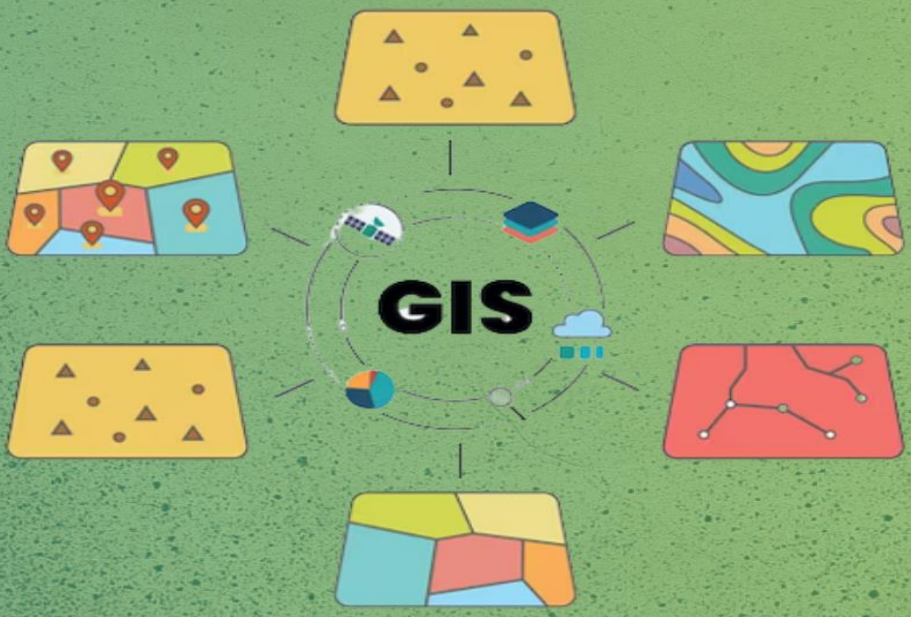
GIS
DICTIONARY



"Discover the World in Words!"

BY RAKESH SURYA & DHIYANI SAH

Preface

Welcome to the world of Geographic Information Systems (GIS) through the lens of the "GIS Dictionary" – a collaborative effort by two passionate Geomatics Engineers, Rakesh Surya and Dhiyani Sah.

GIS, a dynamic field at the intersection of technology, geography, and data science, has transformed the way we perceive and interact with our world. From understanding spatial relationships to making data-driven decisions, GIS touches countless aspects of our daily lives.

This dictionary is born out of our shared enthusiasm for GIS and the recognition of its increasing importance in diverse sectors, from environmental management to urban planning, from disaster response to business intelligence. Whether you are a student taking your first steps into the world of geospatial technology or a seasoned GIS professional seeking to expand your knowledge, this dictionary has something to offer you.

Our aim is to provide a comprehensive and accessible resource that caters to GIS enthusiasts of all levels. Whether you're deciphering the meaning of complex GIS terminology, diving into the intricacies of programming languages, or exploring the vast landscape of GIS software, you'll find valuable insights within these pages.

We understand the evolving nature of GIS, where new tools and techniques emerge regularly. Therefore, we've designed this dictionary to be dynamic, much like the field it represents. It's a living document that will continue to grow and adapt, ensuring its relevance in an ever-changing GIS landscape.

Enjoy your exploration of GIS, and let the "GIS Dictionary" be your companion in this fascinating realm.

Rakesh Surya & Dhiyani Sah
Geomatics Engineers

A

[Ab]

Abbreviation: A shortened form of a word or phrase which represents the whole. Abbreviations are commonly a letter or group of letters taken from the complete form of the word, such as the usage of St. in place of Street.

Abbreviation Dictionary: [symbology] In Maplex for ArcGIS, a file that contains whole words and their abbreviated forms to allow automated shortening of labels.

Abscissa: [coordinate systems] In a rectangular coordinate system, the distance of the x-coordinate along a horizontal axis from the vertical or y-axis. For example, a point with the coordinates (7,3) has an abscissa of 7.

Absolute coordinates: Coordinates that are referenced to the origin of a given coordinate system.

Absolutely constrained adjustment: [ESRI software] In Survey Analyst for field measurements, one of two possibilities for performing a constrained adjustment. In the absolutely constrained adjustment, the coordinates of the reference points keep their original value. Use this method when reference points should remain unchanged in the survey dataset.

Absorption: [remote sensing] The amount of electromagnetic energy lost through interactions with gas molecules and matter during its passage through the atmosphere.

Abstraction: [cognition] A simplified idea of a real-world object or system.

[Ac]

Access key: [computing] A keyboard shortcut that allows a user to access the contents of the Main menu by holding down the Alt key and pressing the underlined letter on the menu or menu command item. An access key is created by placing an ampersand (&) in front of the appropriate letter in the command's caption.

Accessibility: [Business] An aggregate measure of the degree of ease with which a place, person, or thing can be reached, depending on factors such as slope, traffic, distance, and so on.

[Usability] The degree to which Web sites, software, or computers provide equivalent information and functionality to a variety of people, including those with disabilities or visual impairment.

Accuracy: [mathematics] The degree to which a measured value conforms to true or accepted values. Accuracy is a measure of correctness. It is distinguished from precision, which measures exactness.

Acetate: [ESRI software] Circles, lines, polygons, points, or markers that become transparent when not active. Acetate features are overlaid on other map layers and can be independently annotated.

[cartography] A semi-translucent film base used for overlay and drafting in the traditional (manual) cartographic compilation process.

Acknowledgment file: [ESRI software] In ArcGIS, an XML file that contains an acknowledgment message.

Acknowledgment message: [ESRI software] In ArcGIS, a message from a replica to its relative acknowledging the data changes received by the sending replica.

ACL: [programming] Acronym for access control list. A list of accounts or users used to designate restricted and unrestricted services and the authentication criteria required to access an object.

Across-track scanner: [remote sensing] A remote-sensing tool with an oscillating mirror that moves back and forth across a satellite's direction of travel, creating scan line strips that are contiguous or that overlap slightly, thereby producing an image.

Active data frame: [ESRI software] The data frame currently being worked on, for example, the data frame to which layers are being added. The active data frame is highlighted on the map, and its name is shown in bold text in the table of contents.

Active network: [ESRI software] In Survey Analyst for field measurements, the focus of the analyses applied. In an active network, users may list a network's datum points in the Survey Explorer, detect and solve breaks in the network's computation sequence, and find and repair cycles in the network.

Active remote sensing: [remote sensing] A remote-sensing system, such as radar, that produces electromagnetic radiation and measures its reflection back from a surface.

Active theme: [ESRI software] In ArcView 3.x, the theme in a view document to which button and tool actions or corresponding menu commands are applied. An active theme appears raised in a view's table of contents.

ActiveX Connector: [non-ESRI software] A type of ArcIMS Application Server Connector that is a Component Object Model (COM) dynamic link library (DLL) that can be used in a COM application such as Microsoft Active Server Pages (ASP).

Acutance: [photogrammetry] A measure, using a microdensitometer or other instrument, of how well a photographic system shows sharp edges between contiguous bright and dark areas.

[Ad]

Add-in: [programming] An extension to a software program that performs a custom task. ESRI provides various developer add-ins as part of the ArcGIS developer kit.

Address: [cadastral and land records] A designation of the location of a person's residence or workplace, an organization, or a building, consisting of numerical and text elements such as a street number, street name, and city arranged in a particular format.

Address data: [geocoding] Data that contains address information used for geocoding. Address data may consist of one individual address or a table containing many addresses.

Address data format: [geocoding] The arrangement of address information in a database, most often consisting of such address elements as house number, street direction, street name, street type, city, and postal code.

Address data model: [geocoding] The rules of a geodatabase designed specifically to accommodate address-related material, such as streets, zones, ranges, and so forth. These rules define the address elements, their attribute values, and the relationships between them. An address data model facilitates address data storage.

Address element: [geocoding] One of the components that comprise an address. House numbers, street names, street types, and street directions are examples of address elements.

Address event: [address matching] In ArcGIS, features that can be located based on address matching with a street network or other address identifier, such as ZIP Codes or lot numbers.

Address event table: [geocoding] In ArcGIS, a table containing addresses but no spatial reference information. Using GIS software, address event tables can be geocoded to create a spatial data layer.

Address field: [geocoding] A column in a table that stores one or some address elements. An address field can be present in reference data, address data, or both.

Address format: [geocoding] The particular structure and arrangement of address elements and a corresponding method of matching that can be used for a specific application. The address format may vary based on locale or country.

Address locator: [ESRI software] A dataset in ArcGIS that stores the address attributes, associated indexes, and rules that define the process for translating nonspatial descriptions of places, such as street addresses, into spatial data that can be displayed as features on a map. An address locator contains a snapshot of the reference data used for geocoding, and parameters for standardizing addresses, searching for match locations, and creating output. Address locator files have a .loc file extension. In ArcGIS 8.3 and previous versions, an address locator was called a geocoding service.

Address locator property: [geocoding] A parameter in an address locator that defines the process of geocoding.

Address locator style: [geocoding] A template on which an address locator is built. Each template is designed to accommodate a specific format of address and reference data, and geocoding parameters. The address locator style template file has a .lot file extension.

Address matching: [address matching] 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 dataset. If an address falls within a feature's address range, it is considered a match and a location can be returned.

Address range: [geocoding] Street numbers running from lowest to highest along a street or street segment. Address ranges are generally stored as fields in the attribute table of a street data layer. They often indicate ranges on the left and right sides of streets.

Address service: [address matching] A service that can determine the x,y location of an address, and return the address of an x,y location.

Address standardization: [geocoding] The process of breaking down an address into elements and converting those elements with standard abbreviations or spellings. For best

practices, this process applies to preparing the reference data and address data for matching.

Address standardizer: [geocoding] A tool that prepares and breaks down an address into elements that can be used for geocoding. The process may translate some elements into standard keywords or abbreviations; for example, “Avenue” may be translated to “Ave.”

Adds table: [database structures] The geodatabase system table, created when a feature class or table is registered as versioned, maintains information on all rows that have been inserted or updated.

ADF: [Internet] Acronym for Application Developer Framework. The set of custom Web controls and templates that can be used to build Web applications that communicate with a GIS server. ArcGIS Server includes an ADF for both .NET and Java.

ADF runtime: [Internet] The components required to run an application built with the ADF.

Adjacency: [geography] A type of spatial relationship in which two or more polygons share a side or boundary.

Adjacency query: [spatial analysis] A statement or logical expression used to select geographic features that share a boundary.

Adjustment level: [ESRI software] In Survey Analyst for cadastres, a number that corresponds to a specific set of displacement vectors in a series of adjustments to the cadastral fabric. The adjustment level is generally identified by the date and time of the adjustment.

Adoption: The process of appropriating a technology and putting it into use for one’s own purposes; the act by an individual, organization, or community of choosing a technology and putting it into effect.

ADT: [programming] Acronym for abstract data type. For OpenLS, a data type and structure for location information that is shared by two or more services. ADTs are application schemas that are encoded in XML for location services (XLS).

[Ae]

Aerial photograph: [aerial photography] An aerial photograph from which distortions owing to camera tilt and ground relief have been removed. An orthophoto has the same scale throughout and can be used as a map.

[Af]

Affiliation: [defense] In MOLE, the type of threat posed by the war-fighting element is represented. The four basic types supported by MOLE are unknown, friend, neutral, and hostile.

Affine transformation: A geometric transformation that scales, rotates, skews, and/or translates images or coordinates between any two Euclidean spaces. It is commonly used in GIS to transform maps between coordinate systems. In an affine transformation, parallel lines remain parallel, the midpoint of a line segment remains a midpoint, and all points on a straight line remain on a straight line.

[Ag]

Agent: In modeling, an entity within a model that conducts transactions to simulate the actions of a human, group of humans, animal, or other actor.

Agent-based model: A simulation of the large-scale consequences of the decisions and interactions of individual members of a population. An agent-based model consists of an environment or framework that defines the scope and rules of actions, along with a number of agents representing one or more actors whose parameters and behaviors are defined. When the model is run, the characteristics of each agent are tracked through time and space.

Aggregation: [data editing] The process of collecting a set of similar, usually adjacent, polygons (with their associated attributes) to form a single, larger entity.

[Ai]

AIR: [programming] Acronym for Adobe Integrated Runtime. A cross-platform runtime environment built on HTML, Flash, and Flex. AIR applications are deployed on a desktop and can communicate with a server for updates or extended functionality.

AIXM: [navigation] Acronym for Aeronautical Information Exchange Format. An XML format used to describe aeronautical data transactions created and maintained by EUROCONTROL (European Organisation for the Safety of Air Navigation), in the process of being adopted worldwide.

[Aj]

AJAX: [Internet] Acronym for Asynchronous JavaScript and XML. A programming technique for creating fast, interactive Internet applications. AJAX adds a small application to part of the software user's browser for fast loading and display.

[Al]

Albedo: [physics] A measure of the reflectivity of an object or surface; the ratio of the amount of radiation reflected by a body to the amount of energy striking it.

Alert: [usability] A message that calls attention to a notable situation or informs users of changes in the state of a monitored situation.

Alias: [computing] An alternative name specified for fields, tables, files, or datasets that is more descriptive and user-friendly than the actual name. On computer networks, a single e-mail alias may refer to a group of e-mail addresses.

[ESRI software] In geo-processing, an alternate name for a toolbox. Toolbox aliases can be used to avoid confusion when working with tools with the same name that are stored in different toolboxes. For example, tools in the Analysis Tools toolbox can be differentiated from similar tools in the Spatial Analyst Tools toolbox by adding "_analysis" to their names at the command line, as in "clip-analysis."

Aliasing: [graphics computing] The jagged appearance of curves and diagonal lines in a raster image. Aliasing becomes more apparent as the size of the raster pixels is increased or the resolution of the image is decreased.

Alidade: [surveying] A peep sight mounted on a straightedge and used to measure direction.

Align fields: [ESRI software] A task that identifies the fields required for geocoding, such as address and city, when uploading data.

Aligned dimension: A drafting symbol that runs parallel to the baseline and indicates the true distance between beginning and ending dimension points.

Allocation: [network analysis] In network analysis, the process of assigning entities or edges and junctions to features until the feature's capacity or limit of impedance is reached. For example, streets may be assigned to the most accessible fire station within a six-minute radius, or students may be assigned to the nearest school until it is full.

Almanac: [GPS] In GPS, a file transmitted from a satellite to a receiver that contains information about the orbits of all satellites included in the satellite network. Receivers refer to the almanac to determine which satellite to track.

[astronomy] An annual publication containing weather forecasts, information on astronomical events, and miscellaneous facts, arranged according to the calendar of a given year.

Along-track scanner: [remote sensing] A remote-sensing tool with a line of many fixed sensors that record reflected radiation from the terrain along a satellite's direction of movement, creating scan-line strips that are contiguous or that overlap slightly, thereby producing an image.

Alphanumeric grid: [cartography] A grid of numbered rows and lettered columns (or vice versa) superimposed on a map, used to find and identify features. Alphanumeric grids are commonly used as a reference system on local street maps.

Alternate key: [database structures] An attribute or set of attributes in a relational database that provides a unique identifier for each record and could be used as an alternative to the primary key.

Alternate name: [geocoding] A name for an address element, usually a street name, that is different from the official or most common name. For example, a highway number might be an alternate name for a street name.

Altitude: [coordinate systems] The height or vertical elevation of a point above a reference surface. Altitude measurements are usually based on a given reference datum, such as mean sea level.

[map display] The height above the horizon, measured in degrees, from which a light source illuminates a surface. Altitude is used when calculating a hillshade, or for controlling the position of a light source in a scene.

[Am]

AM/FM: Acronym for automated mapping/facilities management. GIS or CAD-based systems used by utilities and public works organizations for storing, manipulating, and mapping facility information such as the location of geographically dispersed assets.

Ambiguity: [uncertainty] In GIS, a state of uncertainty in data classification that exists when an object may appropriately be assigned two or more values for a given attribute. For example, coastal areas experiencing tidal fluctuations may be dry land at some times and under water at other times. Ambiguity may be caused by changeable conditions in reality, by incomplete or conflicting definitions of

attributes, or by subjective differences in the evaluation of data. It may also be caused by disputes, as when two parties claim ownership of the same tract of land.

AML: [ESRI software] Acronym for ARC Macro Language. A proprietary, high-level programming language created by ESRI for generating end-user applications in ArcInfo Workstation.

[An]

Anaglyph: [map display] A stereo image made by superimposing two images of the same area. The images are displayed in complementary colors, usually red and blue or green. When viewed through filters of corresponding colors, the images appear as one three-dimensional image.

Analog image: [graphics computing] An image represented by continuous variation in tone, such as a photograph.

Analysis: [analysis geo-processing] A systematic examination of a problem or complex entity in order to provide new information from what is already known.

Analysis extent: [spatial analysis] The geographic bounding area within which spatial analysis will occur. The bounding area is set by defining the x,y coordinates of opposite corners, usually the bottom-left and top-right corners of results.

Analysis of variance: [statistics] A statistical procedure used to evaluate the variance of the mean values for two or more datasets in order to assess the probability that the data comes from the same sample or statistical population.

Ancillary data: [digital image processing] In digital image processing, data from sources other than remote sensing, used to assist in analysis and classification or to populate metadata.

Ancillary source: [database structures] A supplementary source of information.

Angular unit: [geodesy] The unit of measurement on a sphere or a spheroid, usually degrees. Some map projection parameters, such as the central meridian and standard parallel, are defined in angular units.

Animation: [3D analysis] In ArcMap, ArcScene, and ArcGlobe, a collection of animation tracks that define the dynamic property changes to associated objects. An animation allows for navigation through the display, visualization of temporal changes, or alteration of layer and scene properties, such as layer transparency or the scene background.

Animation Manager: [3D analysis] In ArcMap, ArcScene, and ArcGlobe, the interface in which the keyframes, tracks and time-scale properties of an animation can be edited and an animation can be timed and previewed.

Anisotropic: [modeling] Having nonuniform spatial distribution of movement or properties, usually across a surface.

Annotation: [map design] In cartography, text or graphics on a map provide information for the map reader. An annotation may identify or describe a specific map entity, provide general information about an area on the map, or supply information about the map itself.

Annotation class: [map design] A subset of annotation in a standard or feature-linked geo-database annotation feature class that contains properties that determine how the subset of

annotation will display. A standard or feature-linked geo-database annotation feature class may contain one or more annotation classes.

Annotation construction method: [map design] One of a number of procedures that dictate what type of annotation feature is created and the number of points required to create new annotation features. Construction methods include horizontal, straight, curved, leader line, and follow features.

Annotation feature class: [map design] A geo-database feature class that stores text or graphics that provide information about features or general areas of a map (annotation). An annotation feature class may be linked to another feature class so that edits to the features are reflected in the corresponding annotation (feature-linked annotation). Annotation in a geo-database is edited during an edit session, using the tools on the Annotation toolbar.

Annotation group: [map design] A container within a map document for organizing and managing text or graphics that provide additional information about features or general areas of a map. Annotation groups allow control of the display of different sets of annotations. Annotation stored in a map document is edited with the tools on the Drawing toolbar.

Annotation layer: [map design] A layer that references annotation. Information stored for annotation includes a text string, a position at which it can be displayed, and display characteristics.

Annotation target: [map design] In ArcMap, the annotation group or feature class in a map document where new annotation will be stored when created when using the New Text tools on the Draw toolbar or when copying and pasting annotation. Annotation created with the Annotation Edit tools is stored in the current Editing target, not in the annotation target.

ANSI: Acronym for American National Standards Institute. The private, nonprofit organization that develops U.S. industry standards through consensus and public review.

Ant: [programming] An open-source, Java-based tool from the Apache Software Foundation that is used to manage the build procedure of applications.

Antipode: [geodesy] Any point on the surface of a sphere that lies 180 degrees (opposite) from a given point on the same surface, so that a line drawn between the two points through the center of the sphere forms a true diameter.

Any-vertex connectivity: [network analysis] In network datasets, a type of edge connectivity policy states that an edge may connect to another edge or junction where they have coincident vertices.

Anywhere fix: [GPS] A position that a GPS receiver can calculate without knowing its own location or the local time.

[Ap]

Apartment: [programming] In Microsoft's COM component programming model, a group of threads, working within a process, that work within the same context.

API: [programming] Acronym for application programming interface. A set of interfaces, methods, protocols, and tools that application developers use to build or customize a software program. APIs make it easier to develop a program by providing building blocks of prewritten, tested, and documented code that are incorporated into the new program. APIs can be built for any programming language.

Apogee: In an orbit path, the point at which the object in orbit is farthest from the center of the body being orbited.

APP-6A: [defense] A military symbology specification published by NATO (North Atlantic Treaty Organization). APP-6A is based on MIL-STD-2525A, the predecessor to MIL-STD-2525B.

Appending: [analysis geoprocessing] Adding features from multiple data sources of the same data type into an existing dataset.

Applet: [non-ESRI software] A small program that usually executes from within a Web browser. Applets are compatible with most platforms, and can also be used within applications or devices that support applets.

Application server: [software] A computer program that receives user requests through a client application and returns results to the client.

Application Web service: [Internet] A Web service that solves a particular problem; for example, a Web service that finds all of the hospitals within a certain distance of an address. An application Web service can be implemented using the native Web service framework of a Web server; for example, an ASP.NET Web service (Web Method) or Java Web service (Axis).

[Ar]

Arbitrary symbol: [symbology] A symbol that has no visual similarity to the feature it represents for example, a circle used to represent a city, or a triangle used to represent a school.

Arc: [data structures] On a map, a shape defined by a connected series of unique x,y coordinate pairs. An arc may be straight or curved.

[data structures] 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.

Arc-node topology: The data structure in a coverage used to represent linear features and polygon boundaries and to support analysis functions, such as network tracing. Nodes represent the beginning and ending vertices of each arc. Arcs that share a node are connected, and polygons are defined by a series of connected arcs. An arc that intersects another arc is split into two arcs. Each arc that defines all or part of a polygon boundary records the number of the polygon to its left and to its right, giving it a direction of travel.

ArcGIS Online: [empty] A web-based system for sharing, finding, and using maps, layers, and services. ArcGIS Online includes a set of base maps, map layers, and tools published by Esri for use inside ArcGIS products.

ArcGIS Pro: ArcGIS Pro is the main professional desktop GIS application from Esri, built on a 64-bit architecture. It also allows you to visualize, edit and analyze geographic data in 2D and 3D. Enables you to create projects, maps, layers, tools and other elements, ArcGIS Pro offers several options for sharing your work with other users.

ArcGIS Server Web service: [ESRI software] A Web service processed and executed from within an ArcGIS server. Each Web service has a distinct HTTP location (URL). Web access is enabled by default for all ArcGIS Server services, but can be turned off by an administrator.

ArcGIS Spatial Analyst: [ESRI software] An ArcGIS extension that provides spatial modeling and analysis features. It allows the creation, querying, mapping, and analysis of cell-based raster data and integrated vector-raster analysis.

Arcgisant: [non-ESRI software] The command, provided with the Java ADF, that starts the Apache Ant tool that builds and deploys Web applications.

Architecture: [computing] The internal design of an application or software package; the way software or hardware components are organized into a functioning unit.

Archive: [computing] A collection of information or data that is stored on a permanent medium such as CDs, discs, or tapes. Information is archived to ensure its security or persistence.

Archiving: [ESRI software] In ArcGIS and ArcSDE, a procedure that allows a geodatabase to capture and store updates to features and records as the version is posted or edits are saved directly. Archiving builds a lineage of historical information that can be viewed and queried.

ArcIMS: [ESRI software] ESRI software that allows for centrally hosting and serving GIS maps, data, and applications for use on the Internet. The administrative framework lets users author configuration files, publish maps, design Web pages, and administer ArcIMS spatial servers. ArcIMS supports Windows, Linux, and UNIX platforms and is customizable on many levels.

ArcIMS Administrator: [ESRI software] The ArcIMS component that allows users to manage ArcIMS services, servers, virtual servers, and folders.

ArcIMS application server: [ESRI software] The ArcIMS component that handles the distribution of incoming requests. It tracks which services are running on which ArcIMS spatial servers and hands off a request to the appropriate ArcIMS spatial server.

ArcIMS Application Server Connector: [ESRI software] A component used to connect the Web server to the ArcIMS application server. Types of connectors include ActiveX Connector, ColdFusion Connector, Java Connector, .NET Link, and Servlet Connector. Connectors must be installed on the same computer as the Web server.

ArcIMS architecture: [ESRI software] A multitier framework that includes ArcIMS components: the ArcIMS Manager/manager applications, application server, application server connectors, monitor, tasker, spatial servers, and viewers. The complete architecture also includes a Windows or UNIX operating system, a Web server, a servlet engine, and client-side Web browsers.

ArcIMS Author: [ESRI software] The ArcIMS component that allows users to organize data into a configuration file that can be used to create a service. A configuration file specifies the map content: which data layers will be displayed and how they will look (color, symbols, labels, etc.).

ArcIMS Designer: [ESRI software] The ArcIMS component that guides users in designing Web pages based on at least one service and one of the ArcIMS viewers. Users choose from a variety of options including toolbar functions, scale bar properties, and visible layer settings.

ArcIMS Manager: [ESRI software] A suite of Web pages, deprecated in the 9.0 release, that guides users through the process of authoring configuration files, publishing services, designing Web pages, and administering sites. ArcIMS Manager combines the three independent applications (ArcIMS Author, ArcIMS Designer, and ArcIMS Administrator) into one wizard-driven framework. ArcIMS Manager resides on the Web server computer and can be accessed remotely. It is also referred to as the Web-based Manager and Remote Manager.

ArcIMS manager application: [ESRI software] Any one of these stand-alone applications: ArcIMS Author, ArcIMS Administrator, or ArcIMS Designer. Each of these applications guides users through a process: authoring configuration files (ArcIMS Author), creating services and administering sites (ArcIMS Administrator), or designing Web pages (ArcIMS Designer).

ArcIMS Monitor: [ESRI software] An ArcIMS component that tracks the state of the ArcIMS spatial server. When a computer system reboots, ArcIMS Monitor restarts services automatically by restarting the site configuration. This configuration is based on the setting saved in a serialized file ending in the file extension .sez.

ArcIMS service: [ESRI software] A service that allows the content of a configuration file to be published on the Internet. The configuration file provides data layer content and symbology that the service registers to the ArcIMS spatial server and Web server for processing.

ArcIMS Service Administrator: [ESRI software] A Web-based administration application that allows users to manage ArcIMS services and ArcSDE services remotely.

ArcIMS Tasker: [ESRI software] An ArcIMS component that removes temporary image files generated by the image and ArcMap image services at a user-defined time interval.

ArcIMS viewer: [ESRI software] Any one of the three Web site designs that come as standard options in ArcIMS Designer: the HTML, Java Custom, and Java Standard. They provide the functionality and graphic look for Web sites. The Java viewers require a one-time Web download and are only compatible with Web browsers that support Java 2 plug-in functionality.

ArcIMS virtual server: [ESRI software] A grouping of one or more spatial servers into a single unit for administrative purposes. All of the following are ArcIMS virtual servers: the ArcMap server, extract server, feature server, geocode server, image server, metadata server, query server, and route server. The ArcMap server and route server are optional extensions to ArcIMS.

ArcIMS Web site directory: [ESRI software] The directory that stores the files that make up the ArcIMS Internet GIS application and other files. It is the directory specified as the Working Directory during the installation process. The default location for Windows is C:\ArcIMS. The default location for UNIX is $home.

ArcIMSFolders.sez: [ESRI software] A serialization file containing ArcIMS folders and any submitted MapNotes and EditNotes. It is stored in the ArcIMS AppServer directory. This file replaces the EsriMapCookies.ser file used in ArcIMS 3.1.

ArcIMSSite.sez: [ESRI software] A serialization file created in the ArcIMS AppServer directory that saves site parameters, including which services are running and which servers are started. This file replaces the EsriMapCatalog.ser file used in ArcIMS 3.1.

ArcInfo interchange file: [data transfer] A file format, also known as an export file, used to enable a coverage, grid or TIN and an associated INFO table to be transferred between different machines which are not connected by any type of file sharing network. ArcInfo interchange files have a .E00 extension, which increments to .E01, .E02, and so on, if the interchange file is composed of several separate files.

ArcInfo workspace: [ESRI software] A file-based collection of coverages, grids, TINs, or shapefiles stored as a directory of folders in the file system.

ArcMap Server: [ESRI software] A public ArcIMS virtual server that allows an ArcGIS user to create maps in ArcMap, rather than ArcIMS Author or ArcIMS Manager, and publish them on the Internet. The ArcMap server is an optional extension to ArcIMS.

ArcObjects: [ESRI software] A library of software components that make up the foundation of ArcGIS. ArcGIS Desktop, ArcGIS Engine, and ArcGIS Server are all built using the ArcObjects libraries.

ArcSDE: [ESRI software] Technology for managing geographic information in a relational database management system (RDBMS). ArcSDE is part of the ArcGIS platform, and is the data server between ArcGIS and relational databases. It is widely used to enable geographic information to be shared by many users across a network and to scale in size from personal, to workgroup, to enterprise use.

ArcSDE administrative user: [ESRI software] The user who administers ArcSDE geodatabases. The ArcSDE administrative user can be the SDE user, but for DBO-schema ArcSDE geodatabases in SQL Server it is any user whose login is mapped to DBO in the database, and for user-schema geodatabases in Oracle, the ArcSDE administrative user is the user in whose schema the geodatabase is stored.

ArcSDE client application: An application or program that communicates with ArcSDE to query, store and manage spatial data. Examples include ArcGIS Desktop, ArcGIS Server, and ArcIMS.

ArcSDE database server: [ESRI software] In ArcCatalog, an instance of SQL Server Express used to store ArcSDE geodatabases.

ArcSDE geodatabase: [ESRI software] A geodatabase stored in an RDBMS served to client applications using ArcSDE technology. An ArcSDE geodatabase can support long transactions and versioned workflows, be used as a workspace for geoprocessing tasks, and provide the benefits of a relational database such as security, scalability, backup and recovery, and SQL access.

ArcSDE Personal Edition geodatabase: [ESRI software] A single-user ArcSDE geodatabase that is created on Microsoft SQL Server Express.

ArcSDE system tables: [ESRI software] A collection of tables that store metadata about user tables in a geodatabase managed using ArcSDE technology. ArcSDE system tables are owned by an ArcSDE administrative user.

ArcToolbox: [ESRI software] A user interface in ArcGIS used for accessing, organizing, and managing a collection of geoprocessing tools, models, and scripts.

ArcView project: [ESRI software] In ArcView 3, a file for creating and storing documents for GIS work. All activity in ArcView 3 takes place within project files, which use five types of documents to organize information: views, tables, charts, layouts, and Avenue scripts. A project file organizes its documents and stores their unique

settings in an ASCII format file with the extension .apr.

ArcXML: [ESRI software] Acronym for Arc Extensible Markup Language. A file format that provides a structured method for communication between all ArcIMS components. ArcXML defines content for services and is used for requests and responses between clients, the business logic tier, and servers.

are unit: [standards] A metric areal unit of measure equal to 100 square meters. One are is equal to 1,076.39 square feet, or 0.025 acres.

Area: [Euclidean geometry] A closed, two-dimensional shape defined by its boundary or by a contiguous set of raster cells.

Area of adjustment: [ESRI software] In Survey Analyst – Cadastral Editor, a continuous set of parcels that have been selected for adjustment by least-squares.

Area of interest: [map design] The extent used to define a focus area for either a map or database production.

Argument: [computing] In computing, a value or expression passed to a function, command, or program.

[mathematics] In mathematics, an independent variable of a function.

Arithmetic expression: [mathematics] A number, variable, function, or combination of these, with operators or parentheses, or both, that can be evaluated to produce a single number.

Arithmetic function: [ESRI software] A type of mathematical function that performs a calculation on the values of cells in an input raster. There are six arithmetic functions in ArcGIS Spatial Analyst: Abs, Int, Float, Round up (Ceil), Round down (Floor) and Negate.

Array: [GPS] A set of objects that are connected to function as a unit. In GPS technology, an array of satellites is used to pinpoint locations on the earth.

[As]

Ascending node: The point at which a satellite traveling south to north crosses the equator.

ASCII: [data transfer] Acronym for American Standard Code for Information Interchange. The de facto standard for the format of text files in computers and on the Internet that assigns a 7-bit binary number to each alphanumeric or special character. ASCII defines 128 possible characters.

ASP: [Internet] Acronym for Active Server Pages. A Microsoft server-side scripting technology that can be used to create and run dynamic, interactive Web applications, which are typically coded in JScript, JavaScript or VBScript. An ASP file contains not only the text and HTML tags that standard Web documents contain, but also commands written in a scripting language, which can be carried out on the server or the client.

ASP.NET: [programming] A Microsoft-created programming framework built on top of the common language runtime (CLR) that can be used on a Windows server to create Web applications in a variety of programming languages.

Aspect: [analysis geoprocessing] The compass direction that a topographic slope faces, usually measured in degrees from north. Aspect can be generated from continuous elevation surfaces. For example, the aspect recorded for a TIN face is the steepest downslope direction of the face, and the aspect of a cell in a raster is the steepest downslope direction of a plane defined by the cell and its eight surrounding neighbors.

[map projections] The conceptual center of a projection system.

Aspect ratio: [hardware] The ratio of the width of an image to its height. The aspect ratio of a standard computer monitor is 4:3 (rectangular)

Assembly: [software] A package of software and its associated resources. For example, an ArcGIS Win32 assembly will typically include executables, DLLs, object libraries, registry files, and help files for a unit of software.

Assignment operator: A type of operator that assigns the result of an expression to an output, usually a raster, for storage.

Associated feature class: [ESRI software] In Survey Analyst – Cadastral Editor, a feature class that uses the cadastral fabric as a basemap, and has been associated with cadastral fabric. Associated feature classes can be corrected to maintain alignment with cadastral fabric parcels after least-squares adjustments of the cadastral fabric.

Association: [computing] In UML, the relationship between two classes. In an association, instances of the classes in question usually exist together, but can exist on their own.

Assumed bearing: [surveying] A bearing measured from an arbitrarily chosen reference line called an assumed meridian.

Astrolabe: [astronomy] An instrument that measures the vertical angle between a celestial body and the horizontal plane at an observer's position. The astrolabe was replaced by the sextant in the fifteenth century for navigation, but modern versions are still used to determine local time and latitude.

Asynchronous: [data editing] Not synchronous; that is, not occurring together or at the same time.

Asynchronous request: [programming] In programming, a set of actions or events that may occur simultaneously. For example a program that launches another program, then continues execution while the other program is still running is said to be asynchronous.

[computing] A request from a client application that does not require a response from the server for the client application to continue its process.

[At]

ATL: [programming] Acronym for Active Template Library. A set of C++ template classes, developed by Microsoft for use in building Windows COM objects.

Atlas: [cartography] A collection of maps usually related to a particular area or theme and presented together. Examples of atlases include world atlases, historical atlases, and biodiversity atlases.

Atmospheric window: [remote sensing] Parts of the electromagnetic spectrum that can be transmitted through the atmosphere with relatively little interference.

Atomic clock: [physics] A clock that keeps time by the radiation frequency associated with a particular atomic reaction. Atomic clocks are used in official timekeeping.

Attenuation: [business] A measure of the combined attributes of a center or site that are considered positive features or that draw in potential customers or tenants.

Attribute: [data models] Nonspatial information about a geographic feature in a GIS, usually stored in a table and linked to the feature by a unique identifier. For example, attributes of a river might include its name, length, and sediment load at a gauging station.

[data models] In raster datasets, information associated with each unique value of a raster cell.

[graphics map display] Information that specifies how features are displayed and labeled on a map; for example, the graphic attributes of a river might include line thickness, line length, color, and font for labeling.

[ESRI software] In MOLE, aspatial information about a geographic feature in a GIS, usually stored in a table and linked to the feature by a unique identifier. For example, attributes of a force element might include its name and speed. Most MOLE attributes are what some military specifications refer to as labels or modifiers.

Attribute data: [data models] Tabular or textual data describing the geographic characteristics of features.

Attribute domain: [data structures] In a geodatabase, a mechanism for enforcing data integrity. Attribute domains define what values are allowed in a field in a feature class or non-spatial attribute table. If the features or non-spatial objects have been grouped into subtypes, different attribute domains can be assigned to each of the subtypes.

Attribute query: [data analysis] A request for records of features in a table based on their attribute values.

Attribute table: [data structures] 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 zone 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.

Attributes dialog box: [data editing] In ArcMap, a dialog box that displays attributes of selected features for editing.

Attribution: [data editing] The process of assigning attributes to features.

[Au]

Authentication: [computing] The process of validating the identity of a user who logs on to a computer system, network, or Web site.

Authorization: [computing] Completion of the software registration process. During authorization, the single-use or server product and/or extensions have been installed and registered, and an authorization file has been generated through the appropriate registration wizard and sent to the software user.

Authorization file: [computing] A file that contains single use or server product authorization data. Each authorization file contains information regarding the feature name, version number, time-out date, registration number, and authorization code.

Autocorrelation: [statistics] The correlation or similarity of values, generally values that are nearby in a dataset. Temporal data is said to exhibit serial autocorrelation when values measured close together in time are more similar than values measured far apart in time. Spatial data is said to exhibit spatial autocorrelation when values measured nearby in space are more similar than values measured farther away from each other.

Automated cartography: [graphics map display] The process of making maps using computer systems that carry out many of the tasks associated with map production.

Automated feature extraction: The identification of geographic features and their outlines in remote-sensing imagery through post processing technology that enhances feature definition, often by increasing feature-to-background contrast or using pattern recognition software.

Automated text placement: [data editing] An operation in which text is automatically placed on or next to features on a digital map by a software application according to rules set by the software user.

Automation: [computing] The automatic functioning of a machine, system, or process, without the need for human interaction.

[software] In COM technology, a feature that allows an object that was designed for use in one application to be accessed in another application. For example, ArcObjects may be accessed in Visual Basic and in other languages, tools, and applications that support automation.

Automation scale: [data capture] The scale at which nondigital data is made digital; for example, a map digitized at a scale of 1:24,000 has an automation scale of 1:24,000. The data can be rendered at different display scales.

Auto-vectorization: [data capture] The creation of vector data from raster data through automated tracing of pixels that are in close proximity and of the same or similar value.

[Av]

Availability: [data transfer] The degree of ease with which a dataset or other object may be found or obtained.

Avenue: [ESRI software] The object-oriented programming language on which ArcView 3.x is based. Avenue provides tools for customizing ArcView 3.x and developing ArcView 3.x applications.

Average point spacing: [3D GIS] The average distance separating sample points in a point dataset. A terrain dataset uses the average point spacing of a dataset to define a horizontal tiling system into which to divide input source measurements.

AVHRR: [remote sensing] Acronym for Advanced Very High Resolution Radiometer. A scanner flown on National Oceanic and Atmospheric Administration (NOAA) polar-orbiting satellites for measuring visible and infrared radiation reflected from vegetation, cloud cover, shorelines, water, snow, and ice. AVHRR data is often used for weather prediction and vegetation mapping.

B

[Ax]

Axis: A line along which measurements are made in order to determine the coordinates of a location.

[coordinate systems] In a spherical coordinate system, the line that directions are related to and from which angles are measured.

[astronomy] In astronomy, the imaginary line through the poles about which a rotating body turns.

[Az]

Azimuth: The horizontal angle, measured in degrees, between a baseline drawn from a center point and another line drawn from the same point. Normally, the baseline points true north and the angle is measured clockwise from the baseline.

[analysis geoprocessing] A compass direction. For example, in some GIS software, the direction from which a light source illuminates a surface is called the azimuth.

[navigation] In navigation, the horizontal angle, measured in degrees, between a reference line drawn from a point and another line drawn from the same point to a point on the celestial sphere. Normally, the reference line points true north and the angle is measured clockwise from the reference line.

Azimuthal projection: [map projections] A map projection that transforms points from a spheroid or sphere onto a tangent or secant plane. The azimuthal projection is also known as a planar or zenithal projection.

B-tree: A tree data structure used for indexing data within a database or file system implementation. In a B-tree structure, data is sorted into a set of hierarchical nodes, usually using only three or four levels. The limited number of levels makes effective searches possible, because most of the nodes in the tree do not have to be accessed during a search.

[Ba]

Background: [output] In ArcScene or ArcGlobe, the backdrop of the view. The color of the background can be set to suggest sky, empty space, or any color that improves visualization.

Backscatter: [remote sensing] Electromagnetic energy that is reflected back toward its source by terrain or particles in the atmosphere.

BAM: [cartography] Acronym for best available map. The most suitable data source for a map.

Band: [remote sensing] A set of adjacent wavelengths or frequencies with a common characteristic. For example, visible light is one band of the electromagnetic spectrum, which also includes radio, gamma, radar and infrared waves.

Band ratio: [digital image processing] A digital image-processing technique that enhances contrast between features by dividing a measure of reflectance for the pixels in one image band by the measure of reflectance for the pixels in the other image band.

Band separate: [remote sensing] An image format that stores each band of data in a separate file.

Band-pass filter: [remote sensing] A wave filter that allows signals in a certain frequency to pass

through, while blocking or attenuating signals at other frequencies.

Bandwidth: [computing] The amount of digital data that can be transferred over a computer network within a specified time period, usually measured in bits per second (bps).

Barrier: [network analysis] In network analysis, an entity that prevents flow from traversing a network edge or junction.

[ESRI software] A line feature used to keep certain points from being used in the calculation of new values when a raster is interpolated. The line can represent a cliff, ridge, or some other interruption in the landscape. Only the sample points on the same side of the barrier as the current processing cell will be considered.

Base data: [data analysis] Map data over which other, thematic information is placed.

Base height: In aerial photography, the height or altitude from which a photograph is taken.

Base height ratio: [aerial photography] In aerial photography, the distance on the ground between the centers of overlapping photos, divided by aircraft altitude. In a stereo-model, base height ratio is used to determine vertical exaggeration.

[3D analysis] In ArcGIS 3D Analyst, the height at which a surface, raster, or feature is drawn in a scene. Base height for features and rasters can be set from a surface, such as a DEM, 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.

Base layer: [data analysis] A data layer in a GIS to which all other layers are geometrically referenced.

Base station: [GPS] A GPS receiver at a known location that broadcasts and collects correction information for roving GPS receivers.

Base symbol: [ESRI software] In ArcGIS Tracking Analyst, the default symbol used to represent an event or a feature on a map.

Base tag: [ESRI software] A text formatting tag that allows control of how the ESRI Maplex Labeling Engine places labels based on multiple fields relative to a feature. The field identified with the base tag is placed nearest the feature, and other fields are placed relative to the position of the base field.

Baseline: [surveying] An accurately surveyed line from which other lines or the angles between them are measured.

[surveying] In a U.S. land survey system, a line passing east and west through the origin, used to establish township, section, and quarter-section corners.

[GPS] In GPS, the physical distance between a base station and a rover.

Base map: [data analysis] A map depicting background reference information such as landforms, roads, landmarks, and political boundaries, onto which other thematic information is placed. A base map is used for locational reference and often includes a geodetic control network as part of its structure.

Batch file: [computing] A text file containing commands that is sent to the CPU to be executed automatically. A batch file allows the central processing unit (CPU) to process the commands at off-peak times or at a regularly scheduled time, rather than on demand from the user.

Batch geocoding: [geocoding] The process of geocoding many address records at the same time.

Batch mode operation: [ESRI software] A procedure which uses a given ArcToolbox tool to process a set of information, or batch, rather than applying the tool to one piece at a time. Batch mode operation is available through tools in ArcGIS 8.3 and previous versions.

Batch processing: [ESRI software] A method for processing data automatically in which the data is grouped into batches and executed by the computer at one time, without user interaction.

Batch table: [ESRI software] In ArcToolbox, a table which displays the input name, user-selected parameters, and output name, where applicable, for all entries pertaining to a group, or batch, of jobs. Batch tables are available through tools in ArcGIS 8.3 and previous versions.

Batch vectorization: [data conversion] An automated process that converts raster data into vector features for an entire raster or a portion of it based on user-defined settings.

Bathymetric map: [cartography] A map representing the topography of a seafloor or lake bed, using contour lines to indicate depth.

Bathymetry: [cartography] The science of measuring and charting the depths of water bodies to determine the topography of a lake bed or seafloor.

Battle dimension: [ESRI software] In MOLE, the primary area in which a force unit operates, such as air, space, ground, sea, surface, and subsurface.

Baud rate: [data transfer] In communications, the number of electrical cycles, or signals, transmitted per second. At lower transfer speeds the baud rate equals the data transfer rate measured in bps, or bits per second. Baud rate and bps are still sometimes used interchangeably, though inaccurately, since current standards allow for the encoding of multiple bits into a single cycle.

Bayes' theorem: A theorem developed by English mathematician Thomas Bayes (1702-1761) about conditional probability. It states that the probability of a given event, given the original data and some new data, is proportional to the probability of the event given the original data only, and the probability of the new data given the original data and the event.

Bayesian statistics: A statistical approach to measuring likelihood. Bayesian estimates are based on the synthesis of a prior distribution and current sample data. Classical approaches to statistics estimate the probability of an event by averaging all possible data. The Bayesian approach, in contrast, weights probability according to actual data from a particular situation. It also factors in data from sources outside the statistical investigation, such as past experience, expert opinion, or prior belief. This outside information is described by a distribution that includes all possible values for the parameter.

[Be]

Bearing: The horizontal direction of a point in relation to another point, 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 often referred to as true bearings, magnetic bearings, or assumed bearings, depending on whether the meridian is true, magnetic, or assumed

Bearing method: [ESRI software] In Survey Analyst for field measurements, one of two methods for computing the coordinate geometry traverse. The bearing method uses compass directions for the orientation of each course.

Behavior: [ESRI software] The actions or characteristics exhibited by an object in a database, as defined by a set of rules.

Benchmark: [surveying] A brass or bronze disk, set in a concrete base or similarly permanent structure, inscribed with a mark showing its elevation above or below an adopted vertical datum.

[computing] A performance test of hardware, software, or an application that sets a standard of quality using test data or operations typical of working conditions.

Best route: [ESRI software] The route of least impedance between two or more locations, taking into account connectivity and travel restrictions such as one-way streets and rush-hour traffic.

Bézier curve: [Euclidean geometry] A curved line whose shape is derived mathematically rather than by a series of connected vertices. In graphics programs, a Bzier curve usually has two endpoints and two handles that can be moved to change the direction and the steepness of the curve. Bzier curves are named for the French engineer Pierre Bzier (1910-1999).

[Bh]

Bhattacharyya distance: [digital image processing] In digital image processing, a measure of the theoretical distance between two normal distributions of spectral classes, which acts as an upper limit on the probability of error in a Bayesian estimate of correct classification. Bhattacharyya distance is named for the Indian mathematician Anil Kumar Bhattacharyya (1915-1996).

[Bi]

Big endian: [hardware] A computer hardware architecture in which, within a multibyte numeric representation, the most significant byte has the lowest address and the remaining bytes are encoded in decreasing order of significance.

Billboarding: [graphics map display] A method for displaying graphics associated with features in a three-dimensional map display by posting them vertically as two-dimensional symbols and orienting them to always face the user.

Binary: [computing] In computing, having only two states, such as yes or no, on or off, true or false, or 0 or 1.

Binary file: [computing] A file that contains data encoded as a sequence of bits (ones and zeros) instead of plain text. A binary file, such as a DLL or an executable file, contains information that can be directly loaded or executed by a computer.

Binding: [programming] In computer programming, the process by which a program discovers an object's methods and properties.

Binomial distribution: [statistics] A distribution describing the probability of obtaining exactly K successes in N independent trials, where each trial results in either a success or a failure.

Biogeography: The study of the geographical distribution of living things.

Biomass: The total amount of organic matter in a defined area; usually refers to vegetation.

Bit: [computing] The smallest unit of information within a computer. A bit can have one of two values, 1 and 0, that can represent on and off, yes and no, or true and false.

Bit depth: [data structures] The range of values that a particular raster format can store, based on the formula 2n. An 8-bit depth dataset can store 256 unique values.

Bitmap: 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 bitmap can represent.

[Bl]

Blind digitizing: [data capture] A method of manual digitizing in which the operator has no graphic display on hand with which to see the digitized coordinates as they are captured.

BLOB: [database structures] Acronym for binary large object. A large block of data, such as an image, a sound file, or geometry, stored in a database. The database cannot read the BLOB's structure and only references it by its size and location.

Block: [ESRI software] In ArcGIS, a group of records in a compressed file geodatabase feature class or table that are stored together. The arrangement of compressed data into blocks helps optimize query performance.

Block attribute: [non-ESRI software] In CAD, a collection of objects that can be associated to form a single object.

Block group: [federal government] A unit of U.S. census geography that is a combination of census blocks. A block group is the smallest unit for which the U.S. Census Bureau reports a full range of demographic statistics. There are about 700 residents per block group. A block group is a subdivision of a census tract.

Block kriging: A kriging method in which the average expected value in an area around an unsampled point is generated rather than the estimated exact value of an unsampled point. Block kriging is commonly used to provide better variance estimates and smooth interpolated results.

Blocking: [ESRI software] In ArcGIS, a geocoding indexing process that reduces the number of potential matches that need to be checked.

Blunder: [surveying] In surveying, a defective measurement that can be detected by a statistical test.

[Bo]

Boolean expression: [mathematics] An expression, named for the English mathematician George Boole (1815-1864), that results in a true or false (logical) condition. For example, in the Boolean expression "HEIGHT > 70 AND DIAMETER = 100," all locations where the height is greater than 70 and the diameter is equal to 100 would be given a value of 1, or true, and all locations where this criteria is not met would be given a value of 0, or false.

Boolean operation: A GIS operation that uses Boolean operators to combine input datasets into a single output dataset.

Boolean operator: [mathematics] A logical operator used in the formulation of a Boolean expression. Common Boolean operators include AND, which specifies a combination of conditions (A and B must be true); OR, which specifies a list of alternative conditions (A or B must be true); NOT, which negates a condition (A but not B must be true); and XOR (exclusive

or), which makes conditions mutually exclusive (A or B may be true but not both A and B).

Border arcs: [data models] The arcs that create the boundary line of a polygon coverage.

Boundary: [surveying] A line separating adjacent political entities, such as countries or districts; adjacent tracts of privately-owned land, such as parcels; or adjacent geographic zones, such as ecosystems. A boundary is a line that may or may not follow physical features, such as rivers, mountains, or walls.

Boundary effect: A problem created during spatial analysis, caused by arbitrary or discrete boundaries being imposed on spatial data representing non-discrete or unbounded spatial phenomena. Boundary problems include edge effects, in which patterns of interaction or interdependency across the borders of the bounded region are ignored or distorted, and shape effects, in which the shape imposed on the bounded area affects the perceived interactions between phenomena.

Boundary feature weight: [ESRI software] One of two types of feature weights that allow control of how labels are placed relative to polygon features in ArcMap. Higher feature weights prevent labels from being placed over features. A high boundary feature weight keeps labels off of the edge of a polygon, but does not prevent the label from being placed within the boundary.

Boundary line: [cartography] A division between adjacent political entities, tracts of private land, or geographic zones. Boundary lines may be imaginary lines, physical features that follow those lines, or the graphical representation of those lines on a map. Boundary lines between privately owned land parcels are usually called property lines.

Boundary monument: [surveying] An object that marks an accurately surveyed position on or near a boundary.

Boundary network: [ESRI software] In Survey Analyst – Cadastral Editor, an irregular mesh of parcel boundaries, connection lines and control points representing a cadastral fabric. A boundary network represents parcels implicitly joined together, and is used by least-squares adjustment to distribute error from fixed control points based on the precision of boundary dimensions (bearings and distances).

Boundary survey: [cadastral and land records] A map that shows property lines and corner monuments of a parcel of land.

Bounding rectangle: [map display] The rectangle, aligned with the coordinate axes and placed on a map display, that encompasses a geographic feature or group of features or an area of interest. It is defined by minimum and maximum coordinates in the x and y directions and is used to represent, in a general way, the location of a geographic area.

[Br]

Break: [ESRI software] In ArcGIS Network Analyst, an object used in vehicle routing problem (VRP) analysis. A break can be used to model a specified period of rest along a route within a vehicle routing problem VRP instance.

Break line: [3D GIS] A line in a TIN that represents a distinct interruption in the slope of a surface, such as a ridge, road, or stream. No triangle in a TIN may cross a breakline (in other words, breaklines are enforced as triangle edges). Z-values along a breakline can be constant or variable.

Brightness theme: [data models] In 3D Analyst and Spatial Analyst for ArcView 3.x, a grid theme

whose cell values are used to vary the brightness of another grid theme. The cell values in one grid can be visually plotted against those in another. Most commonly, hill shade grids are used as brightness themes for elevation grids. The effect is to display the elevation surface in relief.

Browse graphic: [ESRI software] An image associated with data to provide a general idea of what the service looks like.

[Bu]

Buffer: [spatial analysis] A zone around a map feature measured in units of distance or time. A buffer is useful for proximity analysis.

Bug: [computing] In computing, a flaw or error in a software program or hardware component that prevents it from performing the way it should.

Build: [network analysis] In ArcGIS, the process of creating a network system. For geometric networks, this includes establishing connectivity, creating network features, and creating logical network tables. For network datasets, this includes establishing connectivity, creating network elements, and assigning network attribute values.

[ESRI software] An ArcInfo Workstation command that constructs topology and creates a feature attribute table for a coverage.

Build parcel: [ESRI software] In Survey Analyst – Cadastral Editor, a cadastral fabric editing command that creates a parcel from construction lines and legal records.

Bus: [computing] A set of conductors that provide communications links between the various functional components of a computer, such as memory and peripheral devices.

Business table: [ESRI software] In a geodatabase, the spatially-enabled DBMS table that holds the main attribute values of a dataset. A business table with a spatial column is a feature class, and a business table with a raster column is a raster dataset or a raster catalog. In the database, the business table name is the dataset name.

Button: [programming] A command that executes a function, macro, or custom code when clicked.

[By]

Byte: [computing] The smallest addressable unit of data storage within a computer, almost always equivalent to 8 bits and containing one character.

C

C4I: [defense] In defense, an abbreviation used to signify that a computer program or system supports command, control, communication, computers, and information.

[Ca]

CAD: [graphics computing] Acronym for computer-aided design. A computer-based system for the design, drafting, and display of graphical information. Also known as computer-aided drafting, such systems are most commonly used to support engineering, planning, and illustrating activities.

CAD dataset: The feature representation of a CAD file in a geodatabase-enforced schema. A CAD feature dataset is comprised of five read-only feature classes: points, polylines, polygons, multipatch and annotation. ArcGIS supported formats include DWG (AutoCAD), DXF (AutoDesk

Drawing Exchange Format), and DGN (the default Micro-station file format).

CAD drawing: [graphics computing] The digital equivalent of a drawing, figure, or schematic created using a CAD system.

[ESRI software] In ArcCatalog, an item in the Catalog tree representing all features and annotation in a CAD file. The symbology defined in the CAD file determines how features are drawn in ArcMap or in the ArcCatalog preview.

CAD drawing dataset: [ESRI software] The pictorial representation of an entire CAD file that can be viewed in any ArcGIS application with a display. The CAD drawing dataset is a vector data source of a mixed feature type in which the symbology is set to mimic that of the originating CAD application. The graphic properties of a CAD drawing dataset's objects can be identified, but the dataset is not usable for feature class-based queries or analysis.

CAD feature class: [ESRI software] A read-only member of a CAD feature dataset, comprised of one of the following: polylines, points, polygons, multipatch, or annotation. The feature attribute table of a CAD feature class is a virtual table comprised of select CAD graphic properties and any existing field attribute values.

CAD feature dataset: [ESRI software] The feature representation of a CAD file in a geodatabase-enforced schema. A CAD feature dataset is comprised of five read-only feature classes: points, polylines, polygons, multi-patch and annotation. ArcGIS supported formats include DWG (AutoCAD), DXF (AutoDesk Drawing Exchange Format), and DGN (the default Micro-station file format).

CAD file: [ESRI software] The digital equivalent of a drawing, figure, or schematic created using a CAD system. CAD files are the data source for CAD drawing datasets, feature datasets and feature classes. ArcGIS software-supported formats include DWG (AutoCAD), DXF (AutoDesk Drawing Exchange Format), and DGN (the default Microstation file format). A CAD file is represented in ArcCatalog with a CAD feature dataset and a CAD drawing dataset.

CAD layer: [ESRI software] A layer that references a set of CAD data. CAD data is vector data of a mixed feature type. CAD layers may be of two types: CAD drawing dataset layers, in which one map layer represents the entire CAD file, and CAD feature layers, in which data is organized by geometry type.

[non-ESRI software] A component of a CAD drawing file. CAD layers are the digital equivalent of acetates in overlay drafting, and are powerful tools for organizing a drawing into logical categories. CAD layers and levels may be managed with ArcGIS. In Micro-Station, layers are also referred to as levels.

CAD staging geodatabase: [database structures] A normalized, fixed set of feature classes and data tables of a predefined schema from a collection of input CAD drawings.

Cadastral fabric: [ESRI software] In Survey Analyst – Cadastral Editor, a network of connected parcels. Parcels are represented by parcel line features, parcel point features, and parcel polygon features, referred to in aggregate as parcel features. Parcel topology in the cadastral fabric is stored explicitly through shared or common parcel point features.

Cadastral fabric accuracy levels: [ESRI software] In Survey Analyst – Cadastral Editor, a number assigned to a parcel line that determines how much the line influences the coordinates that result from a least-squares adjustment. A line with a high accuracy level will have more influence than a line with a lower accuracy level.

The highest accuracy level in the cadastral fabric is 1.

Cadastral fabric history: [ESRI software] In Survey Analyst – Cadastral Editor, the record of changes to the legal and system state of the cadastral fabric.

Cadastral fabric job: [ESRI software] In Survey Analyst – Cadastral Editor, a collection of parcels that have been extracted from the cadastral fabric for editing and least-squares adjustment. Parcels in the cadastral fabric are always edited in cadastral fabric jobs.

Cadastral fabric layer: [ESRI software] In Survey Analyst – Cadastral Editor, the map representation of a cadastral fabric for which display properties may be set; a layer in ArcMap that represents the cadastral fabric.

Cadastral fabric line point: [ESRI software] In Survey Analyst – Cadastral Editor, a point that allows a parcel corner to lie on an adjacent parcel boundary line without splitting the boundary line. Line points are constrained to lie on their parcel lines.

Cadastral fabric parcel line: [ESRI software] In Survey Analyst – Cadastral Editor, a parcel line feature in the cadastral fabric that contains dimension information. Represents parcel boundaries. Parcel lines connect up to form parcel polygons and always connect two point features in the cadastral fabric.

Cadastral fabric parcel line category: [ESRI software] In Survey Analyst – Cadastral Editor, a line type that defines how a parcel line in the cadastral fabric will be managed by the cadastral fabric editor. For example, connection lines are managed differently than boundary lines.

Cadastral fabric parcel point: [ESRI software] In Survey Analyst – Cadastral Editor, a point represents a parcel corner or the end of a connection line. A parcel point always has computed x- and y-coordinates.

Cadastral fabric sublayer: [ESRI software] In Survey Analyst – Cadastral Editor, an internal feature class that forms part of the cadastral fabric. Cadastral Fabric sublayers include lines, points, polygons, line points, and control points.

Cadastral fabric topology: ESRI software] In Survey Analyst – Cadastral Editor, the topological relationships explicit in the cadastral fabric data model.

Cadastral mapping: surveying

Cadastral survey: [cadastral and land records] A boundary survey taken for the purposes of ownership and taxation.

Cadastre: An official record of the dimensions and value of land parcels, used to record ownership and assist in calculating taxes.

Calibration: [accuracy] The comparison of the accuracy of an instrument's measurements to a known standard.

[spatial analysis] In spatial analysis, the selection of attribute values and computational parameters that will cause a model to properly represent the situation being analyzed. For example, in path finding and allocation, calibration generally refers to assigning or calculating impedance values.

Callout line: [graphics map display] A line on a map extending between a feature's geographic position and its corresponding symbol or label, used in areas where there is not enough room to display a symbol or label in its correct location.

Camera: [ESRI software] In ArcScene and ArcGlobe, an object that defines the perspective of a scene or globe's display.

Candidate: [ESRI software] A record returned as a potential match for an address in the geocoding process.

Candidate key: [computing] In a relational database, any key that can be used as the primary key in a table.

Capacity: [analysis geoprocessing] In location-allocation, the maximum number of people or units that a center can service, contain, or have assigned to it.

Caption: [ESRI software] In ArcGIS, the text for a command that appears with the "Text Only" and "Image and Text" display types. As part of the user interface, captions are customizable by the user.

Cardinal point: [navigation] One of the four compass directions on the earth's surface: north, south, east, or west.

Cardinality: [mathematics] The correspondence or equivalency between sets; how sets relate to each other. For example, if one row in a table is related to three rows in another table, the cardinality is one to many.

Carrier: [physics] An electromagnetic wave, such as radio, with modulations that are used as signals to transmit information.

Carrier-aided tracking: [GPS] Signal processing that uses the GPS carrier signal to lock onto the PRN code generated by the satellite.

Carrier-phase GPS: [GPS] GPS measurements that are calculated using the carrier signal of a satellite.

Carrying contour: [symbology] A single line representing multiple coincident contour lines, used to show vertical topographic features such as cliffs, cuts, and fills.

Cartesian coordinate system: A two-dimensional, planar coordinate system in which horizontal distance is measured along an x-axis and vertical distance is measured along a y-axis. 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. The Cartesian coordinate system is named for the French mathematician and philosopher Ren Descartes (1596-1650).

Cartesian plane: Euclidean geometry

Cartogram: [map design] A diagram or abstract map in which geographical areas are distorted proportionally to the value of an attribute.

Cartographer: [cartography] One who practices the art and science of expressing graphically, usually through maps, the natural and social features of the earth.

Cartographic generalization: [cartography] The abstraction, reduction, and simplification of features so that a map is clear and uncluttered at a given scale.

Cartography: [cartography] The art and science of expressing graphically, usually through maps, the natural and social features of the earth.

Cartouche: [map design] An ornamental frame on a map, usually around the map's title. Cartouches are rarely used on modern maps.

CASE: [non-ESRI software] Acronym for computer-aided software engineering. Any software that assists with the development and maintenance of software, especially the analysis

and design. Complex tasks that often require many lines of code are simplified with CASE user interfaces and code generators.

Catalog tree: [ESRI software] In ArcCatalog or ArcMap's Catalog window, a hierarchical view of folder connections which provide access to GIS data stored on local disks or shared on a network that allows users to manage connections to databases and GIS servers.

CATID: [non-ESRI software] Acronym for Component Category ID. A unique string assigned to locally related COM classes to group them together. A CATID is a type of Globally Unique IDentifier (GUID).

[Cb]

CBSA: [government] A geographic region containing at least one urban area with a population of at least 10,000, defined by the U.S. Office of Management and Budget for use by federal statistical agencies, including the U.S. Census Bureau. A core-based statistical area can be a metropolitan statistical area or a micro-politan statistical area.

[Cd]

CD: [hardware] An optical disk, slightly less than 5 inches in diameter, used to store up to approximately 650 megabytes of data.

[Ce]

Celestial sphere: [astronomy] The sky, considered as the inside of a sphere of infinitely large radius that surrounds the earth, on which all celestial bodies except the earth are imagined to be projected.

Cell: [graphics computing] The smallest unit of information in raster data, usually square in shape. In a map or GIS dataset, each cell represents a portion of the earth, such as a square meter or square mile, and usually has an attribute value associated with it, such as soil type or vegetation class.

Cell selection: [analysis geoprocessing] The process of selecting raster cells either interactively or by using a SQL query.

Cell size: [data models] The dimensions on the ground of a single cell in a raster, measured in map units. Cell size is often used synonymously with pixel size.

Cell statistics: [ESRI software] An ArcGIS Spatial Analyst function that calculates a statistic for each cell of an output raster that is based on the values of each cell in the same location of multiple input rasters.

Cellular automaton: [modeling] A mathematical construction consisting of a row or grid of cells in which each cell has an initial valuefrom a known and limited number of possible valuesand all cells are simultaneously evaluated and updated according to their internal states and the values of their neighbors. The simplest cellular automaton is a row in which each cell has one of two values, such as red or green. In this case, there are eight possible value combinations for a cell and its neighbors. (If a green cell with two red neighbors is notated RGR, then the eight combinations are RRR, RRG, RGR, GRR, RGG, GRG, GGR, GGG.) A set of rules determines whether or not a cell changes value when it is evaluated. A sample rule might be, "A green cell becomes red if it has a red neighbor on both sides." Successive updates, or generations, of a cellular automaton may produce complex patterns. Cellular automata are of interest in spatial modeling and are often used to model land-cover change.

Census block: [federal government] The smallest geographic entity for which the U.S. Census Bureau tabulates decennial census data. Many blocks correspond to city blocks bounded by streets, but blocks in rural areas may include several 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 dating back to 1940 had blocks established only for part of the nation.

Census geography: [federal government] Any one of various types of precisely defined geographic areas used by the U.S. Census Bureau to collect and aggregate data. The largest unit of area is the entire United States, while the smallest is a census block.

Census tract: [federal government] A small, statistical subdivision of a county that usually includes approximately 4,000 inhabitants but may include from 2,500 to 8,000 inhabitants. A census tract is designed to encompass a population with relatively uniform economic status, living conditions, and some demographic characteristics. Tract boundaries normally follow physical features but may also follow administrative boundaries or other nonphysical features. A census tract is a combination of census block groups.

Center: [Euclidean geometry] The point in a circle or in a sphere equidistant from all other points on the object.

Centerline: [data capture] A line digitized along the center of a linear geographic feature, such as a street or a river, that at a large enough scale would be represented by a polygon.

Centerline vectorization: [data capture] The generation of vector features along the center of connected cells. It is typically used for vectorizing scanned parcel and survey maps.

Centerpoint: In aerial photography, the point at the exact center of an aerial photograph.

Central meridian: [coordinate systems] The line of longitude that defines the center and often the x-origin of a projected coordinate system. In planar rectangular coordinate systems of limited extent, such as state plane, grid north coincides with true north at the central meridian.

Centroid: [data capture] The geometric center of a feature. For line, polygon, or three-dimensional features, it is the center of mass (or center of gravity) and may fall inside the feature, as shown below for a triangle, or outside the feature, as shown below for a complex line. For multipoints, polylines, or polygons with multiple parts, it is computed using the weighted mean center of all feature parts. The weight for a point feature is 1, for a line feature is its length, and for polygon features is its area.

[Cg]

CGI: [computing] Acronym for Common Gateway Interface. A standard for scripts that run external programs from a World Wide Web server. CGI typically specifies how to pass arguments to the program via HTTP requests; defines a set of environmental variables made available to the program; and generates output, usually in HTML format, that is passed back to the browser. CGI scripts are frequently designed to access information in a database and format the results as HTML, convert information retrieved from an interactive Web page into a database, send datasets, and so on.

[Ch]

Chain: [surveying] A unit of length equal to 66 feet, used especially in U.S. public land surveys. Ten square chains equal 1 acre.

Chain code: [data capture] A method of drawing a polygon as a series of straight line segments defined as a set of directional codes, with each code following the last like links in a chain.

Change detection: [remote sensing] A process that measures how the attributes of a particular area have changed between two or more time periods. Change detection often involves comparing aerial photographs or satellite imagery of the area taken at different times. The process is most frequently associated with environmental monitoring, natural resource management, or measuring urban development.

Character: [computing] A letter, digit, or special graphic symbol treated as a single unit of data and usually stored as one byte.

Chart: [cartography] A map used to plot a course for air or water navigation.

[mathematics] A graphic representation of tabular data; a diagram showing the relationship between two or more variable quantities, usually measured along two perpendicular axes. A chart may also be referred to as a graph.

[ESRI software] In ArcView 3, one of the five types of documents that can be contained within a project file. A chart visually presents the attribute data contained in a table.

Check-in: [ESRI software] In disconnected editing, the procedure that transfers a copy of data into a master geodatabase, overwriting the original copy of that data and re-enabling it so it can be accessed and saved from that location. In checkout/check-in replication, check-in is the procedure that synchronizes the data in the parent replica with that in the child replica.

Checkout: [ESRI software] A procedure in disconnected editing that records the duplication of data from one geodatabase to another and disables the original data so that both versions cannot be accessed or saved at the same time.

Checkout geodatabase: [ESRI software] In ArcGIS versions 8.39.1, a personal or ArcSDE geodatabase that contains data checked out from a master geodatabase during disconnected editing.

Checkout version: [ESRI software] The data version created in a checkout geodatabase when data is checked out to that database during disconnected editing. The checkout version is created as a copy of the synchronization version. Only the edits made to this checkout version can be checked back in to the master geodatabase.

Checkout/check-in replication: [ESRI software] A type of geodatabase replication that involves copying data to a destination geodatabase, editing that data in the destination, and then merging the changes with the source geodatabase. In ArcGIS and ArcSDE, the destination can be a file, personal, or ArcSDE geodatabase, while the source must be an ArcSDE geodatabase. Once the data is merged (synchronized), checkout/check-in replication is completed.

Chi-square statistic: [statistics] A statistic used to assess how well a model fits the data. It compares categorized data with a multinomial model that predicts the relative frequency of outcomes in each category to see to what extent they agree.

Child replica: [ESRI software] In geodatabase editing, data that has been copied to a destination geodatabase during the replication process.

Chord: A straight line that joins two points on a curve.

Choropleth map: [cartography] A thematic map in which areas are distinctly colored or shaded to represent classed values of a particular phenomenon.

Chroma: The saturation, purity, or intensity of a color.

CHUM: [navigation] Acronym for Chart Updating Manual. A document containing updates to aeronautical information, used by the U.S. military to update their current published products with the latest information.

[Ci]

Circle: [Euclidean geometry] A two-dimensional geometric shape for which the distance from the center to any point on the edge is equal; the closed curve defining such a shape.

Circular arc: [Euclidean geometry] A curved line that is a section of a circle, with two vertices, one situated at each endpoint.

Circular variance: [spatial statistics use for geostatistics] A measure of directional variation, on a scale from zero to one, among a set of line vectors. Circular variance approaches zero when all vectors point in roughly the same direction and approaches one when the vectors point in markedly different directions.

Civilian code: [GPS] The standard PRN code used by most civilian GPS receivers.

[Cl]

Clarke Belt: [astronomy] An orbit 22,245 miles (35,800 kilometers) above the equator in which a satellite travels at the same speed that the earth rotates. The Clarke Belt was named after the writer and scientist Arthur C. Clarke. It is also referred to as a geostationary orbit.

Clarke ellipsoid of 1866: [geodesy] A reference ellipsoid having a semi-major axis of approximately 6,378,206.4 meters and a flattening of 1/294.9786982. It is the basis for the North American Datum of 1927 (NAD27) and other datums. The Clarke ellipsoid of 1866 is also known as the Clarke spheroid of 1866.

Class: [data analysis] A set of entities grouped together on the basis of shared attribute values.

[data models] Pixels in a raster file that represent the same condition.

[computing] A template for a type of object in an object-oriented programming language. A class is used to create objects that share the same structure and behavior.

Class intervals: A set of categories for classification that divide the range of all values so that each piece of data is contained within a non-overlapping category.

Classification: [cartography] The process of sorting or arranging entities into groups or categories; on a map, the process of representing members of a group by the same symbol, usually defined in a legend.

Classification table: [ESRI software] An ASCII file in the geocoding rule base that identifies and classifies keywords that may appear in an address, such as street types and directions. Classification tables have a .cls file extension.

CLDC: [programming] Acronym for Connected Limited Device Configuration. A framework for developing J2ME applications for devices with very limited resources, such as wireless devices.

Clean data: [data quality] Data that is free from error.

Cleaning: [data conversion] Improving the appearance of scanned or digitized data by correcting overshoots and undershoots, closing polygons, performing coordinate editing, and so on.

Clearinghouse: [data sharing] A repository structure, physical or virtual, that collects, stores, and disseminates information, metadata, and data. A clearinghouse provides widespread access to information and is generally thought of as reaching or existing outside organizational boundaries.

Client: [computing] An application, computer, or device in a client/server model that makes requests to a server.

Client-side address locator: [ESRI software] An address locator that is created and used on the same computer.

Client/server architecture: [computing] A software system with a central processor (server) that accepts requests from one or more user applications, computers, or devices (clients). Although client/server architecture can exist on one computer, it is more relevant to (and is typically thought of as relating to) network systems that distribute applications over computers in different locations.

Clinometric map: A map that represents slope with colors or shading.

Clip: [ESRI software] A command that extracts features from one feature class that reside entirely within a boundary defined by features in another feature class.

Cloning: [computing] In object-oriented programming, the process of creating a new instance of a class with the same state as an existing instance.

Closed loop traverse: [surveying] In surveying, a traverse that starts and ends with the same survey point.

Closest facility analysis: [ESRI software] In ArcGIS Network Analyst, a type of network analysis for finding the closest locations (facilities) from sites (incidents), based on the impedance chosenfor example, finding hospitals near a car accident. When finding closest facilities, users can specify how many to find and whether the direction of travel is toward or away from the site (incident). Users can also specify a cutoff threshold beyond which ArcGIS Network Analyst will not search for a facilityfor example, finding hospitals within 6 miles of a car accident.

Closure error: [surveying] A discrepancy between existing coordinates and computed coordinates that occurs when the final point of a closed traverse has known coordinates and the final course of a traverse computes different coordinates for the same survey point.

Closure report: [ESRI software] The summary of the difference between the endpoint coordinate of a traverse and the calculated endpoint.

CLR: [non-ESRI software] Acronym for common language runtime. The execution engine for .NET Framework applications, providing services such as code loading and execution and memory management.

CLSID: [computing] Acronym for class identifier. A COM term referring to the globally unique number that is used by the system registry and the COM framework to identify a particular co-class.

Cluster analysis: [statistics] A statistical classification technique for dividing a population into relatively homogeneous groups. The similarities between members belonging to a

class, or cluster, are high; while similarities between members belonging to 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.

Cluster tolerance: [ESRI software] The minimum tolerated distance between vertices in a topology. Vertices that fall within the set cluster tolerance are snapped together during the topology validation process.

Clustering: [ESRI software] A part of the topology validation process in which vertices that fall within a specified distance (cluster tolerance) of each other are snapped together.

[Cm]

CMYK: Cyan Magenta Yellow Black; an additive color model in which cyan, magenta, yellow, and black are added together in various ways to reproduce a broad array of colors. Used for print color definition in graphics design.

[Co]

Coclass: [computing] A template for an object that can be instantiated in memory.

Code-phase GPS: [GPS] GPS measurements calculated using the PRN code transmitted by a GPS satellite.

Coded value domain: [ESRI software] A type of attribute domain that defines a set of permissible values for an attribute in a geodatabase. A coded value domain consists of a code and its equivalent value. For example, for a road feature class, the numbers 1, 2, and 3 might correspond to three types of road surface: gravel, asphalt, and concrete. Codes are stored in a geodatabase, and corresponding values appear in an attribute table.

COGO: [coordinate geometry COGO] Acronym for coordinate geometry. A method for calculating coordinate points from surveyed bearings, distances, and angles.

[coordinate geometry COGO] Automated mapping software used in land surveying that calculates locations using distances and bearings from known reference points.

COGO composite measurement: [ESRI software] In Survey Analyst for field measurements, measurements that comprise a set of interdependent COGO simple measurements.

COGO simple measurement: [ESRI software] In Survey Analyst for field measurements, measurements that model values that define vectors, directions, lengths, and orthogonal offsets.

Coincident: [Euclidean geometry] Occupying the same space. Coincident features or parts of features occupy the same space in the same plane.

Coincident geometry: [ESRI software] In a geodatabase, how the coordinates of coincident features are stored. For example, if two lines are coincident, they will both be drawn in ArcMap, with one line lying precisely on top of the other. For two adjacent polygons, the coordinates for the shared boundary will be stored with each polygon and the boundary will be drawn twice.

Cokriging: A form of kriging in which the distribution of a second, highly correlated variable (covariate) is used along with the primary variable to provide interpolation estimates. Cokriging can improve estimates if the primary variable is difficult, impossible, or expensive to measure, and the second variable is sampled more intensely than the primary variable.

ColdFusion: [non-ESRI software] An Adobe software product that integrates databases and Web pages using a server and development tools. ColdFusion Web pages include elements written in ColdFusion Markup Language that simplify integration with databases.

ColdFusion Connector: [ESRI software] An ArcIMS Application Server Connector. In this environment, a request that includes ColdFusion tags is first executed on the ColdFusion Server. The ArcIMS custom ColdFusion tags are then passed to the ArcIMS Application Server for processing.

Color composite: [remote sensing] A color image made by assigning red, green, and blue colors to each of the separate monochrome bands of a multispectral image and then superimposing them.

Color map: [graphics computing] A set of values that are associated with specific colors. Color maps are most commonly used to display a raster dataset consistently on many different platforms.

Color model: [graphics computing] Any system that organizes colors according to their properties for printing or display. Examples include RGB (red, green, blue), CMYK (cyan, magenta, yellow, black), HSB (hue, saturation, brightness), HSV (hue, saturation, value), HLS (hue, lightness, saturation), and CIE-L*a*b (Commission Internationale de l'Eclairage-luminance, a, b).

Color ramp: [symbology] A range of colors used to show ranking or order among classes on a map.

Color separation: [printing] In printing, the use of a separate printing plate for each ink color used.

[printing] The process of scanning with color filters to separate the original image into single-color negative.

Column: [database structures] An item in an attribute table.

[computing] The vertical dimension of a table. Each column stores the values of one type of attribute for all the records, or rows, in the table. All the values in a given column are of the same data type; for example, number, string, BLOB, or date.

[data models] A vertical group of cells in a raster, or pixels in an image.

COM: [computing] Acronym for Component Object Model. A binary standard that enables software components to interoperate in a networked environment regardless of the language in which they were developed. Developed by Microsoft, COM technology provides the underlying services of interface negotiation, life-cycle management (determining when an object can be removed from a system), licensing, and event handling. The ArcGIS system is created using COM objects.

COM contract: [programming] The COM requirement that interfaces, once published, cannot be altered.

COM interface: [programming] A grouping of logically related virtual functions, implemented by a server object, allowing a client to interact with the server object. Interfaces form the basis of COMs communication between objects and the basis of the COM contract.

Combinatorial operator: [mathematics] A kind of mathematical operator that interprets input with Boolean values. Combinatorial operators assign a different number to each unique combination of input values.

Combo box: [computing] A user interface tool that combines the features of a text box and a drop-down list. For example, the Location combo box in ArcCatalog allows the selection of an item in the Catalog tree by typing its path or choosing its path from a drop-down list.

Command: [computing] An instruction to a computer program, usually one word or concatenated words or letters, given by the user from a control device, such as a keyboard, or read from a file by a command interpreter.

[computing] A menu, menu item, button, combo box, text box, or tool on a toolbar.

[ESRI software] Any class in an ArcGIS system that implements the ICommand interface and can, therefore, be added to a menu or toolbar in an ArcGIS application.

Command bar: [ESRI software] A toolbar, menu bar, menu, or shortcut menu in an ArcGIS application.

Command line: [computing] A string of text that acts as a command, typed at an interface prompt.

Command line interface: [computing] A format of the input and output of a program in which the user enters commands by means of strings of text typed on a keyboard, as opposed to selecting commands from graphical prompts such as icons or dialog boxes.

Command Line Window: [ESRI software] In geoprocessing, a window that provides a command line for running tools and a message window for viewing the status messages created when running those tools.

Command prompt window: [non-ESRI software] A window accessible from the Windows Start menu in which MS-DOS commands are typed.

Comment: [ESRI software] In Survey Analyst for field measurements, a field that provides additional information about the computation.

[programming] One or more specially marked lines of text used to document the code in a script or program. Comments are ignored when the code is run.

Committed read: [ESRI software] The isolation level in a database management system (DBMS) in which transactions read committed data only they don't read data that has not been committed.

Compaction: [ESRI software] A process that rearranges and consolidates the data in a file so that it occupies a single, contiguous space, allowing the data in each file to be accessed more efficiently.

Comparison threshold: [computing] The degree of uncertainty that can be tolerated in the spelling of a keyword used in a search, including phonetic errors and the random insertion, deletion, replacement, or transposition of characters.

Compass: [navigation] An instrument used to find the direction of north from one's current location, consisting of a case with compass points marked around its edge and a floating magnetic needle that pivots to point to magnetic north.

Compass point: [cartography] An indication of direction. One of the 32 divisions into which the circle around the needle of a compass is divided, each equal to 11.25 degrees.

Compass rose: [symbology] A diagram of compass points drawn on a map or chart, subdivided clockwise from 0 to 360 degrees with 0 indicating true north. On older maps and

charts a compass rose was a decorated diagram of cardinal points, divided into 16 or 32 points.

Compass rule: A widely used rule for adjusting a traverse that assumes the precision in angles or directions is equivalent to the precision in distances. This rule distributes the closure error over the whole traverse by changing the northings and eastings of each traverse point in proportion to the distance from the beginning of the traverse. More specifically, a correction factor is computed for each point as the sum of the distances along the traverse from the first point to the point in question, divided by the total length of the traverse. The correction factor at each point is multiplied by the overall closure error to get the amount of error correction distributed to the point's coordinates. The compass rule is also known as the Bowditch rule, named for the American mathematician and navigator Nathaniel Bowditch (1773-1838).

[ESRI software] In ArcMap and Survey Analyst for field measurements, one of three adjustment methods available for adjusting closure error for a traverse computation. The other two methods are the transit rule and the Crandall rule.

Compiler: [programming] A program used in software development that translates the lines of a programmer's code from one programming language to another, usually from a high-level language to the ones and zeros of machine language.

Complex dynamic event: [ESRI software] In ArcGIS Tracking Analyst, a type of complex temporal event that includes two components and involves a moving object, such as an airplane. The moving object's geographical location changes through time, so its additional attributes are stored in an input table.

Complex edge feature: [ESRI software] In a geodatabase, a linear network feature that corresponds to one or more network elements in the logical network.

Complex junction feature: [ESRI software] In ArcGIS 8.3 and previous versions, a junction feature in a geodatabase that corresponds to more than one network element in the logical network. For example, the state of the junction determines whether features can be connected or disconnected. This is not a concept that can be modeled in ArcGIS 9.0 and later versions.

Complex market area: [data analysis] An area calculated by finding the outermost customers of a store along several vectors and connecting them. Complex market areas are more accurate than simple market areas because they respond to physical and cultural barriers. They are sometimes called amoebas because of their irregular shapes.

Complex stationary event: [ESRI software] A type of complex temporal event in ArcGIS Tracking Analyst that includes two components and involves a stationary object, such as a traffic sensor. The sensor's geographical location will not change, so its location information is stored in the input feature class.

Complex temporal event: [ESRI software] An event in ArcGIS Tracking Analyst that contains two components: one with persistent object information, and one with observations of the object through time. The merger of the temporal observations with the temporal object creates a complex event record or message. There are two types of complex temporal events: dynamic and stationary.

Component: [non-ESRI software] In COM, a binary unit of code that can be used to create COM objects.

Component category: [computing] A section of the registry that can be used to categorize classes by their functionality. Component categories are used extensively in ArcGIS to allow extensibility of the system.

Component Category Manager: [ESRI software] An ArcGIS utility program (Categories.exe) that can be used to view and manipulate component category information.

Composite measurement: [ESRI software] In Survey Analyst for field measurement, a set of simple measurements that are related and applied as a group.

Composite relationship: [computing] A link or association between objects where the lifetime of one object controls the lifetime of its related objects. For example, the association between a highway and its shield markers is a composite relationship, since the shield markers should not exist without the highway.

Composition: [computing] A UML term used to describe a form of association in which the lifetime of the whole controls the lifetime of the parts. In a composition, the instances of two classes depend on each other. The whole controls the location and lifetime of its parts. For example, in ArcMap, a map is composed of layers. If you move a map on a layout, the layers move, and if you delete the map, its layers get deleted; therefore, the lifetime of these objects depend on one another.

Compound element: [standards] Within metadata, a group of data elements (including other compound elements) that together describe a characteristic of a spatial dataset in more detail than can be described by an individual data element.

Compound key: [database structures] A primary key that requires two or more fields to be unique.

Compression: [computing] The process of reducing the size of a file or database. Compression improves data handling, storage, and database performance. Examples of compression methods include quadtrees, run-length encoding, and wavelets.

[ESRI software] A process that removes unreferenced rows from geodatabase system tables and user delta tables. Compression helps maintain versioned geodatabase performan.

Compromise projection: [map projections] A projection that does not have equal area, conformal, or equidistant characteristics. The compromise projection is an attempt at balance between these characteristics, and is often used in thematic mapping.

Computation: [ESRI software] In Survey Analyst for field measurements, a process that requires a set of input parameters to apply a set of rules, and an algorithm to calculate output parameters. The input parameters are typically coordinates and measurements. The output parameters are usually coordinates.

Computation name: [ESRI software] In Survey Analyst for field measurements, a unique identifier that calls or retrieves a specific type of computation, defined on the General tab of the Survey Explorer.

Computation network: [ESRI software] In Survey Analyst for field measurements, a sequence of computation dependenciesthe output points of some computations are used as the input for one or more others.

Computation state: [ESRI software] In Survey Analyst for field measurements, the condition of a computation. A computation may be in four different states: valid, out-of-date, incorrect, or incomplete.

Computation tool: [ESRI software] In Survey Analyst for field measurements, a tool that interacts with the map to add measurement values to computation pages.

Computational geometry: [mathematics] A branch of mathematics that uses algorithms to solve geometry problems. Computational geometry is used in many GIS operations, including proximity analysis, feature generalization, and automated text placement.

Computer-assisted learning: [education] Instruction or training that uses computer-based media instead of hard-copy materials. Computer-assisted learning is generally designed to use the strengths of computer-based media such as the ability to navigate in a nonlinear fashion through the use of hyperlinks.

Concatenate: [computing] To join two or more character strings together, end to end; for example, to combine the two strings "spatial" and "analysis" into the single string "spatial analysis."

Concatenate events: [ESRI software] In linear referencing, a command that combines event records in tables containing events on the same route with the same value for specified fields. Only events in situations where the to-measure of one event matches the from-measure of the next event are combined. The concatenate events command is available for line event tables only.

Concatenated key: [computing] In a relational database table, a primary key made by combining two or more keys that together form a unique identifier.

Concurrency: [ESRI software] The ability of a DBMS to support simultaneous access by more than one user.

Concurrency management: [data editing] A database management process for maintaining the consistency of data while supporting simultaneous editing by more than one user. A typical technique involves locking portions of the database to prevent data corruption caused by multiple users simultaneously editing data.

Concurrent use: [computing] Floating software products that are administered by a license manager. A central license manager (installed anywhere on a network) allows users to install the floating products on any number of machines. The number of seats or licenses purchased determines the number of users who can run the applications simultaneously.

Condition table: [ESRI software] A component of the PLTS knowledge base that contains SQL statements and custom code for feature validation extended beyond standard geodatabase domains. PLTS utilizes condition tables for enhanced validation during both database production and quality control.

Conditional operator: [computing] A symbol or keyword that specifies the relationship between two values and is used to construct queries to a database. Examples include = (equal to), < (less than), and > (greater than).

Conditional statement: [computing] A programming language statement that executes one option if the statement is true, and another if it is false. The if-then-else statement is an example of a conditional statement.

Configuration file: [ESRI software] In ArcIMS, the file that contains the core site information. ArcIMS configuration files contain all the basic information about the content to be delivered, such as location of the data and layer symbology. Typically, a configuration file contains data that defines map content and has a file extension of .axl, but it can also be used to deliver metadata or route data (as .axl files) and to serve maps created in ArcMap (.mxd or .pmf files). Regardless of their type, configuration files contain content that the service registers to the ArcIMS spatial server and Web server for processing.

[ESRI software] In ArcIMS, a file with a .cfg file extension that functions much like an ArcIMS property file by storing attributes for a particular ArcIMS item or function.

Configuration keyword: [ESRI software] In ArcSDE, a name for a group of parameters that defines how geodatabase objects are stored.

Conflation: [data editing] A set of procedures that aligns the features of two geographic data layers and then transfers the attributes of one to the other.

Conflict: [data editing] In database editing, a state of incompatibility that occurs when multiple users simultaneously edit a version or reconcile two versions. Conflicts occur when the same feature or topologically related features are edited in two versions, and it is unclear which representation of the database is valid.

Conflict resolution: [data editing] The process of solving uncertainty within a database that occurs when two versions of the same data are edited at the same time. Conflicts can occur when multiple users simultaneously edit the same feature or topologically related features, or reconcile two versions of a dataset. Resolving a conflict requires that the user make a decision about the feature's correct representation and identify it in the Conflict Resolution dialog box.

[ESRI software] In labeling with Maplex for ArcGIS, the process of solving conflicts for space between features and other labels. The label engine uses a set of parameters to determine whether or not to place a label in spite of space conflicts, and various label fitting strategies may be used to make labels more compact to fit into smaller spaces.

Conformal projection: A projection that preserves the correct shapes of small areas. In a conformal projection, graticule lines intersect at 90-degree angles, and at any point on the map the scale is the same in all directions. A conformal projection maintains all angles at each point, including those between the intersections of arcs; therefore, the size of areas enclosed by many arcs may be greatly distorted. No map projection can preserve the shapes of larger regions.

Conformality: The characteristic of a map projection that preserves the shape of any small geographic area.

Conic projection: A projection that transforms points from a spheroid or sphere onto a tangent or secant cone that is wrapped around the globe in the manner of a party hat. The cone is then sliced from the apex (top) to the bottom, and flattened into a plane.

Connection: [ESRI software] In ArcCatalog, a mechanism used to access remote file systems and shared databases.

Connection line: [cadastral and land records] A cadastral fabric line with bearing and distance data attached to it, commonly used to tie parcels across roads, tie in control points, or tie the point of survey commencement to the point of beginning for a particular parcel. Connection

lines do not necessarily indicate parcel boundaries.

Connectivity: [data models] The way in which features in GIS data are attached to one another functionally or spatially.

[ESRI software] In a geodatabase, the state of association between edges and junctions in a network system for network data models. Connectivity helps define and control flow, tracing, and pathfinding in a network.

[ESRI software] In a coverage, topological identification of connected arcs by recording the from-node and to-node for each arc. Arcs that share a common node are connected.

Connectivity group: [network analysis] In network datasets, a logical grouping of point features, line features, or both, that controls how network elements are connected. Connectivity groups are defined when a network dataset is built. A network dataset may have multiple connectivity groups.

Connectivity policy: [network analysis] In a network dataset, a property of network sources that defines how network elements connect to each other within a connectivity group. There are two types of edge-edge connectivity policies (end-point connectivity and any-vertex connectivity) and two types of edge-junction connectivity policies (honor and override).

Connector: [data models] A visual representation of the relationship between elements in a model. Connectors join elements together to create processes. Typical processes connect an input data element, a tool element, and a derived data element.

Constrained adjustment: [ESRI software] In Survey Analyst for field measurements, one of two phases involved when performing a least squares adjustment for a measurement network. In this phase, the emphasis is on testing the reference points as well as computing final coordinates.

Constraints: [data models] Limits imposed on a model to maintain data integrity. For example, in a water network model, an 8-inch pipe cannot connect to a 4-inch pipe.

Construct features: [ESRI software] In ArcGIS versions 9 and earlier, an edit command that takes selected features from one or more feature classes and creates new features in a target feature class. The Construct Features tool uses the input geometries of the selected features to construct polygons or lines following polygon boundaries, depending on the geometry of the target feature class.

Construction line: [ESRI software] In Survey Analyst – Cadastral Editor, a line with a bearing and distance that is used to create geometry for a new cadastral fabric parcel.

Container account: [ESRI software] The operating system account that server object container processes run as, which is specified by the GIS server post installation utility. Objects running in a server container process have the same access rights to system resources as the container account.

Container process: [ESRI software] A process in which one or more server objects are running. Container processes run on SOC machines, and are started and shut down by the SOM. They are visible in the Windows Task Manager as ArcSOC.exe.

Containment: A spatial relationship in which a point, line, or polygon feature or set of features is enclosed completely within a polygon.

Content: [Internet] In ArcGIS Online, refers to maps, layers, and tools.

Content Standard for Digital Geospatial Metadata: [standards] A publication authored by the FGDC that specifies the information content of metadata for digital geospatial datasets. The purpose of the standard is to provide a common set of terminology and definitions for concepts related to the metadata. All U.S. government agencies (federal, state, and local) that receive federal funds to create metadata must follow this standard.

Conterminous: Having the same or coincident boundaries.

Context menu: A list menu that pops up when the right mouse button is clicked in Windows applications. Some keyboards also have an application key that opens shortcut menus.

Contiguity: In a coverage, the topological identification of adjacent polygons by recording the left and right polygon for each arc.

Contiguous: [data structures] Of polygons: adjacent; having a common boundary; sharing an edge.

[data structures] Of raster cells: connected orthogonally or diagonally; or, sometimes, connected strictly orthogonally.

[data structures] Of TIN edges: having no gaps or overlaps.

Continuous data: [data models] Data such as elevation or temperature that varies without discrete steps. Since computers store data discretely, continuous data is usually represented by TINs, rasters, or contour lines, so that any location has either a specified value or one that can be derived.

Continuous feature: [data models] A feature that is not spatially discrete. The transition between possible values on a continuous surface is without abrupt or well-defined breaks.

Continuous raster: [data models] A raster in which cell values vary continuously to form a surface. In a continuous raster, the phenomena represented have no clear boundaries. Values exist on a scale relative to each other. It is assumed that the value assigned to each cell is what is found at the center of the cell. Rasters representing elevation, precipitation, chemical concentrations, suitability models, or distance from a road are examples of continuous rasters.

Continuous tone image: [printing] A photograph that has not been screened and so displays all the varying tones from dark to light.

Contour interval: The difference in elevation between adjacent contour lines.

Contour line: [cartography] A line on a map that connects points of equal elevation based on a vertical datum, usually sea level.

Contour tagging: [data capture] Assigning elevation values to contour lines.

Contrast: [remote sensing] In remote sensing and photogrammetry, the ratio between the energy emitted or reflected by an object and that emitted or reflected by its immediate surroundings.

Contrast ratio: [graphics computing] The ratio between the maximum and minimum brightness values in an image.

Contrast stretch: [graphics computing] Increasing the contrast in an image by expanding its grayscale range to the range of the display device.

Control: [computing] A basic element of a software application's GUI. Examples of controls include menus, buttons, tools, check boxes, slider bars, text input boxes, and combo boxes.

Control point: [surveying] An accurately surveyed coordinate location for a physical feature that can be identified on the ground. Control points are used in least-squares adjustments as the basis for improving the spatial accuracy of all other points to which they are connected.

[coordinate systems] One of various locations on a paper or digital map that has known coordinates and is used to transform another dataset spatially coincident but in a different coordinate system into the coordinate system of the control point. Control points are used in digitizing data from paper maps, in georeferencing both raster and vector data, and in performing spatial adjustment operations such as rubber sheeting.

Conventional alternative hypothesis: [spatial statistics use for geostatistics] In statistical testing, a set of assumptions that will be accepted by test data if the null hypothesis is rejected. In surveying, the alternative hypothesis assumes that there is an outlier present in a single measurement in a measurement network. The test associated with this hypothesis is the W-test.

Convergence angle: [cartography] The angle between a vertical line (grid north) and true north on a map.

Conversion: [data conversion] The process of changing input data from one representation or format to another, such as from raster to vector, or from one file format to another, such as from x,y coordinate table to point shapefile.

Convex hull: [mathematics] The smallest convex polygon that encloses a group of objects, such as points. In ArcGIS, TIN boundaries are convex hulls by default.

Convex polygon: [mathematics] A polygon in which a straight line drawn between any two points inside the polygon is completely contained within the polygon. Visually, the boundary of a convex polygon is the shape a rubber band would take around a group of objects.

Coordinate geometry traverse: [ESRI software] In Survey Analyst, a process of computing a sequence of survey point locations starting from an initial known point. Each new survey point is defined by a traverse course and is used as the takeoff point for the next point in the sequence. A traverse course can be defined using various combinations of directions, distances, angles, and circular arc parameters. The coordinate geometry traverse is primarily used to define coordinates based on values taken from subdivision plans.

Coordinate system: A reference framework consisting of a set of points, lines, and/or surfaces, and a set of rules, used to define the positions of points in space in either two or three dimensions. The Cartesian coordinate system and the geographic coordinate system used on the earth's surface are common examples of coordinate systems.

Coordinate transformation: The process of converting the coordinates in a map or image from one coordinate system to another, typically through rotation and scaling.

Coordinated universal time: [astronomy] The official timekeeping system of the world's nations since 1972. It refers local time throughout the world to time at the prime meridian, and is based on atomic clocks, but is

periodically artificially adjusted so as to always remain within 0.9 seconds of universal time. The adjustment is made by the addition of leap seconds to the course of atomic time. Coordinated universal time is abbreviated "UTC." (The abbreviation UTC does not represent the word order of "coordinated universal time" in either English or French. It is an extension of the "UT*" pattern established for versions of universal time.

Coordinates: [coordinate systems] A set of values represented by the letters x, y, and optionally z or m (measure), that define a position within a spatial reference. Coordinates are used to represent locations in space relative to other locations.

Correlation: [statistics] An association between data or variables that change or occur together. For example, a positive correlation exists between housing costs and distance from the beach; generally, the closer a home is to the beach, the more it costs. Correlation does not imply causation. For example, there is a statistical correlation between ice cream sales and crime rates, but neither causes the other. The correlation coefficient is an index number between -1 and 1 indicating the strength of the association between two variables.

Corridor: [data models] A buffer drawn around a line.

Corridor analysis: [spatial analysis] A form of spatial analysis usually applied to environmental and land-use data in order to find the best locations for building roads, pipelines, and other linear transportation features.

Cost: [data analysis] A function of time, distance, or any other factor that incurs difficulty or an outlay of resources.

[network analysis] In ArcGIS Network Analyst, an attribute of a network element used to model impedance and demand in network datasets. Cost is an attribute that is accumulated during traversal of a network.

Cost raster: [spatial analysis] A raster dataset that identifies the cost of traveling through each cell in the raster. A cost raster can be used to calculate the cumulative cost of traveling from every cell in the raster to a source or a set of sources.

Cost-distance analysis: [ESRI software] The calculation of the least cumulative cost from each cell to specified source locations over a cost raster.

Cost-weighted allocation: [ESRI software] An ArcGIS Spatial Analyst function that identifies the nearest source from each cell in a cost-weighted distance grid. Each cell is assigned to its nearest source cell, in terms of accumulated travel cost.

Cost-weighted direction: [ESRI software] An ArcGIS Spatial Analyst function that provides a road map from the cost weighted distance grid, identifying the route to take from any cell, along the least-cost path, back to the nearest source.

Cost-weighted distance: [ESRI software] An ArcGIS Spatial Analyst function that uses a cost grid to assign a valuethe least accumulative cost of getting back to the sourceto each cell of an output grid.

COTS: [software] Acronym for commercial off-the-shelf. Commercially available software or systems that are ready to use and which do not require significant customization.

County: [federal government] The primary legal subdivision of all U.S. states except Alaska and Louisiana. The U.S. Census Bureau uses counties

or equivalent entities (boroughs in Alaska, parishes in Louisiana, the District of Columbia in its entirety, and municipios in Puerto Rico) as statistical subdivisions.

County subdivision: [federal government] A statistical division of a county recognized by the U.S. Census Bureau for data presentation. County subdivisions can include census county divisions, census subareas, minor civil divisions, and unorganized territories.

Covariance: [statistics] A statistical measure of the linear relationship between two variables. Covariance measures the degree to which two variables move together relative to their individual mean returns.

Coverage: [ESRI software] A data model for storing geographic features. A coverage stores a set of thematically associated data considered to be a unit. It usually represents a single layer, such as soils, streams, roads, or land use. In a coverage, features are stored as both primary features (points, arcs, polygons) and secondary features (tics, links, annotation). Feature attributes are described and stored independently in feature attribute tables. Coverages cannot be edited in ArcGIS 8.3 and subsequent versions.

Coverage feature class: In ArcInfo, a classification describing the format of geographic features and supporting data in a coverage. Feature classes include point, arc, node, route, route system, section, polygon, and region. One or more coverage features are used to model geographic features; for example, arcs and nodes can be used to model linear features, such as street centerlines. The tic, annotation, link, and boundary feature classes provide supporting data for coverage data management and viewing.

Coverage units: [coordinate systems] The units of the coordinate system in which a coverage is stored (for example, feet, meters, inches).

[Cr]

Cracking: [data editing] In ArcGIS, a part of the topology validation process in which vertices are created at the intersection of feature edges.

Crandall rule: [surveying] A special-case, least-squares-based method for adjusting the closure error in a traverse. The Crandall rule is most frequently used in a closed traverse that represents a parcel from a subdivision plan to ensure that tangency between courses remains intact as, for example, when applied to a tangent curve. It assumes that course directions and angles have no error and, therefore, all error corrections are applied only to the distances. This method uses a least-squares adjustment to distribute the closure error, and applies infinite weight to the angles or direction measurements to ensure that they are not adjusted. In some circumstances the results of this adjustment method may be unexpected, or the adjustment may not be possible, and an alternative method is required. The Crandall rule was developed by C.L. Crandall around 1901.

[ESRI software] In ArcMap and Survey Analyst for field measurements, one of three adjustment methods available for adjusting closure error for a traverse computation. The other two methods are the transit rule and the compass rule.

Creation date: [ESRI software] In Survey Analyst for field measurements, an attribute of the computation that records the date of origin.

Creation time: [ESRI software] The time it takes to initialize an instance of a server object when server objects are created in the GIS server either as a result of the server starting or in

response to a request for a server object by a client.

Critical value: [spatial statistics use for geostatistics] The specific cutoff point that determines acceptance or rejection of a hypothesis. Critical values are determined by the choice of a level of significance ().

Crop marks: [printing] Marks that indicate the edge of the page of a finished, printed map. Crop marks are used as a reference for trimming excess paper after printing.

Cross correlation: [spatial statistics use for geostatistics] Statistical correlation between spatial random variables of different types, attributes, names, and so on, where the correlation depends on the distance or direction that separates the locations.

Cross covariance: [statistics] The statistical tendency of variables of different types, attributes, names, and so on, to vary in ways that are related to each other. Positive cross covariance occurs when both variables tend to be above their respective means together, and negative cross covariance occurs if one variable tends to be above its mean when the other variable is below its mean.

Cross tabulation: [data analysis] In a GIS, comparing attributes in different coverages or map layers according to location.

[statistics] A method for showing the relationship between two or more data characteristics by repeating each of the categories of one variable for each category of the other variables. For example, a cross tabulation of census data might show households by number of occupants by income.

Cross validation: [statistics] A procedure for testing the quality of a predicted data distribution. In cross validation, a piece of data whose value is known independently is removed from the dataset and the rest of the data is used to predict its value. Full cross validation is done by removing, in turn, each piece of data from the dataset and using the rest of the data to predict its value.

Cross variogram: [spatial statistics use for geostatistics] A function of the distance and direction separating two locations, used to quantify cross correlation. The cross variogram is defined as the variance of the difference between two variables of different types or attributes at two locations. The cross variogram generally increases with distance, and is described by nugget, sill, and range parameters.

Cross-reference database: [ESRI software] A database containing tables with information defining the mapping between a data source schema and an output geodatabase schema. Cross-reference databases are used by the PLTS data loader to batch populate a geodatabase from a variety of sources.

Cross-tile indexing: [ESRI software] A technique for indexing features that cross tile boundaries in a map library by storing them as one or more features in each tile, instead of storing them each as a single feature.

[Cs]

CSS: [non-ESRI software] Acronym for Cascading Style Sheets. A standard for defining the layout or presentation of an HTML or XML document. Style information includes font size, background color, text alignment, and margins. Multiple style sheets may be applied to “cascade” over previous style settings, adding to or overriding them. The World Wide Web Consortium maintains the CSS standard.

[Cu]

Cubic convolution: [mathematics] A technique for resampling raster data in which the average of the nearest 16 cells is used to calculate the new cell value.

Cull: [ESRI software] In ArcScene and ArcGlobe, to selectively choose not to draw one side of an areal feature.

Cultural feature: [cartography] A human-made feature represented on a map, such as a building, road, tower, or bridge.

Cultural geography: [cognition] The field of geography concerning the spatial distribution and patterns created by human cultures and their effects on the earth.

Curb approach: [network analysis] In network analysis, a network location property that models a path for approaching a stop from a specific side based on edge direction. For example, a school bus must approach a school from its door side so that students exiting the bus will not have to cross the street. There are three types of curb approaches: left, right, or both.

Current cadastral fabric: [ESRI software] In Survey Analyst – Cadastral Editor, the most up-to-date legal state of the cadastral fabric.

Current coordinate: [ESRI software] In Survey Analyst for field measurements, the single coordinate for a survey point that is the best representation for its location within each project. A current coordinate is required when the same project computes or imports more than one coordinate for a particular survey point.

Current workspace: [ESRI software] A user-specified path to a container for file-based geographic data, set in the Environment Settings dialog box. Data from the current workspace can be accessed from any tool dialog box (including script and model dialog boxes), or at the command line simply by typing its name.

Current workspace: [ESRI software] A user-specified path to a container for file-based geographic data, set in the Environment Settings dialog box. Data from the current workspace can be accessed from any tool dialog box (including script and model dialog boxes), or at the command line simply by typing its name.

Curve fitting: [data editing] Converting short connected straight lines into smooth curves to represent features such as rivers, shorelines, and contour lines. The curves that result pass through or close to the existing points.

Custom behavior: [computing] A set of methods, functions or operations associated with a database object that has been specifically created or overridden by a programmer.

Custom feature: [computing] In geodatabases, a feature with specialized behavior instantiated in a class by a programmer.

Custom functionality: [computing] A modification to or enhancement of standard software functionality to meet a specific user's needs.

Custom group layer: [ESRI software] A layer created in ArcMap using the ArcGIS Image Server extension. Custom group layers display the contents of an image service definition, including the footprint, boundary, seam line and preview raster layer.

Custom object: [computing] An object with custom behavior provided by a developer.

Custom tool: [ESRI software] In geoprocessing, a tool created by a user and added to a toolset and/or toolbox. Custom tools may only be added to custom toolsets and/or toolboxes.

Custom toolset: [ESRI software] In geoprocessing, a subset of a toolbox created by a user to hold custom tools or a group of frequently used tools.

Customer market analysis: [business] A type of market analysis that focuses on data about customers, rather than about a store or stores. An example is desire line analysis.

Customer profiling: [business] A process that establishes common demographic characteristics for a set of customers within a geographic area.

Customer prospecting: [business] A type of market analysis that locates regions with appropriate demographic characteristics for targeting new customers.

Cut/fill: [ESRI software] An ArcGIS Spatial Analyst and 3D Analyst function that summarizes areas and volumes of change between two surfaces.

[Cy]

Cycle: [data models] A set of lines forming a closed polygon.

[network analysis] In network analysis, a path or tour beginning and ending at the same location.

[physics] One oscillation of a wave.

Cylindrical projection: A projection that transforms points from a spheroid or sphere onto a tangent or secant cylinder. The cylinder is then sliced from top to bottom and flattened into a plane.

D

[Da]

Daemon: [computing] In programming, a process that continuously runs in the background, without being explicitly implemented, and performs a specified operation at predefined times or in response to certain events. Daemon is a UNIX term; the Windows equivalent is a system agent or service.

Dangle: [data capture] The endpoint of a dangling arc.

Dangle tolerance: [data capture] In ArcInfo coverages, the minimum length allowed for dangling arcs by the clean process, which removes dangling arcs shorter than the dangle tolerance.

Dangling arc: [data capture] An arc having the same polygon on both its left and right sides and having at least one node that does not connect to any other arc. It often occurs where a polygon does not close properly, where arcs do not connect properly (an undershoot), or where an arc was digitized past its intersection with another arc (an overshoot). A dangling arc is not always an error; for example, it can represent a cul-de-sac in a street network.

Dasymetric mapping: [data analysis] A technique in which attribute data that is organized by a large or arbitrary area unit is more accurately distributed within that unit by the overlay of geographic boundaries that exclude, restrict, or confine the attribute in question. For example, a population attribute organized by census tract might be more accurately distributed by the overlay of water bodies, vacant land, and other land-use

boundaries within which it is reasonable to infer that people do not live.

Data: [data management] Any collection of related facts arranged in a particular format; often, the basic elements of information that are produced, stored, or processed by a computer.

Data capture: [data capture] Any operation that converts GIS data into computer-readable form. Geographic data can be captured by being downloaded directly into a GIS from sources such as remote-sensing or GPS data, or it can be digitized, scanned, or keyed in manually from paper maps or photographs.

Data change message: [ESRI software] In ArcGIS, a message containing any inserts, updates, and deletes applied to a replica. These messages are used to synchronize replicas in a disconnected environment.

Data conversion: [data conversion] The process of translating data from one format to another.

Data definition language: [programming] A set of SQL statements that can be used either interactively or within a programming language to create a new database, set permissions on it, and define its attributes.

Data dictionary: [data management] A catalog or table containing information about the datasets stored in a database. In a GIS, a data dictionary might contain the full names of attributes, meanings of codes, scale of source data, accuracy of locations, and map projections used.

Data element: [data transfer] The smallest unit of information used to describe a particular characteristic of a spatial dataset. A data element is a logically primitive description that cannot be further subdivided.

Data file: [computing] A file that holds text, graphics, or numbers.

Data format: [data structures] The structure used to store a computer file or record.

Data frame: [ESRI software] 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.

Data integration: [interoperability] The process of sharing and combining data between two organizations or systems.

Data integrity: The degree to which the data in a database is accurate and consistent according to data model and data type.

Data message: [GPS] Information in a satellite's GPS signal that reports its orbital position, operating health, and clock corrections.

Data model: [data models] In GIS, a mathematical construct for representing geographic objects or surfaces as data. For example, the vector data model represents geography as collections of points, lines, and polygons; the raster data model represents geography as cell matrixes that store numeric values; and the TIN data model represents geography as sets of contiguous, non overlapping triangles.

[ESRI software] In ArcGIS, a set of database design specifications for objects in a GIS application. A data model describes the thematic layers used in the application (for example, hamburger stands, roads, and

counties); their spatial representation (for example, point, line, or polygon); their attributes; their integrity rules and relationships (for example, counties must nest within states); their cartographic portrayal; and their metadata requirements.

Data recorder: [GPS] A lightweight, handheld field computer used to store data collected by a GPS receiver.

Data sharing: Making data available and accessible to organizations or individuals other than the creator of the data.

Data source: [data management] Any data. Data sources may include coverages, shapefiles, rasters, or feature classes.

Data structure: [data structures] The organization of data within a specific computer system that allows the data to be stored and manipulated effectively; a representation of a data model in computer form.

Data synchronization: [ESRI software] The process of applying data changes from a replica to the relative replica in a replica pair. Data changes include row or feature inserts, updates, and deletes. Synchronization can be performed in one or both directions between a replica pair.

Data transfer: [data transfer] The process of moving data from one system to another or from one point on a network to another.

Data type: [data storage] The attribute of a variable, field, or column in a table that determines the kind of data it can store. Common data types include character, integer, decimal, single, double, and string.

Data view: [ESRI software] An all-purpose view in ArcMap and ArcReader for exploring, displaying, and querying geographic data. This view hides all map elements, such as titles, north arrows, and scale bars.

Data-driven ring analysis: A type of market analysis primarily used to look at competing sites or to select potential new locations.

Database: [data storage] One or more structured sets of persistent data, managed and stored as a unit and generally associated with software to update and query the data. A simple database might be a single file with many records, each of which references the same set of fields. A GIS database includes data about the spatial locations and shapes of geographic features recorded as points, lines, areas, pixels, grid cells, or TINs, as well as their attributes.

Database administrator: [data management] The person who manages a database. Database administration includes user setup, security, backup and recovery procedures for data, and optimization of physical data storage for best performance.

Database connection: [data management] A link to a database from a software application. Database connections have two states: connected to or disconnected from the database. Deletion of a database connection only deletes the connection itself, not the database or its contents. Creation of a database connection requires selection of a data provider for data retrieval.

Database design: [database structures] The development of the conceptual, logical, and physical structures of a database in order to meet user requirements.

Database generalization: [database structures] The abstraction, reduction, and simplification of features and feature classes for deriving a simpler model of reality or decreasing stored data volumes.

Database management system: [database structures] A set of software applications used to create and maintain databases according to a schema. Database management systems provide tools for adding, storing, changing, deleting, and retrieving data.

Database role: [ESRI software] The database permissions category assigned to a group of users who perform the same types of tasks and, therefore, require the same level of database access. Database roles are used by database administrators to simplify the administration of user privileges.

Database statistics: [ESRI software] Mathematically calculated data that describes the state of a database and which the database management system (DBMS) uses to optimize query response.

Database support: [database structures] The proprietary database platforms supported by a program or component.

Dataflow: [data models] The route of data passage through a system.

Dataset: [data management] Any collection of related data, usually grouped or stored together.

Dataset precision: [data quality] The mathematical exactness or detail with which a value is stored within a dataset, based on the number of significant digits that can be stored for each coordinate.

Datasnooping: [ESRI software] In Survey Analyst, the process of testing each measurement using the W-test.

Datum: The reference specifications of a measurement system, usually a system of coordinate positions on a surface (a horizontal datum) or heights above or below a surface (a vertical datum).

Datum level: [geodesy] A surface to which heights, elevations, or depths are referenced.

Datum points: In Survey Analyst for field measurements, survey points that are not defined by computations, but that are the input data for the initial computations in a sequence of computations.

[Db]

DBF file: [ESRI software] A database file format.

[Dc]

DCOM: [non-ESRI software] Acronym for Distributed Component Object Model. Extends COM to support communication among objects on different computers on a network.

[De]

Dead reckoning: [navigation] A navigation method of last resort that uses the most recently recorded position of a ship or aircraft, along with its speed and drift, to calculate a new position.

Debug: [computing] To test for, detect, and correct errors in a computer program or component.

Decimal degrees: [map projections] Values of latitude and longitude expressed in decimal format rather than in degrees, minutes, and seconds.

Decision support system: [computing] A computer program that includes data presentation and modeling tools that help people understand problems and find solutions.

Declination: [coordinate systems] In a spherical coordinate system, the angle between the equatorial plane and a line to a point somewhere on the sphere.

[coordinate systems] The arc between the equator and a point on a great circle perpendicular to the equator.

[astronomy] The angular distance between a star or planet and the celestial equator.

Deeply stateful application: [computing] An application that uses the GIS server to maintain application state by changing the state of a server object or its related objects. Deeply stateful applications require non-pooled server objects.

Default cadastral fabric: [ESRI software] In Survey Analyst – Cadastral Editor, the most up-to-date version of the cadastral fabric in the database that corresponds to the default version in the database. The default cadastral fabric does not represent the current legal state of the cadastral fabric.

Default interface: [Internet] When a COM object is created, the interface that is returned automatically if no other interface is specified. Most ArcObjects classes specify unknown as the default interface.

Default junction type: [network analysis] In geometric networks, the user-established junction type that automatically connects two edges in the absence of a current user choice. An edge may also have a default end junction type, used for the free ends of new edges.

Defined study area: [ESRI software] A study area with a defined boundary, such as a city.

Definition query: [ESRI software] In ArcMap, a request that examines feature or tabular attributes based on user-selected criteria and displays only those features or records that satisfy the criteria.

Deflection: [data editing] The creation of a segment at an angle relative to an existing segment.

Degree: [geodesy] A unit of angular measure represented by the symbol . The earth is divided into 360 degrees of longitude and 180 degrees of latitude.

Degrees/minutes/seconds: The 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.

Delaunay triangles: [3D analysis] The components of Delaunay triangulation. Delaunay triangles cannot exist alone; they must exist as part of a set or collection that is typically referred to as a triangulated irregular network (TIN). A circle circumscribed through the three nodes of a Delaunay triangle will not contain any other points from the collection in its interior.

Delaunay triangulation: [3D analysis] A technique for creating a mesh of contiguous, nonoverlapping triangles from a dataset of points. Each triangle's circumscribing circle contains no points from the dataset in its interior. Delaunay triangulation is named for the Russian mathematician Boris Nikolaevich Delaunay.

Deletes table: [database structures] The geodatabase system table, created when a feature class or table is registered as versioned, that maintains information on all rows that have been deleted or updated.

Delimiter: [computing] A character, such as a space or comma, that separates words or values.

Delta file: [data editing] A file that contains data edits that can be exchanged between geodatabases or between geodatabases and other data stores. The edits can come from a checkout geodatabase, modified rows between source and target versions, or a custom application. Supported delta file formats are XML (delta XML file) and delta database (.mdb file).

Delta table: [database structures] One of two geodatabase system table the adds and deletes tables created for a feature class or table when it is registered as versioned. These tables record changes made to a version during editing.

DEM: [data models] Acronym for digital elevation model. The representation of continuous elevation values over a topographic surface by a regular array of z-values, referenced to a common vertical datum. DEMs are typically used to represent the bare-earth terrain, void of vegetation and manmade features.

Demographics: [geography] The statistical characteristics (such as age, birth rate, and income) of a human population.

Demography: [geography] The statistical study of human populations, especially their locations, distribution, economic statistics, and vital statistics.

Densify: [data editing] To add vertices to a line at specified distances without altering the line's shape.

Densitometer: [graphics map display] An instrument for measuring the opacity of translucent materials such as photographic negatives and optical filters.

Density: [Euclidean geometry] In spatial measurements, the quantity per unit area or length.

[physics] In a substance such as a gas, solid, or liquid, a measurement of the ratio of mass to volume.

[ESRI software] In ArcGIS Spatial Analyst, a function that distributes the quantity or magnitude of point or line observations over a unit of area to create a continuous raster for example, population per square kilometer.

Density slicing: [remote sensing] A technique normally applied to a single-band monochrome image for highlighting areas that appear to be uniform in tone, but are not. Grayscale values (0-255) are converted into a series of intervals, or slices, and different colors are assigned to each slice. Density slicing is often used to highlight variations in vegetation.

Dependent variable: [statistics] The variable representing the process being predicted or modeled, such as crime, foreclosure, or rainfall. The dependent variable is a function of the independent variables. Regression can be used to predict the dependent variable, using known (observed) values to build (calibrate) the regression model. In the regression equation, the dependent variable appears on the left side of the equal sign.

Deployment: [computing] The installation of a component or application on a target machine.

Depot: [ESRI software] In ArcGIS Network Analyst, a network location used to represent a starting, stopping, or renewal location for routes in vehicle routing problem (VRP) analysis. Users can specify multiple depots. Depots are used as locations for loading/unloading vehicles within the fleet.

Depot visit: [ESRI software] In ArcGIS Network Analyst, an object used to represent a single visit to a specific depot in vehicle routing problem (VRP) analysis. A depot visit may occur at the

start of a route, the end of the route, or as a renewal midway along a route.

Depth contour: [symbology] A line on a map connecting points of equal depth below a hydrographic datum.

Derived data: In ModelBuilder, data created by running a geoprocessing operation on existing data. Derived data from one process can serve as input data for another process.

Descending node: The point at which a satellite traveling north to south crosses the equator.

Descriptor: [network analysis] A type of attribute for network elements that cannot be apportioned. The value of a descriptor stays the same through the length of an edge element in a network dataset. Descriptors describe characteristics of the element; for example, the number of lanes for a particular road in a road network.

Desire-line analysis: [data analysis] A type of market analysis that draws lines from a set of geocoded points (usually customers) to a single, central point (usually a store). Desire lines can be weighted.

Desktop GIS: [data management] Mapping software that is installed onto and runs on a personal computer and allows users to display, query, update, and analyze data about geographic locations and the information linked to those locations.

Destination: [computing] The secondary object in a relationship class, such as a table containing attributes associated with features in a related table.

Destination table: [ESRI software] In ArcView 3.x, one of the two tables involved in a join operation. The destination table must be the active table; the attributes of the source (inactive) table are appended to it.

Detail page: [ESRI software] One of two types of pages in the Survey Analyst Survey Explorer. The Detail page displays a detailed view of individual survey objects.

Determinate flow direction: [network analysis] A conclusively definitive line or course in which something is issuing or moving in a stream. For an edge feature, this occurs when the flow direction can be ascertained from the connectivity of a network, the locations of sources and sinks, and the enabled or disabled states of features.

Deterministic model: [spatial statistics use for geostatistics] In spatial modeling, a type of model or a part of a model in which the outcome is completely and exactly known based on known input; the fixed or nonrandom components of a spatial model. The spline and inverse distance weighted interpolation methods are deterministic since they have no random components. The kriging and cokriging interpolation methods may have a deterministic component, often called the trend.

Detrending: [statistics] The process of removing the trend from a spatial model by subtracting the trend surface (usually polynomial functions of the spatial x- and y-coordinates) from the original data values. The resulting detrended values are called residuals.

Developable surface: [map projections] A geometric shape such as a cone, cylinder, or plane that can be flattened without being distorted. Many map projections are classified in terms of these shapes.

Developer product: [ESRI software] Products that can be used on one machine, similar to single use products. Each developer product

requires a unique registration number used to generate the authorization file. The Software Authorization Wizard is then used to enter the authorization file and unlock the software for use.

Developer sample: [ESRI software] A sample contained in the ArcGIS Developer Help system.

Development environment: [programming] A software product used to write, compile, and debug components or applications.

Device context: [ESRI software] Represents a surface that can be drawn to, for example, a screen, bitmap, or printer. In ArcGIS, the Display abstract class is used to abstract a device context.

Device coordinates: [graphics computing] The coordinates shown on a digitizer or display, as opposed to those of a recognized datum or coordinate system.

[Dg]

DGIWG: [organizational issues] Acronym for Digital Geographic Information Working Group. A group established in 1983 to develop standards for spatial data exchange among nations participating in the North Atlantic Treaty Organization (NATO). The goals of the group are interoperability and burden sharing among nations, and its membership has recently expanded beyond NATO nations. While DGIWG is not an official NATO body, its work on standards has been recognized by the NATO Geographic Conference (NGC).

[Di]

Dialog box: [computing] In geoprocessing, a form consisting of a tool's parameters.

Diazo process: [output] A way of quickly and inexpensively copying maps using a diazo compound, ultraviolet light, and ammonia.

Difference image: In image processing, an image made by subtracting the pixel values of one image from those in another.

Differential correction: [GPS] A technique for increasing the accuracy of GPS measurements by comparing the readings to two receivers one roving and the other a fixed base station and a known location.

Diffusion: [diffusion] The spread of an innovation or technology use among a group of people or organizations.

DIGEST: [standards] Acronym for Digital Geographic Information Exchange Standard. A standard for spatial data transfer among nations, data producers, and data users. The Digital Geographic Information Working Group (DGIWG) developed the standard to support interoperability within and between nations and share the burden of digital data production. The standard addresses the exchange of raster, matrix, and vector data (and associated text) and a range of levels of topological structures.

Digital: [mathematics] Represented in discrete, quantified units rather than continuously. Computers process and store information in digital form.

Digital image: [graphics computing] An image stored in binary form and divided into a matrix of pixels. Each pixel consists of a digital value of one or more bits, defined by the bit depth. The digital value may represent, but is not limited to, energy, brightness, color, intensity, sound, elevation, or a classified value derived through image processing. A digital image is stored as a raster and may contain one or more bands.

Digital image processing: [remote sensing] Any technique that changes the digital values of an image for the sake of analysis or enhanced display, such as density slicing or low- and high-pass filtering.

Digital number: [remote sensing] In a digital image, a value assigned to a pixel.

Digitizing: [data capture] The process of converting the geographic features on an analog map into digital format using a digitizing tablet, or digitizer, which is connected to a computer. Features on a paper map are traced with a digitizer puck, a device similar to a mouse, and the x,y coordinates of these features are automatically recorded and stored as spatial data.

Digitizing mode: [data capture] A way of using a digitizing tablet in which locations on the tablet are mapped to specific locations on the screen. Moving the digitizer puck on the tablet surface causes the screen pointer to move to precisely the same position on the screen.

Dijkstra's algorithm: An algorithm that examines the connectivity of a network to find the shortest path between two points. Dijkstra's algorithm is named after the Dutch computer scientist Edsger Dijkstra (1930-2002).

DIME: [data models] Acronym for Dual Independent Map Encoding. A data storage format for geographic data developed by the U.S. Census Bureau in the 1960s. DIME-encoded data was stored in Geographic Base Files (GBF). The Census Bureau replaced the DIME format with Topologically Integrated Geocoding and Referencing (TIGER) in 1990.

Dimension: [physics] A length of a certain distance and bearing.

Dimension construction method: [ESRI software] One of a number of procedures that dictate what type of dimension feature is created and the number of points required to complete the feature's geometry. Construction methods include simple aligned, aligned, linear, rotated linear, free aligned, and free linear.

Dimension feature: [ESRI software] In ArcMap, a special kind of geodatabase annotation that shows specific lengths or distances on a map. A dimension feature may indicate the length of a side of a building or land parcel, or it may indicate the distance between two features, such as a fire hydrant and the corner of a building.

Dimension feature class: [ESRI software] A geodatabase feature class that stores dimension features.

Dimension style: [ESRI software] Description of a dimension feature's symbology, what parts of it are drawn, and how it is drawn. Every time a new dimension feature is created, it is assigned a particular style according to its shared characteristics. A collection of dimension styles is associated with a dimension feature class. Styles for a dimension feature class are created, copied, and managed using ArcCatalog or the editing capabilities in ArcMap. Styles are then assigned to individual dimension features.

Dimensioning toolbar: [ESRI software] A toolbar in ArcMap that facilitates the creation of dimension features.

Directed link: [network analysis] In ArcInfo Workstation, an arc between two nodes with one direction specified.

Directed network flow: [network analysis] A network state in which edges have an associated direction of flow. In a directed network flow, the resource that traverses a network's components

cannot choose a direction to take, as in hydrologic and utility systems.

Direction: [ESRI software] In an ArcGIS vertical coordinate system, an identifier that indicates whether z-values are positive up or positive down. Heights or elevations are usually positive up, against the force of gravity (indicated by +1). Depths are usually positive down, with the force of gravity (indicated by -1).

Direction field: [ESRI software] In Survey Analyst for field measurements, a field in the computation page that allows the entry of bearings or azimuths between an input survey point and a computed survey point.

Directional filter: In image processing, an edge-detection filter that enhances those linear features in an image that are oriented in a particular direction.

Directional influences: [spatial statistics use for geostatistics] Natural or physical processes that affect a measured trait or attribute so that the magnitude of the effects on the attribute vary in different directions.

Directory: [computing] An area of a computer disk that holds a set of data files, other directories, or both. Operating systems use directories to organize data. Directories are arranged in a tree structure, in which each branch is a subdirectory of its parent branch. The location of a directory is specified with a pathfor example, C:\gisprojects\shrinkinglemurhabitatgrids.

Dirty areas: [data quality] Regions surrounding features that have been altered after the initial topology validation process and require additional topology validation to be performed to find any errors.

Disabled feature: [network analysis] In geometric networks, an object or shape representing a geographic object through which flow is impossible.

Disconnected editing: [ESRI software] The process of copying data to another geodatabase, editing that data, then merging the changes with the data in the source or master geodatabase.

Discrete data: [data models] Data that represents phenomena with distinct boundaries. Property lines and streets are examples of discrete data.

Discrete digitizing: [data capture] A method of digitizing in which points are placed individually to define a feature's shape.

Discrete feature: [ESRI software] A feature that has definite feature boundaries.

Discrete raster: [data models] A raster that typically represents phenomena that have clear boundaries with attributes that are descriptions, classes, or categories. Generally, integers are used for the cell values. In a raster of land cover, for example, the value 1 might represent forestland, the value 2 urban land, and so on. It is assumed that the phenomena that each value represents fill the entire area of the cell. Rasters representing land use, political boundaries or ownership are examples of discrete rasters.

Disk: [hardware] A storage medium for recording digital information, consisting of a round, flat, spinning plate coated with a magnetic material.

Disk cache: [ESRI software] In ArcGlobe, the folder on a computer's disk drive where ArcGlobe stores layer cache files.

DispID binding: [non-ESRI software] A type of early binding in which DispID properties and methods are accessed at compile time, so there's no need to call them at run time. DispID binding is used for components that have type libraries but don't support vTable binding. MapObjects uses DispID binding.

Displacement link: [ESRI software] In ArcGIS, a link created to define the source and destination coordinates for a spatial adjustment. Links are represented as arrows with the arrowhead pointing toward the destination location. Links can be created manually or loaded from a link file.

Displacement vector: [ESRI software] In Survey Analyst – Cadastral Editor, the difference in the coordinates of a point between successive least-squares adjustments. A set of displacement vectors is recorded for a point when the point is part of a least-squares adjustment. Adjustment vectors can be used to track spatial changes in the cadastral fabric over time, and to adjust associated feature classes to match the most up to date cadastral fabric location.

Display: [ESRI software] Often used to refer to subclasses of the Display abstract class. For example, "when drawing to the display" means when drawing to any of the display coclasses; "the display pipeline" refers to the sequence of calls made when drawing occurs.

Display projection: [map projections] The coordinate system used for displaying geographic data. Examples include the data frame in ArcMap and the view in ArcView GIS.

[map projections] A pseudo Plate Carree projection used by ArcGIS and ArcView GIS to display data that is in a geographic coordinate system. The angular values of the geographic coordinate system are directly mapped to the display, just as values from a projected coordinate system are mapped.

Display scale: [map display] The scale at which data is rendered on a computer screen or on a printed map.

Display type: [ESRI software] The mode of command representation on a computer screen. The display type controls whether you see a command's image, its caption, or both when it appears on a toolbar or in a menu.

Display unit: [map display] The unit of measure used to render dimensions of shapes, distance tolerances, and offsets 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.

Dissolve: [ESRI software] A geoprocessing command that removes boundaries between adjacent polygons that have the same value for a specified attribute.

[data editing] The process of removing unnecessary boundaries between features, such as the edges of adjacent map sheets, after data has been captured

Dissolve route events: [ESRI software] In linear referencing, a procedure that combines event records in tables where there are events on the same route that have the same value for specified fields. The Dissolve Route Events tool combines events when there is measure overlap, and is available for both line and point event tables.

Distance: [physics] The measure of separation between two entities or locations that may or may not be connected, such as two points. Distance is differentiated from length, which

implies a physical connection between entities or locations.

Distance decay: [spatial analysis] A mathematical representation of the effect of distance on the accessibility of locations and the number of interactions between them, reflecting the notion that demand drops as distance increases. Distance decay can be expressed as a power function or as an exponential function.

Distance field: [ESRI software] In the Survey Analyst for field measurements Survey Explorer, a field for entering distance for use in a computation.

Distance unit: [physics] The unit of measurement for distance, such as feet, miles, meters, and kilometers.

Distortion: On a map or image, the misrepresentation of shape, area, distance, or direction of or between geographic features when compared to their true measurements on the curved surface of the earth.

Distributed data: [ESRI software] Data spread over multiple platforms or a network by a process referred to as replication.

Distributed database: [database structures] A database with records that are dispersed between two or more physical locations. Data distribution allows two or more people to be working on the same data in separate locations.

Distribution: [statistics] The frequency or amount at which a thing or things occur within a given area.

[statistics] The set of probabilities that a variable will have a particular value.

Dithering: [graphics computing] The approximation of shades of gray or colors in a computer image made by arranging pixels of black and white or other colors in alternate layers. 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.

Diurnal: [astronomy] Daily, as in the revolution of the earth.

Diurnal arc: [astronomy] The apparent path from rise to set made by a heavenly body across the sky.

[Dl]

DLG: [data models] Acronym for digital line graph. Data files containing vector representations of cartographic information derived from USGS maps and related sources. DLGs include information from the USGS planimetric map base categories such as transportation, hydrography, contours, and public land survey boundaries.

DLL: [Internet] Acronym for dynamic-link library. A type of file that stores shared code to be used by multiple programs (a “code library”). Programs access the shared code by linking to the DLL file when they run, a process referred to as dynamic linking. The DLL file must be registered for other programs to locate it.

[Dm]

DMA: [government] Acronym for Designated Market Area. A television market as defined by Nielsen Media Research. Most DMAs correspond to whole counties, but there are a few exceptions where counties are split into different DMAs.

[Dn]

DNC: [navigation] Acronym for digital nautical chart. A nautical database developed from existing hard-copy charts, digital data, bathymetric survey information, imagery, and various raster data. DNCs are used by the U.S. military and its allies for marine navigation.

DNS: [Internet] Acronym for domain name system. The Internet distributed system that stores IP addresses and domain names to assist with the routing of network traffic.

[Do]

Dockable window: [computing] A window that can exist in a floating state or be attached to the main application window.

Docking: [computing] Moving a floating toolbar or window to a fixed location in the graphical user interface.

Document: [ESRI software] A component of an ArcView 3.x project. Each document type (view, table, chart, layout, script) has its own window and interface.

Documentation: [ESRI software] Supporting information for software data and tools. Documentation may be descriptive or instructional, and is published in a variety of formats, including user's guides and manuals, desktop help systems, embedded or context-sensitive help, tutorials, reports, and metadata.

Documentation Editor: [ESRI software] In geoprocessing, the interface used to write documentation for tools, toolsets, toolboxes, and processes within a model.

Domain: [data transfer] The range of valid values for a particular metadata element.

[computing] 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 an IP address. All devices sharing a common part of the IP address are said to be in the same domain.

Domain name: [Internet] The unique name of a computer system on the Internet, such as "thegisjournal.com."

Donut rings: [spatial analysis] A method of defining the rings in an analysis so that the values inside the rings are exclusive. For example, in an analysis with three donut rings and 10 households in each, the total number of households for each ring would be 10.

DOP: [GPS] Acronym for dilution of precision. An indicator of satellite geometry for a constellation of satellites used to determine a position. Positions with a lower DOP value generally constitute better measurement results than those with higher DOP. Factors determining the total GDOP (geometric DOP) for a set of satellites include PDOP (positional DOP), HDOP (horizontal DOP), VDOP (vertical DOP), and TDOP (time DOP).

Doppler shift: [physics] The apparent change in frequency of sound or light waves caused by the relative motion between a source and an observer. As they approach one another, the frequency increases; as they draw apart, the frequency decreases. The Doppler shift is also known as the Doppler effect, and is named for Austrian physicist and mathematician Christian Andreas Doppler.

Doppler-aided GPS: [GPS] Signal processing that uses a measured Doppler shift to help the receiver track the GPS signal.

DOQ: [aerial photography] Acronym for digital orthophoto quadrangle. A computer-generated, uniform-scale image created from an aerial photograph. Digital orthophoto quadrangles are true photographic maps in which the effects of tilt and relief are removed by a mathematical process called transformation or rectification. The uniform scale of a DOQ allows accurate measurement of distances.

DOQQ: [navigation] Acronym for digital orthophoto quarter quadrangle. A digital orthophoto quadrangle (DOQ) divided into four quadrants.

Dot density map: [cartography] A quantitative, thematic map on which dots of the same size are randomly placed in proportion to a numeric attribute associated with an area. Dot density maps convey the intensity of an attribute.

Dot distribution map: [cartography] A map that uses dots or other symbols to represent the presence, quantity, or value of a phenomenon or thing in a specific area. In a dot distribution map, the size of the dots is scaled in proportion to the intensity of the variable.

Dot screen: [printing] A photographic film covered with uniformly sized, evenly spaced dots used to break up a solid color, producing an apparently lighter color.

Double precision: [computing] 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 1 meter at a global extent.

Douglas-Peucker algorithm: An algorithm that simplifies complex lines by reducing the number of points used to represent them. The Douglas-Peucker algorithm was developed by the Canadian geographers David H. Douglas and Thomas K. Peucker.

Downstream: [network analysis] In network tracing, the direction along a line or edge that is the same as the direction of flow.

[Dp]

Dpi: [graphics computing] Acronym for dots per inch. A measure of the resolution of scanners, printers, and graphic displays. The more dots per inch, the more detail can be displayed in an image.

[Dr]

Drafting: [cartography] A method of drawing with pencil or pen and ink, used in cartographic reproduction.

Drainage: All map features associated with the movement and flow of water, such as rivers, streams, and lakes.

Draped layer: [ESRI software] A layer in ArcGlobe that has been categorized to be draped on top of the globe surface.

DRG: [data models] Acronym for digital raster graphic. A raster image of a scanned USGS standard series topographic map, usually including the original border information, referred to as the map collar, map surround, or marginalia. Source maps are georeferenced to the surface of the earth, fit to the universal transverse Mercator (UTM) projection, and scanned at a minimum resolution of 250 dpi. The accuracy and datum of a DRG matches the accuracy and datum of the source map.

Drift: [spatial statistics use for geostatistics] The general pattern of z-values throughout a kriging model. The drift, or structure, forms the model's basic shape.

Drive-time area: [spatial analysis] A zone around a map feature measured in units of time needed for travel by car. For example, a store's 10-minute drive-time area defines the area in which drivers can reach the store in 10 minutes or less.

Drum scanner: A type of scanner in which a hard-copy image or map is attached to a cylinder that spins while a sensor captures a digital image from the surface of the page.

[Ds]

DSM: [data models] Acronym for digital surface model. The representation of continuous elevation values over a topographic surface, including vegetation and man-made features, by a regular array of z-values, referenced to a common datum. DSMs are typically used to represent terrain relief that includes the elevations of the top surfaces of buildings, trees, towers, and other features elevated above the bare earth. The DSM is also known as the "First Return Surface."

[Dt]

DTD: [programming] Acronym for document type definition. A set of rules that define the allowed structure and properties of XML documents.

DTED: [data models] Acronym for digital terrain elevation data. A format for elevation data, usually tiled in 1-degree cells, produced by the National Geospatial-Intelligence Agency and U.S. allies for military applications.

[Du]

Duplicate labels: [ESRI software] Labels with identical content. Maplex for ArcGIS provides the option of labeling only a single feature out of a cluster of similar features. Identical labels will not be placed within the user-defined distance of a placed label.

[Dy]

Dynamic feature class: [ESRI software] A feature class consisting of points associated with address elements in an address data table that change based on changes made to the address data table.

Dynamic HTML: [Internet] An extension to HTML that allows Web designers to make elements on a Web page interactive, rather than changeable only when the page is loaded.

Dynamic segmentation: [data analysis] The process of computing the map locations of linearly referenced data (for example, attributes stored in a table) at run time so they can be displayed on a map, queried, and analyzed using a GIS. The dynamic segmentation process enables multiple sets of attributes to be associated with any portion of a line feature without segmenting the underlying feature. In the transportation field, examples of such linearly referenced data might include accident sites, road quality, and traffic volume.

E

[Ea]

Early binding: [programming] A COM technique an application uses to access an object. In early binding, an object's properties and methods are discovered from an interface at compile time, instead of being checked at run time as in late binding. This difference often gives early binding performance benefits over late binding. There are two types of early binding: DispID binding and vTable binding.

Easting: [coordinate systems] The distance east of the origin that a point in a Cartesian coordinate system lies, measured in that system's units.

[coordinate systems] The positive x-value in a rectangular coordinate system.

[Ec]

Eccentricity: [Euclidean geometry] A measure of how much an ellipse deviates from a circle, expressed as the ratio of the distance between the center and one focus of an ellipsoid to the length of its semimajor axis. The square of the eccentricity (e2) is commonly used with the semimajor axis a to define a spheroid.

Ecliptic: [astronomy] The great circle formed by the intersection of the plane of the earth's orbit around the sun (or apparent orbit of the sun around the earth) and the celestial sphere.

[astronomy] The mean plane of the earth's orbit around the sun.

Ecological fallacy: [statistics] The assumption that an individual from a specific group or area will exhibit a trait that is predominant in the group as a whole.

Economic geography: [geography] The field of geography concerning the distribution and variation of economic factors by location, including how economic factors interact with geographic factors such as climate, land use, and geology.

[Ed]

Edge: [data models] A line between two points that forms a boundary. In a geometric shape, an edge forms the boundary between two faces. In an image, edges separate areas of different tones or colors. In topology, an edge defines lines or polygon boundaries.

[network analysis] In a network system, a line feature through which a substance, resource, or traffic flows. Examples include a street in a transportation network and a pipeline in a sewer system. In a geometric network, a network edge can be simple or complex. A simple edge is always connected to exactly two junction features, one at each end. A complex edge is always connected to at least two junction features at its endpoints, but it can also be connected to additional junction features along its length. In a network dataset, a network edge is only connected to two junctions at its endpoints.

[3D analysis] In a TIN data model, a line segment between nodes (sample data points). Edges store topologic information about the faces that they border.

Edge connectivity policy: [network analysis] In network datasets, a connectivity policy that defines how one edge may connect to another edge mid-span. There are two edge-edge connectivity policies: endpoint connectivity and any-vertex connectivity.

Edge detection: A digital image processing technique for isolating edges in a digital image by examining it for abrupt changes in pixel value.

Edge enhancement: A digital image processing technique for emphasizing the appearance of edges and lines in an image.

Edge-edge rule: [network analysis] In geometric networks, a connectivity rule that defines how one edge may connect to another edge through a junction.

Edge-junction cardinality: [ESRI software] In connectivity relationships for networks, the number of edges of one type that may be associated with junctions of another type. Edge-junction cardinality defines a range of permissible connections that may occur in a one-to-many relationship between a single junction and many edges.

Edge-junction rule: [ESRI software] In geometric networks, a connectivity rule that defines how an edge may connect to a junction.

Edgematching: [data editing] A spatial adjustment process that aligns features along the edge of an extent to the corresponding features in an adjacent extent.

Edit Annotation tool: [ESRI software] A tool on the Annotation toolbar that is used to manipulate geodatabase annotation. Text can be interactively moved, scaled, and rotated. Shortcut menu options allow control of the position, orientation, symbology, content, size, and style of text.

Edit mask: [data editing] The portion of a coverage where the geometry (or geographical features) has been altered, but where topology has not yet been restored.

Edit session: [ESRI software] In ArcGIS, the environment in which spatial and attribute editing take place. After starting an edit session, a user can modify feature locations, geometry, or attributes. Modifications made during the edit session are not saved unless the user explicitly chooses to save them.

Edit sketch: [ESRI software] In ArcGIS, a temporary, underlying representation that is used to create or edit feature geometry.

Edit task: [ESRI software] During editing prior to ArcGIS 10, a setting in the Task drop-down list that determines which operation the sketch construction tools will perform. Examples of edit tasks include creating new features and modifying existing features. The edit task is set by clicking a task in the Task drop-down list.

Editor toolbar: [ESRI software] In ArcMap, a set of tools that allows the creation and modification of features and their attributes.

EDMS: [non-ESRI software] Acronym for electronic document management system. A computer-based system for organizing, maintaining, and retrieving digital and hard-copy documents. An EDMS usually includes a check-in, check-out system for document tracking, versioning, and search-and-retrieval capabilities.

EDN: [ESRI software] Acronym for ESRI Developer Network. A subscription program used to acquire ESRI software for developers, which includes a special program for supporting the ESRI developer community. EDN is intended to promote collaboration and interaction among GIS developers and ESRI staff.

[El]

Electromagnetic radiation: [physics] Energy that moves through space at the speed of light as different wavelengths of time-varying electric and magnetic fields. Types of electromagnetic radiation include gamma, x, ultraviolet, visible, infrared, microwave, and radio.

Electromagnetic spectrum: [physics] The entire range of wavelengths (frequencies) over which electromagnetic radiation extends.

Electronic atlas: [map display] A mapping system that displays but does not allow for the spatial analysis of data.

Element: [ESRI software] In geoprocessing in ArcGIS, a component of a model. Elements can be variables, such as input and derived data, or tools.

Elevation: [geodesy] The vertical distance of a point or object above or below a reference surface or datum (generally mean sea level). Elevation generally refers to the vertical height of land.

Elevation guide: [symbology] A map element that displays a simplified representation of the terrain within a map's extent. Elevation guides are designed to provide a quick overview of topography, including the high and low points.

Elevation layer: [ESRI software] A layer in ArcGlobe that has been categorized to help define the geometry of the globe surface.

Elevation tints: [symbology] Hypsometric tint bands based on elevation ranges used in an elevation guide.

Ellipse: A geometric shape described mathematically as the collection of points whose distances from two given points (the foci) add up to the same sum. An ellipse is shaped like a circle viewed obliquely.

Ellipsoid: [Euclidean geometry] A three-dimensional, closed geometric shape, all planar sections of which are ellipses or circles. An ellipsoid has three independent axes, and is usually specified by the lengths a,b,c of the three semi-axes. If an ellipsoid is made by rotating an ellipse about one of its axes, then two axes of the ellipsoid are the same, and it is called an ellipsoid of revolution, or spheroid. If the lengths of all three of its axes are the same, it is a sphere.

[geodesy] When used to represent the earth, an oblate ellipsoid of revolution, made by rotating an ellipse about its minor axis.

[Em]

Embedded feature class: [3D GIS] A multipoint feature class embedded into a terrain dataset. When a feature class is embedded, it is incorporated directly into the terrain pyramid and the terrain becomes the sole container of the data. Embedded feature classes can be used to reduce the amount of disk space required by mass point data such as lidar.

EMF: [non-ESRI software] Acronym for Enhanced Metafile. A spool file format used in printing by the Windows operating system.

Empirical: [statistics] That property of a quantity that indicates that the quantity depends on data, observations, or experiment only; that is, it is not a model or part of a model. An empirical semivariogram is computed on data only, in contrast to a theoretical semivariogram model.

[En]

Enabled feature: [ESRI software] In geometric networks, a network feature that allows flow to pass through it.

ENC: [navigation] Acronym for electronic navigational chart. A vector data product used for nautical navigation. ENC data is produced by nautical charting agencies throughout the world and uses the IHO (International Hydrographic Organization) S-57 standard for its database structure and attribution.

Enclosure: [data transfer] A file describing the contents of an item included in metadata. Enclosing files in metadata works the same way as enclosing files in an e-mail message.

Encoding: [data conversion] The recording or reformatting of data into a computer format. Data may be encoded to reduce storage, increase security, or to transfer it between systems using different file formats. In GIS, analog graphic data, such as paper maps and images, are encoded into computer formats by scanning or digitizing.

End hatch definition: [ESRI software] In linear referencing, a special type of hatch definition that draws hatch marks only at the low and high measure of a linear feature.

End offset: [ESRI software] An adjustable value that dictates how far away from the end of a line an address location should be placed. Using an end offset prevents the point from being placed directly over the intersection of cross streets if the address happens to fall on the beginning or end of the street.

Endpoint connectivity: [network analysis] In network datasets, a type of edge connectivity policy that states that an edge may only connect to another edge at its endpoints.

Enhancement: [remote sensing] In remote sensing, applying operations to raster data to improve appearance or usability by making specific features more detectable. Such operations can include contrast stretching, edge enhancement, filtering, smoothing, and sharpening.

Enterprise GIS: [organizational issues] A geographic information system that is integrated through an entire organization so that a large number of users can manage, share, and use spatial data and related information to address a variety of needs, including data creation, modification, visualization, analysis, and dissemination.

Enterprise JavaBeans: [non-ESRI software] The server-side component architecture for the J2EE platform. EJB enables development of distributed, transactional, secure, and portable Java applications.

Envelope: The rectangle surrounding one or more geographical features in coordinate space, determined by the minimum and maximum coordinates in the x and y directions, as well as the ranges of any z- or m-values that the features may have. An envelope can be used to filter data for analysis.

Environment settings: [ESRI software] Settings that can apply to all tools within the application, all tools within a model or script, or a particular process within a model or script. Environment settings include current workspace, output spatial reference, output spatial grids, cell size, and tile size. They are generally set before running tools.

Environment variable: [computing] A variable maintained by the operating system and shared among programs. Environment variables function as placeholders for environment information, such as a drive, path or file name.

Environmental model: An abstract representation of a complex environmental process, emphasizing relationships and patterns in natural systems. Environmental models allow decision makers to better understand the effects of natural systems or the impact of human activities on natural systems.

[Eo]

EOBrowser: [ESRI software] An ArcGIS utility application that can be used to investigate the contents of object libraries.

[Ep]

Ephemeris: A table of the predicted positions of a satellite within its orbit for each day of the year, or for other regular intervals.

EPSG ID: [coordinate systems] A coordinate system identification created by the European Petroleum Survey Group.

[Eq]

Equal competition area: [business] A trade area boundary set halfway between a store or service point and its neighboring stores or service points.

Equal-area classification: [cartography] A data classification method that divides polygon features into groups so that the total area of the polygons in each group is approximately the same.

Equal-area projection: A projection in which the whole of the map as well as each part has the same proportional area as the corresponding part of the earth. An equal-area projection may distort shape, angle, scale, or any combination thereof. No flat map can be both equal-area and conformal.

[Er]

Erase: [ESRI software] In ArcInfo, a command that removes or deletes features from one coverage that overlap features in another coverage.

Erosion: environmental GIS

Error: [data quality] A measured, observed, calculated, or interpreted value that differs from the true value or the value that would be obtained by a perfect observer using perfect equipment and perfect methods under perfect conditions.

[data quality] In a GIS database, a spatial or attribute value that differs from the true value. Error may also be understood as the totality of wrong or unreliable information in a database. Spatial errors are mainly errors in position (feature coordinates are wrong) and topology (features do not properly connect, intersect, or adjoin). Attribute errors are wrong quantities or descriptions associated with features, or missing or invalid values. Errors enter a GIS database through various processes, including data collection (for instance, flawed instruments); data conversion (for example, map digitizing mistakes); data entry and editing; data integration (for example, mixing data at different scales); spatial data processing (for example, inaccuracies caused by generalization); and data analysis (for example, features assigned to inappropriate categories on the basis of flawed criteria).

[ESRI software] In geodatabase topology, violation of a topology rule detected during the validation process. 4 [programming] In computer programming, a piece of code that prevents a program from compiling or running; also, program logic that makes a program end prematurely, go into an endless loop, or give incorrect results.

Error propagation: [uncertainty] In GIS data processing, the persistence of an error into new datasets calculated or created using datasets that originally contained errors. The study of error propagation is concerned with the effects of combined and accumulated errors throughout a series of data processing operations.

[computing] In computing, an outcome or occurrence that happens when a user interacts with an application. For example, in a case in which clicking a button triggers the closing of a form, the event is the closing of the form.

Error table: [ESRI software] A geodatabase table used by the GIS Data ReViewer to track error information through the quality control process. Defects are recorded, resolved and verified in the error table.

[Es]

ESRI Grid: [ESRI software] An ESRI data format for storing raster data that defines geographic space as an array of equally sized square cells arranged in rows and columns. Each cell stores a numeric value that represents a geographic attribute (such as elevation) for that unit of space. When the grid is drawn as a map, cells are assigned colors according to their numeric values. Each grid cell is referenced by its x,y coordinate location.

ESRI Maplex Label Engine: [ESRI software] In Maplex for ArcGIS, extended software that allows finer control of how labels are placed.

ESRI Standard Label Engine: [ESRI software] In ArcMap, the software used to place labels.

EsriMapCatalog.ser: [ESRI software] A binary serialized file created in the ArcIMS 3.x AppServer directory to save site parameters. This file has now been replaced by ArcIMSSite.sez.

EsriMapCookies.ser: [ESRI software] A binary serialized file created in the ArcIMS 3.x AppServer directory to store ArcIMS Folders and any submitted MapNotes and EditNotes. This file has now been replaced by ArcIMSFolders.sez.

Estimation: [spatial statistics use for geostatistics] In spatial modeling, the process of forming a statistic from observed data to assign optimal parameters in a model or distribution.

[Eu]

Euclidean distance: The straight-line distance between two points on a plane. Euclidean distance, or distance “as the crow flies,” can be calculated using the Pythagorean theorem.

Euclidean distance analysis: [ESRI software] In ArcGIS Spatial Analyst, a description of each raster cell’s relationship to the closest source.

[Ev]

Evaluator: [network analysis] A function that determines attribute values for network elements in a network dataset. If a network source does not have an evaluator, the default evaluator for its element type is used.

Event: [linear referencing] A geographic location stored in tabular rather than spatial form. Event types include address events, route events, x,y events, and temporal events.

Event handling: [programming] Watching for events that are broadcast by another class, and taking action when they occur.

Event layer: [ESRI software] In ArcGIS, a layer created from an event table.

Event overlay: [linear referencing] In linear referencing, an operation that produces a route event table that is the logical intersection or

union of two input route event tables. Event overlay is one way to perform line-on-line, line-on-point, and event point-on-point overlays.

Event table: [linear referencing] A data source containing location information in tabular format (called events) that is used to create a spatial dataset. For example, an event table might contain x,y coordinates or routes.

Event theme: [ESRI software] In ArcView 3.x, a spatial data theme created from an event table.

[Ex]

Exception: [ESRI software] An error that is an acceptable violation of a topology rule. In ArcMap, for example, a cul-de-sac is a legitimate exception to the rule that prohibits dangles.

Executable file: A binary file containing a program that can be run as a stand-alone application. In the Microsoft Windows program, executable files are designated with an .exe extension.

Exit state: [ESRI software] The condition of a tool upon closure. If a tool fails due to a programming bug or command failure, the exit state will be "failed."

Explode: [ESRI software] An editing process that separates a multipart feature into its component features, which become independent features.

Exponent: [mathematics] In mathematics, a number that indicates how many times a base value is multiplied by itself. Exponents are usually indicated with superscripts.

Export: [computing] To move data from one computer system to another, and often, in the process, from one file format to another.

Exposure station: [aerial photography] In aerial photography, each point in the flight path at which the camera exposes the film.

Expression: A sequence of operands and operators constructed according to the syntactic rules of a symbolic language that evaluates to a single number, string, or value.

Extended Entity Data: [programming] In AutoCAD, extra optional data attached to an AutoCAD drawing element.

Extension: [ESRI software] 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.

Extent: The minimum bounding rectangle (xmin, ymin and xmax, ymax) defined by coordinate pairs of a data source. All coordinates for the data source fall within this boundary.

Extent rectangle: [ESRI software] A rectangle that is displayed in one data frame, showing the size and position of another data frame.

Extract server: [ESRI software] A private ArcIMS virtual server that clips data and saves it to a Zip file.

Extract wizard: [ESRI software] An ArcToolbox wizard that selects features from a coverage based on attribute values to create a new coverage.

Extraction guide: [data management] A specification that defines parameters for feature extraction and attribution. Specifications typically include the size of features to be collected, density of feature collection, scale ranges, and attribute assignment.

Extrapolation: [statistics] Using known or observed data to infer or calculate values for unobserved times, locations or other variables outside a sampled area. In the absence of data, extrapolation is a common method for making predictions, but it is not always accurate. For example, based on observed economic indicators, an economist can make predictions about the state of the economy at a future time. These predictions may not be accurate because they cannot take into account seemingly random events such as natural disasters.

Extrusion: [3D analysis] The process of projecting features in a two-dimensional data source into a three-dimensional representation: points become vertical lines, lines become planes, and polygons become three-dimensional blocks. Uses of extrusion include showing the depth of well point features or the height of building-footprint polygons.

F

F statistic: [statistics] A ratio of variances, calculated from a sample of data and used to provide information about a whole dataset. For example, statistic F may be used to provide estimates of variance, or differences, in a population, based on observations from two or more random samples.

F test: [statistics] A statistical test for determining the probability that the variances of two different samples are the same. The F test uses a statistic known as statistic F to test statistical hypotheses about the variances of distributions from which samples have been drawn.

[Fa]

Face: [Euclidean geometry] A planar surface of a geometric shape, bounded by edges.

Facility: [ESRI software] In ArcGIS Network Analyst, a network location used in closest facility and service area analyses.

False easting: [map projections] The linear value added to all x-coordinates of a map projection so that none of the values in the geographic region being mapped are negative.

False northing: [map projections] The linear value added to all y-coordinates of a map projection so that none of the values in the geographic region being mapped are negative.

[Fe]

Feature: [cartography] A representation of a real-world object on a map.

Feature class: [ESRI software] In ArcGIS, 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 be stored in geodatabases, shapefiles, coverages, or other data formats. 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.

Feature data: [ESRI software] Data that represents geographic features as geometric shapes.

Feature dataset: [ESRI software] In ArcGIS, a collection of feature classes stored together that

share the same spatial reference; that is, they share a coordinate system, and their features fall within a common geographic area. Feature classes with different geometry types may be stored in a feature dataset.

Feature displacement: [graphics map display] The movement of features that would otherwise overprint or conflict with other features. For example, if a river, a road, and a railway run through a narrow valley, it is necessary, at some scales, to displace at least one of the features that represent them on the map to keep their symbols distinct.

Feature extraction: [digital image processing] In image processing, a method of pattern recognition in which patterns within an image are measured and then classified as features based on those measurements.

Feature layer: [data analysis] A layer that references a set of feature data. Feature data represents geographic entities as points, lines, and polygons.

Feature server: [ESRI software] A public ArcIMS virtual server for feature services.

Feature streaming: [ESRI software] The process of delivering vector feature data defined for a service that uses the feature server component. On the client side, feature streaming allows you to access a published map and then add feature data for overlays, sharing, making EditNotes, and performing analysis. Feature streaming functionality minimizes the need for multiple server requests.

Feature template: [ESRI software] A collection of default settings for creating a feature, including the layer where the feature will be stored, the attributes the feature will have, and the default tool used to create the feature.

Feature weight: [ESRI software] In ArcMap, a ranking system that indicates whether features from a given feature class may be covered by a label in cases where the label cannot be placed in free space. Feature classes with lower weights will tend to have labels placed over their features before feature classes with higher weights. Polygon feature classes have two types of weights: boundary weights and interior weights.

Feature-linked annotation: [ESRI software] Annotation that is stored in the geodatabase with links to features through a geodatabase relationship class. Feature-linked annotation reflects the current state of features in the geodatabase: it is automatically updated when features are moved, edited, or deleted.

[Fg]

FGDC: [organizational issues] Acronym for Federal Geographic Data Committee. An organization established by the United States Federal Office of Management and Budget responsible for coordinating the development, use, sharing, and dissemination of surveying, mapping, and related spatial data. The committee is comprised of representatives from federal and state government agencies, academia, and the private sector. The FGDC defines spatial data metadata standards for the United States in its Content Standard for Digital Geospatial Metadata and manages the development of the National Spatial Data Infrastructure (NSDI).

[Fi]

Field: [database structures] A column in a table that stores the values for a single attribute.

[computing] The place in a database record, or in a GUI, where data can be entered.

[data models] A synonym for surface.

Field mapping: [analysis geoprocessing] In geoprocessing, defining the field structure and content for an output dataset.

Field precision: [ESRI software] The number of digits that can be stored in a field in a table.

Field scale: [ESRI software] The number of decimal places for float or double-type geodatabase table fields.

Field view: [cognition] A philosophical view of geographic space in which space is completely filled by occurrences of phenomena, and in which phenomena are described by a range of values on a numeric scale. In this view, every spatial location is something, even if it is the zero value of a phenomenon.

File: [computing] A collection of uniquely named information stored on a drive, disk, or tape. A file generally resides within a directory.

File geodatabase: [database structures] A geodatabase stored as a folder of files. A file geodatabase can be used simultaneously by several users, but only one user at a time can edit the same data.

File name: [computing] The name that distinguishes a file from all other files in a particular directory. It can refer to the name of the file by itself (harold), the name plus the file extension (harold.shp), or the whole path of a file up to and including the file name extension (C:\mygisdata\shapefiles\harold.shp).

File name extension: [computing] The abbreviation following the final period in a file name that indicates the file's format, such as .shp, .zip, or .tif. File name extensions are usually one to four letters long.

Fill: [map display] The interior of a polygon; the area inside the perimeter.

[ESRI software] In MOLE, the graphic component inside the frame that forms the background.

Fill symbol: [symbology] A color or pattern used to fill polygons on a map.

Fillet: [data analysis] A segment of a circle used to connect two intersecting lines. Fillets are used to create smoothly curving connections between lines, such as pavement edges at street intersections or rounded corners on parcel features.

Filter: [spatial analysis] On a raster, an analysis boundary or processing window within which cell values affect calculations and outside which they do not. Filters are used mainly in cell-based analysis where the value of a center cell is changed to the mean, the sum, or some other function of all cell values inside the filter. A filter moves systematically across a raster until each cell has been processed. Filters can be of various shapes and sizes, but are most commonly three-cell by three-cell squares.

[data analysis] A desktop GIS operation used to hide (but not delete) features in a map document or attribute table.

[data analysis] A constraint used to define a subset of data.

Find Similar analysis: [data analysis] A process that seeks out new market areas based on the characteristics of an existing market area.

First normal form: [database structures] The first level of guidelines for designing table and data structures in a relational database. The first normal form guideline recommends creating a unique key for every row in a database table, eliminating duplicate columns from a table, and

creating separate tables to contain related data. A database that follows these guidelines is said to be in first normal form.

Fitness for use: The degree to which a dataset is suitable for a particular application or purpose, encompassing factors such as data quality, scale, interoperability, cost, data format, and so on.

Fix: [geodesy] A single position obtained by surveying, GPS, or astronomical measurements, usually given with altitude, time, date, and latitude-longitude or grid position.

Fixed reference point: [ESRI software] In Survey Analyst for field measurements, a survey point used as an input to a computation. The coordinates are not updated by the computation.

Fixed-time data: [ESRI software] In ArcGIS Tracking Analyst, stored temporal data that can be viewed in past, future, and past-and-future time windows. This data is stored in a shapefile or as a feature class in a geodatabase.

[Fl]

Flag: [graphics map display] A marker that identifies or calls attention to something, indicating importance or the need for further attention.

[ESRI software] In ArcMap, a temporary graphic that is placed on a geometric network to specify the starting point, stops, or endpoint for a trace task.

Flash: [Internet] A browser-independent, vector graphic technology for creating interactive Web sites with video, graphics, and animation. Browsers need plug-ins for Flash animations.

Flatbed scanner: A type of scanner with a flat, clear surface on which a map or image remains stationary while a sensor beam moves across it and captures a digital image.

Flattening: A measure of how much an oblate spheroid differs from a sphere. The flattening equals the ratio of the semimajor axis minus the semiminor axis to the semimajor axis.

Flex: [Internet] A set of tools that allows developers to create cross-platform, browser-independent Web applications using a standards-based programming language. Created by Macromedia in 2004 and now developed by Adobe, the Flex family of products includes Flex SDK, Flex Builder, Flex Data Services, and Flex Charting.

Floating layer: [ESRI software] A layer in ArcGlobe that has been categorized to float independently above or below the globe surface.

Floating point: [computing] A type of numeric field for storing real numbers with a decimal point. The decimal point can be in any position in the field and, thus, may “float” from one location to another for different values stored in the field. For example, a floating-point field can store the numbers 23.632, 0.000087, and -96432.15.

Flow direction: [network analysis] The route or course followed by commodities proceeding through edge elements in a network.

Flow map: [cartography] A map that uses line symbols of variable thickness to show the proportion of traffic or flow within a network.

[Fo]

Focal analysis: [data analysis] The computation of an output raster where the output value at each cell location is a function of the value at

that cell location and the values of the cells within a specified neighborhood around the cell.

Focus field: [ESRI software] In Survey Analyst for field measurements, the field that is the current target for data entry.

Folder connection: [ESRI software] In ArcCatalog, a top-level item in the Catalog tree that provides quick access to geographic data stored on local disks (including CD-ROMs) or shared on a network. Folder connections may provide access to individual folders.

Folder connection: [ESRI software] In ArcCatalog, a top-level item in the Catalog tree that provides quick access to geographic data stored on local disks (including CD-ROMs) or shared on a network. Folder connections may provide access to individual folders.

Follow feature mode: [ESRI software] In ArcGIS, a method for placing geodatabase annotation relative to a line or polygon feature. For example, text next to a river may be dragged along it so that the text curves like the river.

Font: [graphics map display] A single typeface or a set of related patterns representing characters or symbols at one size.

Footprint: [data structures] The extent (often rectangular) of each raster dataset in the mosaic dataset or image service definition. This outline is not always the extent of each raster dataset but can be the extent of the valid raster data within the dataset.

Force concentration: [ESRI software] In MOLE, a component of a map display that shows where force units are located so that the map reader can see where forces are the strongest and weakest.

Force element: [ESRI software] In MOLE, a type of graphic that represents a military unit (such as Company A, 1st Battalion of the 135th Infantry), equipment, or installation (such as a hospital or radar site). Force elements are also known as force units or military units.

Foreground: [map display] In a scene or display, the area that appears to be closest to an observer.

[ESRI software] The area in a raster layer where cells are eligible for selection and vectorization.

Foreign key: [database structures] An attribute or set of attributes in one table that match the primary key attributes in another table. Foreign keys and primary keys are used to join tables in a database.

Form lines: [cartography] Lines on a map that approximate the shape of terrain in lieu of actual contours. Form lines do not refer to a true datum and do not necessarily use regular intervals.

Format: [computing] In computing, the structure and organization of digital information.

[Fr]

Fractal: [mathematics] A geometric pattern that repeats itself, at least roughly, at ever smaller scales to produce self-similar, irregular shapes and surfaces that cannot be represented using classical geometry. If a fractal curve of infinite length serves as the boundary of a plane region, the region itself will be finite. Fractals can be used to model complex natural shapes such as clouds and coastlines.

Frame: [ESRI software] In MOLE, the geometric border of a graphic that indicates the affiliation, battle dimension, and status of the war fighting element that the MOLE graphic represents.

[ESRI software] In ArcView 3.x, a rectangular area on a layout used to display view data, legends, tables, charts, pictures, and other map elements such as north arrows and scale bars.

Framework: [computing] The existing ArcObjects components that comprise the ArcGIS system.

Free network adjustment: [ESRI software] In Survey Analyst for field measurements, one of two phases involved when performing a least squares adjustment for a measurement network. The free network adjustment phase examines the overall geometry of the network by processing only the measurements and using the reference points only for position scale and orientation of the network. The emphasis is on testing the quality of the measurements rather than computing the coordinates.

Free representation: [ESRI software] In ArcGIS, the representation of a single feature that has been disconnected from its representation rule to create an independent rule whose structure can be changed, allowing full freedom of display. Geometric effects within the rule can be converted so that their results become static parts of the feature representation.

Freeze: [ESRI software] To fix a column in place in a table for better viewing of the table's contents. A frozen column will stay in place while the other columns scroll normally.

Frequency: [physics] The number of oscillations per unit of time in a wave of energy, or the number of wavelengths that pass a point in a given amount of time.

From-node: Of an arc's two endpoints, the first one digitized. From- and to-nodes give an arc left and right sides and, therefore, direction.

[Ft]

FTP: [non-ESRI software] Acronym for File Transfer Protocol. A protocol that allows the transmission of files between computers over a network.

[Fu]

Full cache: [ESRI software] In ArcGlobe, a layer cache saved on disk that contains complete levels of details for the entire layer.

Function: [analysis geoprocessing] An operation. In GIS, functions include data input, editing, and management; data query, analysis, and visualization; and output operations.

[analysis geoprocessing] Processing operation applied to rasters or mosaic datasets. Can be applied in an order defined by a function chain.

Function chain: [analysis geoprocessing] An ordered list of functions applied to a raster or mosaic dataset that are performed as the data is accessed.

Functional surface: [ESRI software] In 3D Analyst, a surface that stores a single z-value for any given x,y location.

Fuzzy boundary: [uncertainty] A boundary that has a vague or indeterminate location, or that is a gradual transition between two zones.

Fuzzy classification: [uncertainty] Any method for classifying data that allows attributes to apply to objects by membership values, so that an object may be considered a partial member of a class. Class membership is usually defined on a continuous scale from zero to one, where zero is nonmembership and one is full membership. Fuzzy classification may also be applied to geographic objects themselves, so that an object's boundary is treated as a

gradated area rather than an exact line. In GIS, fuzzy classification has been used in the analysis of soil, vegetation, and other phenomena that tend to change gradually in their physical composition and for which attributes are often partly qualitative in nature.

Fuzzy set: In mathematics, a collection of elements that belong together based on specified criteria, so that elements with partial or uncertain degrees of membership may be included in the collection.

Fuzzy tolerance: [ESRI software] The distance within which coordinates of nearby features are adjusted to coincide with each other when topology is being constructed or polygon overlay is performed. Nodes and vertices within the fuzzy tolerance are merged into a single coordinate location. Fuzzy tolerance is a very small distance, usually from 1/1,000,000 to 1/10,000 times the width of the coverage extent, and is generally used to correct inexact intersections.

G

[Ga]

Gantt chart: [business] A project management graph that displays tasks on a schedule, often used to plan and track projects. The Gantt chart was developed by the American mechanical engineer and management consultant Henry Laurence Gantt.

Gauss-Krüger projection: A projected coordinate system that uses the transverse Mercator projection to divide the world into standard zones 6 degrees wide. Used mainly in Europe and Asia, the Gauss-Krⁿger coordinate system is similar to the universal transverse Mercator coordinate system. The Gauss-Krⁿger projection is named for the German mathematician and scientist Karl Friedrich Gauss and the German geodesist and mathematician Johann Heinrich Louis Krⁿger.

Gazetteer: A list of geographic place-names and their coordinates. Entries may include other information as well, such as area, population, or cultural statistics. Atlases often include gazetteers, which are used as indexes to their maps. Well-known digital gazetteers include the U.S. Geological Survey Geographic Names Information System (GNIS) and the Alexandria Digital Library Gazetteer.

[Gb]

GBF/DIME: Acronym for Geographic Base Files/Dual Independent Map Encoding. Vector geographic base files made for the 1970 and 1980 U.S. censuses, containing address ranges, ZIP Codes, and the coordinates of street segments and intersections for most metropolitan areas in the United States. TIGER files replaced DIME files for the 1990 and subsequent censuses.

[Gd]

GDI: [non-ESRI software] Acronym for Graphical Device Interface. A standard for displaying and transmitting text and graphical objects output devices, such as monitors and printers. GDI generally refers to the Windows GDI API.

[Ge]

Generalization: [map design] The abstraction, reduction, and simplification of features for change of scale or resolution. 2 [data editing] The process of reducing the number of points in a line without losing the line's essential shape. 3

[data editing] The process of enlarging and resampling cells in a raster format.

Genetic algorithm: [computing] A search algorithm inspired by genetics and Darwin's theory of natural selection. The algorithm goes through an iterative process of applying genetic operators, such as reproduction, mutation, and crossover, to a collection of data over several stages. At each stage the fitness of the results is evaluated and the best of the results population is retained, until the results present an optimal solution.

Geocentric: [geodesy] Measured from the earth or the earth's center.

[astronomy] Having the earth as a center.

Geocentric coordinate system: [coordinate systems] A three-dimensional, earth-centered reference system in which locations are identified by their x-, y-, and z-values. The x-axis is in the equatorial plane and intersects the prime meridian (usually Greenwich). The y-axis is also in the equatorial plane; it lies at right angles to the x-axis and intersects the 90-degree meridian. The z-axis coincides with the polar axis and is positive toward the north pole. The origin is located at the center of the sphere or spheroid.

Geocentric datum: A horizontal geodetic datum based on an ellipsoid that has its origin at the earth's center of mass. Examples are the World Geodetic System of 1984, the North American Datum of 1983, and the Geodetic Datum of Australia of 1994. The first uses the WGS84 ellipsoid; the latter two use the GRS80 ellipsoid. Geocentric datums are more compatible with satellite positioning systems, such as GPS, than are local datums.

Geocentric latitude: [coordinate systems] The angle between the equatorial plane and a line from a point on the surface to the center of the sphere or spheroid. On a sphere, all lines of latitude are geocentric. Latitude generally refers to geodetic latitude.

Geocentric longitude: [coordinate systems] The angle between the prime meridian and a line drawn from a point on the surface to the center of a sphere or spheroid. For an ellipsoid of revolution (such as the earth), geocentric longitude is the same as geodetic longitude.

Geocode: [geocoding] To assign a street address to a location.

[government] A code representing the location of an object, such as an address, a census tract, a postal code, or x,y coordinates.

Geocoded feature class: [geocoding] A feature class created by batch geocoding.

GeocodeServer: [ESRI software] An ArcGIS Server software component that provides programmatic access to an address locator and performs single and batch address matching. It is designed for use in building Web services and Web applications using ArcGIS Server.

Geocoding: [geocoding] A GIS operation for converting street addresses into spatial data that can be displayed as features on a map, usually by referencing address information from a street segment data layer.

Geocoding engine: [ESRI software] An entity in the geocoding framework that drives the geocoding process.

Geocoding index: [ESRI software] An index on reference data used by an address locator to search for matching records in the reference data. A geocoding index is either a file or a database table containing index attributes used by the address locator.

Geocoding platform: [ESRI software] A conceptual entity of the geocoding framework that combines the interaction of the ArcGIS interface with the input parameters set in the address locator and the processes of the geocoding engine.

Geocoding process: [geocoding] The steps involved in translating an address entry, searching for the address in the reference data embedded in an address locator, and delivering the best candidate or candidates. These steps include parsing the address, standardizing abbreviated values, assigning each address element to a category known as a match key, indexing the needed categories, searching the reference data, assigning a score to each potential candidate, filtering the list of candidates based on the minimum match score, and delivering the best match. The process requires reference files, input address records, address locators, and software.

Geocoding reference data: [ESRI software] Data that a geocoding service uses to determine the geometric representations for locations.

Geocoding rule base: [programming] A collection of files that directs the geocoding engine in how to standardize address data and match it to the related location in the reference data. Each address locator style uses a specific rule base designed for that style.

Geocoding service: [ESRI software] In ArcGIS 8.3 and previous versions, an object that defines the process for translating nonspatial descriptions of places, such as street addresses, into spatial data that can be displayed as features on a map. A geocoding service defines the path to the reference data source and the file of nonspatial data, algorithms for standardizing addresses and matching them to the reference data, and parameters for reading address data, matching address data to the reference data, and creating output. In ArcGIS 9, a geocoding service is called an address locator.

Geocoding style: [ESRI software] A template on which a geocoding service is built. Each template is designed to accommodate a specific format of address and reference data, and geocoding parameters. Geocoding style template files have a .lot file extension.

Geocomputation: [computing] The application of computer technology to spatial problems, including problems of collecting, storing, visualizing, and analyzing spatial data, and of modeling spatial system dynamics.

Geodatabase: [ESRI software] A database or file structure used primarily to store, query, and manipulate spatial data. Geodatabases store geometry, a spatial reference system, attributes, and behavioral rules for data. Various types of geographic datasets can be collected within a geodatabase, including feature classes, attribute tables, raster datasets, network datasets, topologies, and many others. Geodatabases can be stored in IBM DB2, IBM Informix, Oracle, Microsoft Access, Microsoft SQL Server, and PostgreSQL relational database management systems, or in a system of files, such as a file geodatabase.

Geodatabase data model: [ESRI software] The schema for the various geographic datasets and tables in an instance of a geodatabase. The schema defines the GIS objects, rules, and relationships used to add GIS behavior and integrity to the datasets in a collection.

Geodatabase feature dataset: [ESRI software] In a geodatabase, a collection of feature classes stored together so they can participate in topological relationships with one another. All the feature classes in a feature dataset must share the same spatial reference; that is, they must have the same coordinate system and their

features must fall within a common geographic area. Feature classes with different geometry types may be stored in a feature dataset. In ArcGIS, feature classes that participate in a geometric network must be placed in a feature dataset.

Geodatabase replication: [ESRI software] In ArcGIS, a method of distributing data across two or more geodatabases in order to synchronize data changes. An entire geodatabase or a subset of a geodatabase can be replicated. There are three types of geodatabase replication: two-way replication, one-way replication, and check-out replication.

Geodatabases: [ESRI software] A table in an ArcSDE geodatabase that stores geometric shapes for each feature. Feature tables are used in geodatabases that store data as a binary data type, such as SQL Server geodatabases. They are related to the business table of a feature class through the feature ID. In the database, feature table names are prefaced with an f and are stored in the schema of the user who owns the feature class.

GeoDataServer: [ESRI software] In ArcGIS, a coarse-grained object that represents a geodatabase. It allows software users to perform replication operations, data extraction and database query operations on a geodatabase over the WAN using ArcGIS Server. Application developers can also use the GeoDataServer with geodatabase connections made over the LAN.

Geodataset: [ESRI software] Any organized collection of data in a geodatabase with a common theme.

Geodesic: The shortest distance between two points on the surface of a spheroid. Any two points along a meridian form a geodesic.

Geodesy: [geodesy] The science of measuring and representing the shape and size of the earth, and the study of its gravitational and magnetic fields.

Geodetic datum: A datum that is the basis for calculating positions on the earth's surface or heights above or below the earth's surface.

Geodetic latitude: [coordinate systems] The angle that a line drawn perpendicular to the surface through a point on a spheroid makes with the equatorial plane.

Geodetic longitude: [coordinate systems] The angle between the plane of the meridian that passes through a point on the surface of the spheroid and the plane of a prime meridian, usually the Greenwich meridian.

Geodetic survey: A survey that takes the shape and size of the earth into account, used to precisely locate horizontal and vertical positions suitable for controlling other surveys.

GeoEnrichment: [empty] The process of adding demographic and lifestyle data to your maps.

Geofence: [map display] A designated boundary around a geometry that, if crossed, initiates a notification. Geofences are often used in real-time route Web applications.

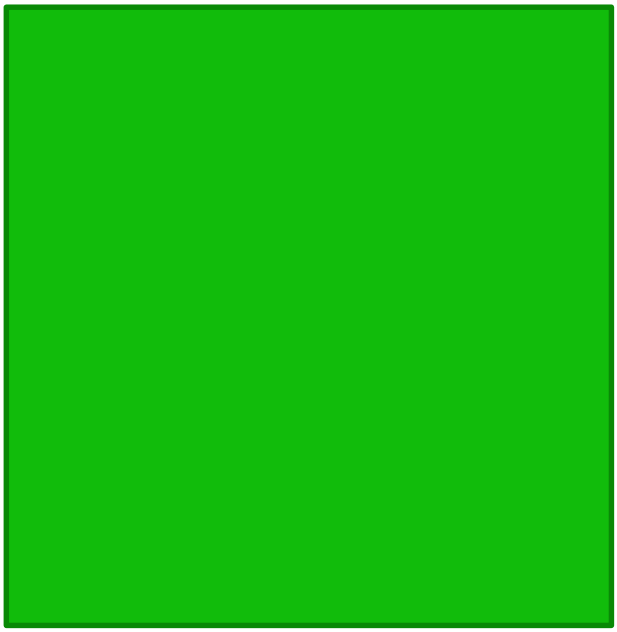
Geographic: [geography] Of or relating to the earth.

Geographic coordinate system: A reference system that uses latitude and longitude to define the locations of points on the surface of a sphere or spheroid. A geographic coordinate system definition includes a datum, prime meridian, and angular unit.

Geographic coordinates: A measurement of a location on the earth's surface expressed in degrees of latitude and longitude.

Geographic data: Information describing the location and attributes of things, including their shapes and representation. Geographic data is the composite of spatial data and attribute data.

Geographic primitive: [graphics map display] A graphic representation of a location; for example, a point to represent the location of a smokestack, or a polygon to represent the location of a toxic plume.



Geographic transformation: [coordinate systems] A systematic conversion of the latitude-longitude values for a set of points from one geographic coordinate system to equivalent values in another geographic coordinate system. Depending on the geographic coordinate systems involved, the transformation can be accomplished in various ways. Typically, equations are used to model the position and orientation of the "from" and "to" geographic coordinate systems in three-dimensional coordinate space; the transformation parameters may include translation, rotation, and scaling. Other methods, including one used in transformations between NAD 1927 and NAD 1983, use files in which the differences between the two geographic coordinate systems are given for a set of coordinates; the values of other points are interpolated from these.

Geography: [geography] The study of the earth's surface, encompassing the description and distribution of the various physical, biological, economic, and cultural features found on the earth and the interaction between those features.

[geography] The arrangement of the geographic features of an area.

Geography level: [government] A division of statistical geographic data, such as country, province, postal code, tract, or block group.

Geoid: [geodesy] A hypothetical surface representing the form the earth's oceans would take if there were no land and the water were free to respond to the earth's gravitational and centrifugal forces. The resulting geoid is irregular and varies from a perfect sphere by as much as 75 meters above and 100 meters below its surface.

Geoid height: [geodesy] The height of the geoid above the ellipsoid.

Geoid-ellipsoid separation: [geodesy] The distance from the surface of an ellipsoid to the surface of the geoid, measured along a line perpendicular to the ellipsoid. The separation is positive if the geoid lies above the ellipsoid, negative if it lies below.

Geolocation: [geolocating] The process of creating geographic features from tabular data by matching the tabular data to a spatial location. An example of geolocation is creating point features from a table of x,y coordinates.

Geometric coincidence: [ESRI software] The distance within which features in a geometric network are deemed to be coincident and, therefore, connected.

Geometric correction: [remote sensing] The correction of errors in remotely sensed data, such as those caused by satellites or aircraft not staying at a constant altitude or by sensors deviating from the primary focus plane. Images are often compared to ground control points on accurate basemaps and resampled, so that exact locations and appropriate pixel values can be calculated.

Geometric effect: [ESRI software] In ArcGIS, a dynamic process that can be applied within a representation rule to dynamically alter the geometry of features before they are drawn. Geometric effects can act on a single symbol layer, or on all symbol layers in a representation rule, and can be chained together to create cumulative effects.

Geometric element: [Euclidean geometry] One of the most basic parts or components of a geometric figure: that is, a surface, shape, point, line, angle, or solid.

Geometric network: [ESRI software] Edge and junction features that represent a linear network, such as a utility or hydrologic system, in which the connectivity of features is based on their geometric coincidence. A geometric network does not contain information about the connectivity of features; this information is stored within a logical network. Geometric networks are typically used to model directed flow systems.

Geometric transformation: [coordinate systems] The process of rectifying a raster dataset to map coordinates or converting a raster dataset from one coordinate system to another.

Geometry: [Euclidean geometry] The measures and properties of points, lines, and surfaces. In a GIS, geometry is used to represent the spatial component of geographic features.

[mathematics] The branch of mathematics concerning points, lines, and polygons, and their properties and relationships.

GeoMobility Server: [programming] An OpenLS platform for wireless Web services defined by the Open Geospatial Consortium.

Geomorphology: The study of the nature and origin of landforms, including relationships to underlying structures and processes of formation.

Geoprocessing: [analysis geoprocessing] A GIS operation used to manipulate GIS data. 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 include geographic feature overlay, feature selection and analysis, topology processing, raster processing, and data conversion. Geoprocessing allows for definition, management, and analysis of information used to form decisions.

Geoprocessing server: [ESRI software] A computer in a network that is used to handle geoprocessing tasks. Geoprocessing servers may use UNIX or Windows platforms, and include a utility to schedule remote processing.

Geoprocessing settings: [ESRI software] Any settings that affect working with or running tools. Geoprocessing settings include the state of the ArcToolbox window, the state of the Environment Settings dialog box, and variables that have been created at the command line. In ArcMap, geoprocessing settings are saved with a

map document. In ArcCatalog, geoprocessing settings are persisted with the application.

Geoprocessing tool: [ESRI software] An ArcGIS tool that can create or modify spatial data, including analysis functions (overlay, buffer, slope), data management functions (add field, copy, rename), or data conversion functions.

GEOPUB30.DLL: [ESRI software] An ArcView Geocoding Windows dynamic link library (DLL) for use on ArcView 3.x. It exposes additional geocoding requests by making them public (rather than private), Avenue scripts-callable requests.

Georectification: [data editing] The digital alignment of a satellite or aerial image with a map of the same area. In georectification, a number of corresponding control points, such as street intersections, are marked on both the image and the map. These locations become reference points in the subsequent processing of the image.

Georeferencing: [coordinate systems] Aligning geographic data to a known coordinate system so it can be viewed, queried, and analyzed with other geographic data. Georeferencing may involve shifting, rotating, scaling, skewing, and in some cases warping, rubber sheeting, or orthorectifying the data.

Georelational data model: [data models] A geographic data model that represents geographic features as an interrelated set of spatial and attribute data. The georelational model is the fundamental data model used in coverages.

Georelational data model: [data models] A geographic data model that represents geographic features as an interrelated set of spatial and attribute data. The georelational model is the fundamental data model used in coverages.

GeoRSS: [Internet] Acronym for Geographically Encoded Objects for RSS feeds. Metadata for RSS documents that describes the location of Web content.

Geospatial technology: [IS technology] A set of technological approaches, such as GIS, photogrammetry, and remote sensing, for acquiring and manipulating geographic data.

Geospecific model: [symbology] A model used to represent a real-world feature. For example, a geospecific model for the White House would look exactly like the White House and be used to represent the White House on a map of Washington, D.C.

Geostationary: [astronomy] Positioned in an orbit above the earth's equator with an angular velocity the same as that of the earth and an inclination and eccentricity approaching zero. A geostationary satellite will orbit as fast as the earth rotates on its axis, so that it remains effectively stationary above a point on the equator. A geostationary satellite is geosynchronous, but geosynchronous satellites are not necessarily geostationary.

Geostatistical layer file: [ESRI software] A layer file created by the ArcGIS Geostatistical Analyst extension. It can be exported to ESRI GRID for further geoprocessing.

Geostatistics: [statistics] A class of statistics used to analyze and predict the values associated with spatial or spatio-temporal phenomena. Geostatistics provides a means of exploring spatial data and generating continuous surfaces from selected sampled data points.

Geosurvey engine: [ESRI software] The software module in Survey Analyst – Cadastral Editor that

manages the interaction between cadastral fabric jobs and the cadastral fabric.

Geosynchronous: [astronomy] Positioned in an orbit moving west to east with an orbital period equal to the earth's rotational period. If a satellite is in a geosynchronous orbit that is circular and lies in the equatorial plane, it is geostationary because it remains over one point on the equator. If not, the satellite appears to make a figure eight once a day between the latitudes that correspond to its angle of inclination over the equator.

Geotypical model: [symbology] A symbolic representation for a class of map features, such as government buildings. For example, on a map of the United States, a white building with a dome on top could be used as a geotypical model for all state capitols.

[Gi]

GIF: Acronym for Graphic Interchange Format. A low-resolution file format for image files, commonly used on the Internet. It is well-suited for images with sharp edges and reduced numbers of colors.

Giomgr: [ESRI software] In ArcSDE, a process that listens for client requests to connect to the database. When it receives such a request, it creates a connection by launching a gsrvr process dedicated to that client. The giomgr process is not used if the client makes a direct connection to the ArcSDE geodatabase.

GIS coordinate: [ESRI software] In Survey Analyst for field measurements, the single coordinate for a survey point that is the best overall representation for that survey point's location, defined by one or more projects. Feature geometry is always linked to the GIS coordinate.

GIS Data ReViewer: [ESRI software] An application used to manage data quality control, visually check data and run batch checks for attribute and geometry defects. Defects are recorded in an error table that can be used to resolve errors and verify corrections.

GIS server: [ESRI software] The components of ArcGIS Server that host and run services. A GIS server consists of a server object manager and one or more server object containers.

GIScience: [social context of GIS] Abbreviation for geographic information science. The field of research that studies the theory and concepts that underpin GIS. It seeks to establish a theoretical basis for the technology and use of GIS, study how concepts from cognitive science and information science might apply to GIS, and investigate how GIS interacts with society.

[Gl]

Global analysis: [data analysis] The computation of an output raster where the output value at each cell location may be a function of all the cells in the input raster.

Global Check method: [ESRI software] In Survey Analyst for field measurements, one of two ways to apply the Coordinate Out of Tolerance command. The Global Check method searches for coordinates out of tolerance within the whole survey dataset.

Global mode: [ESRI software] A navigation mode in ArcGlobe during which the camera target is always at the center of the globe.

Global polynomial interpolation: [spatial statistics use for geostatistics] In ArcGIS Geostatistical Analyst, a deterministic interpolation method. The interpolated surface is not required to conform to the sample data

points, and the method does not have standard errors associated with it.

GlobalID: [ESRI software] A field of type UUID (Universal Unique Identifier) in which values are automatically assigned by the geodatabase when a row is created. The GlobalID field is necessary for maintaining object uniqueness across replicas. All feature classes and tables participating in one-way or two-way replication must contain the GlobalID field. This field is not editable and is automatically populated when it is added for existing data.

Globe: [cartography] A sphere on which a map of the earth or a celestial body is represented. Since the earth's natural shape is similar to a sphere, globes distort the earth's features far less than flat maps.

[ESRI software] In ArcGlobe, the sphere in a globe view on which data is depicted.

Globe document: [ESRI software] A disk-based representation of the globe view or views contained in ArcGlobe. Globe documents have a .3dd extension.

Globe properties: [ESRI software] In ArcGlobe, properties that can be set for a globe document. These include vertical exaggeration, background color, or sun position.

Globe terrain: [ESRI software] In ArcGlobe, a globe surface with base heights supplied from an elevation layer.

Globe view: [ESRI software] In ArcGlobe, the display window in which a globe can be viewed.

GLONASS: [GPS] Acronym for Global Navigation Satellite System. The Russian counterpart of the United States Global Positioning System.

Glyph: [symbology] The geometric shape of a character in a font.

[Gm]

GML: [data transfer] Acronym for Geography Markup Language. An OpenGIS Implementation Specification designed to store and transport geographic information. GML is a profile (encoding) of XML.

[Gn]

Gnomonic projection: [map projections] A planar projection, tangent to the earth at one point, projected from the center of the globe. All great circles appear as straight lines on this projection, so that the shortest distance between two points is a straight line. The gnomonic projection is useful in navigation. The gnomonic projection was used by Thales of Miletus, an ancient Greek astronomer and philosopher, to chart the heavens. It is possibly the oldest map projection.

[Go]

Goodness of fit: In modeling, the degree to which a model predicts observed data; a measure of predictive power.

Gore: A map, shaped like the area between a pair of parentheses, of an area that lies between two lines of longitude. A gore can be fitted to the surface of a globe with little distortion.

[Gp]

GPS: [GPS] Acronym for Global Positioning System. A system of radio-emitting and -receiving satellites used for determining positions on the earth. The orbiting satellites transmit signals that allow a GPS receiver anywhere on earth to calculate its own location through trilateration. Developed and operated

by the U.S. Department of Defense, the system is used in navigation, mapping, surveying, and other applications in which precise positioning is necessary.

[Gr]

Gradian: [Euclidean geometry] A unit of angular measurement in which the angle of a full circle is 400 gradians and a right angle is 100 gradians. The common abbreviation for gradian is grad.

Gradient: [geodesy] The ratio between vertical distance (rise) and horizontal distance (run), often expressed as a percentage. A 10-percent gradient rises 10 feet for every 100 feet of horizontal distance.

[geodesy] The inclination of a surface in a given direction.

[physics] The rate at which a quantity such as temperature or pressure changes in value.

Gradient of gravity: [geodesy] The direction of the maximum increase in gravity in a horizontal plane.

Graduated color map: A map on which a range of colors indicates 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.

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.

Grain tolerance: [data capture] In ArcInfo Workstation, a parameter controlling the number of vertices and the distance between them on lines that represent curves. The smaller the grain tolerance, the closer the vertices can be. Unlike densify tolerance, grain tolerance can affect the shape of curves.

Granularity: [data quality] The coarseness or resolution of data. Granularity describes the clarity and detail of data during its capture and visualization.

[photogrammetry] The objective measure of the random groupings of silver halide grains into denser and less dense areas in a photographic image.

Graphic: [graphics computing] An image produced by and stored in a computer as data for display.

Graphic component: [ESRI software] In MOLE, the most elementary part of a graphic. Icon, frame, and fill are examples of components that make up MOLE graphics.

Graphic text: [ESRI software] Text added in ArcMap layout view that exists in page space and is stored in a map document. Graphic text does not move if the extent or scale is changed.

Graticule: [cartography] A network of longitude and latitude lines on a map or chart that relates points on a map to their true locations on the earth.

[astronomy] A glass plate or cell with a grid or cross wires on it that rests in the focal plane of the eyepiece of a telescope, used to locate and measure celestial objects.

Graticule alignment of labels: [symbology] A label positioning method in which labels are oriented along the graticule of the data frame. This is useful for maps of large areas, for cartographic or stylistic reasons.

Gravimeter: [geodesy] A device used to measure small variations in the earth's gravitational field between two or more points.

Gravimetric geodesy: [geodesy] The science of deducing the size and shape of the earth by measuring its gravitational field.

Gravity model: [geography] A model that assumes that the influence of phenomena or populations on each other varies inversely with the distance between them.

[business] The idea that the probability of a given consumer visiting and purchasing at a given site is some function of the distance to that site, the site's attractiveness, and the distance and attractiveness of competing sites.

Gravity model: [geography] A model that assumes that the influence of phenomena or populations on each other varies inversely with the distance between them.

[business] The idea that the probability of a given consumer visiting and purchasing at a given site is some function of the distance to that site, the site's attractiveness, and the distance and attractiveness of competing sites.

Greenwich mean time: [astronomy] The time at the prime meridian, which runs through the Royal Observatory in Greenwich, England. From 1884 to 1928, Greenwich mean time was the official name (and is still the popular name) for universal time. It sometimes also refers to coordinated universal time.

Greenwich meridian: The meridian adopted by international agreement in 1884 as the prime meridian, the 0-degree meridian from which all other longitudes are calculated. The Greenwich prime meridian runs through the Royal Observatory in Greenwich, England.

Grid: [cartography] In cartography, any network of parallel and perpendicular lines superimposed on a map and used for reference. These grids are usually referred to by the map projection or coordinate system they represent, such as universal transverse Mercator grid. [data models] See raster.

Grid meridian: [ESRI software] In Survey Analyst for field measurements, any meridian that is parallel to the central meridian, used when computing points in planar rectangular coordinate systems of limited extent.

Grid north: [cartography] The direction north along the north-south grid lines of a map projection.

Grid stack: [ESRI software] A mechanism for storing multivariate raster data in ESRI software, consisting of an ordered set of spatially overlapping grids (referred to as layers) referenced by an INFO file or geodatabase. A stack is treated as a single entity for multivariate analysis. Cluster analysis, classification, and principal component analysis all work on the layers in a stack.

Ground control: [geodesy] A system of points with known positions, elevations, or both, used as fixed references in georeferencing map features, aerial photographs, or remotely sensed images.

Ground receiving station: [remote sensing] Communications equipment for receiving and transmitting signals to and from satellites such as Landsat.

Ground truth: The accuracy of remotely sensed or mathematically calculated data based on data actually measured in the field.

Group: [Internet] In ArcGIS Online, a way to collaborate with other ArcGIS users and to exchange content related to a specific project or common activity.

Group layer: [ESRI software] A group of several layers that appear and act as a single layer. Group layers make it easier to organize a map, assign advanced drawing order options, and share layers for use in other maps.

GRS80: [geodesy] Acronym for Geodetic Reference System of 1980. The standard measurements of the earth's shape and size adopted by the International Union of Geodesy and Geophysics in 1979.

[Gs]

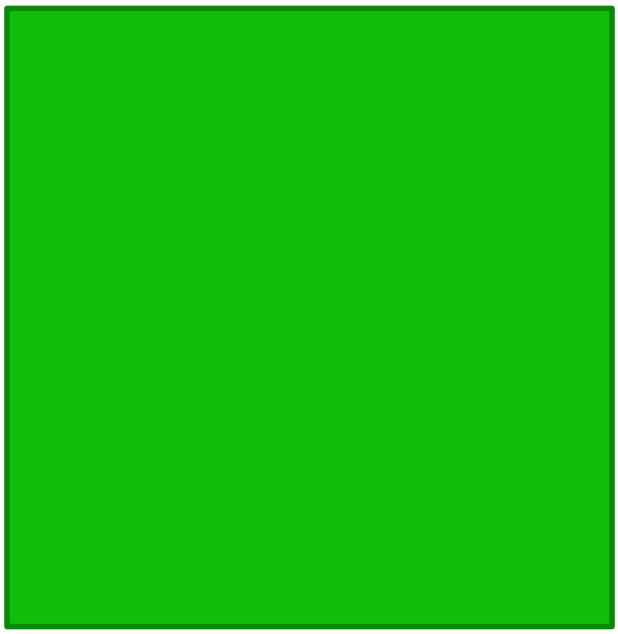
GSDI: [data sharing] Acronym for global spatial data infrastructure. A global framework of technologies, policies, standards, and human resources necessary to acquire, process, store, distribute, and improve the use of geospatial data across multiple countries and organizations.

Gsrvr: [ESRI software] A process that connects to a relational database management system (RDBMS), using the RDBMS server libraries, and becomes the dedicated link for a GIS client to the database. A gsrvr process is only used in three-tiered geodatabase connections. The GIS client sends instructional commands to the gsrvr process on how to build appropriate SQL statements to perform the requested spatial action (pan, zoom, and so on).

[Gu]

GUI: [computing] Acronym for graphical user interface. A software display of program options that allows a user to 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 in which control is accomplished via the exchange of strings of tex.

GUID: [ESRI software] Acronym for globally unique identifier. A string used to uniquely identify an interface, class, type library, component category, or record.



H

[Ha]

Hachure: A short line on a map that indicates the direction and steepness of a slope. Hachures that represent steep slopes are short and close together; hachures that represent gentle slopes are longer, lighter, and farther apart. Contours, shading, and hypsometric tints have largely replaced hachuring on modern maps.

Hachured contour: [symbology] On a topographic map, concentric contour lines drawn with hachures to indicate a closed depression or basin. Concentric contour lines drawn without hachure marks indicate a hill.

Halftone image: [printing] A continuous tone image photographed through a fine screen that converts it into uniformly spaced dots of varying size while maintaining the gradations of highlight and shadow. The size of the dots varies in proportion to the intensity of the light passing through them.

Hamiltonian circuit: A path through a network that visits each junction in the network only once and then returns to its point of origin. Hamiltonian circuits are named after the Irish mathematician, physicist, and astronomer William Rowan Hamilton.

Hamiltonian path: A path through a network that visits each junction in the network only once without returning to its point of origin. Hamiltonian paths are named after the Irish mathematician, physicist, and astronomer William Rowan Hamilton.

Hardware key: [hardware] A small hardware device that provides the unique number used in the generation of a license file. The key is plugged into either the parallel or USB port on the License Manager Server. UNIX users of ArcGIS software do not need a hardware key. Hardware keys are also called dongles.

HARN: [geodesy] Acronym for High Accuracy Reference Network. A regional or statewide resurvey and readjustment of NAD 1983 control points using GPS techniques. The resurvey date is often included as part of the datum name: NAD 1983 (1991) or NAD91.

Hatch class: [linear referencing] In linear referencing, a group or category of hatch definitions.

Hatch definition: [linear referencing] In linear referencing, a specification for where hatch marks are drawn on a line feature. Each hatch definition has its own set of properties that include the multiple of the hatch interval at which the hatches in the hatch definition will be placed, the line or marker symbol of the hatches, and whether the hatches will be labeled. The use of multiple hatch definitions allows for the design of complex hatching schemes.

Hatch style: [linear referencing] In linear referencing, an organized collection of symbols and settings for the hatch definitions that make up a hatch class. Hatch styles are stored in a style file (.style) and created by the user to maintain standards for displaying hatches on multiple maps with multiple data sources.

Hatches: [linear referencing] In linear referencing, a series of vertical line or marker symbols displayed on top of features at an interval specified in route measure units.

Hatching: [linear referencing] In linear referencing, a type of labeling that posts and labels hatches or symbols at a regular interval along measured line features.

[Hd]

HDOP: [geodesy] Acronym for horizontal dilution of precision. A measure of the geometric quality of a GPS satellite configuration in the sky. HDOP is a factor in determining the relative accuracy of a horizontal position. The smaller the DOP number, the better the geometry.

[He]

Heading: [navigation] The direction of a moving object, expressed as an angle from a known direction, usually north.

Heads-up digitizing: [data capture] Manual digitization by tracing a mouse over features

displayed on a computer monitor, used as a method of vectorizing raster data.

Heap: [computing] In computer programming, a variation on the binary tree data structure in which each node's value is greater than the value of its leaf nodes. Sorting data in a heap allows an element to be located more quickly than it could be found in an ordinary list.

Hectare: [standards] A metric areal unit of measure equal to 10,000 square meters. One hectare is equal to 100 ares or 2.47 acres.

Height: [Euclidean geometry] The vertical distance between two points, or above a specified datum.

Helmert transformation: A geometric transformation that scales, rotates, or translates images or coordinates between any two Euclidean spaces. It is commonly used in GIS to transform maps between coordinate systems. In a Helmert transformation, parallel lines remain parallel. The midpoint of a line segment remains a midpoint, and all points on a straight line remain on a straight line. The Helmert transformation is named for the German mathematician and geodesist Friedrich Robert Helmert (1843-1917).

Help Node: [ESRI software] In ArcGIS 8.3 and previous versions, a branch in the ArcToolbox tree providing overview help for ArcToolbox toolsets.

Hemisphere: [astronomy] Half of a celestial body, such as the earth.

[Euclidean geometry] Half of a sphere.

Heuristic: [computing] In computer science, an algorithm that incorporates a shortcut or simplification for solving a programming problem, such as searching. While a heuristic may run faster than a more rigorous algorithm, there is no guarantee that it will find the best solution.

[mathematics] In graph theory, a function used to determine the lowest cost or shortest path between two given nodes in a tree.

Hexadecimal: [mathematics] A number system using base 16 notation, usually comprised of the digits 09 and the letters AF or af.

[Hi]

Hierarchical database: [computing] A database that stores related information in a tree-like structure, where records can be traced to parent records, which in turn can be traced to a root record.

Hierarchy: [network analysis] A type of network attribute for a network element in a network dataset. Hierarchy can be used during network analysis to assign priority to a network element. For example, in a transportation network dataset, a "road class" hierarchy can be assigned to edges to favor major roads instead of local streets.

High-level language: [programming] A programming language that uses keywords and statements that are similar to expressions in human language or mathematics and is, therefore, easier for people to comprehend and use. A high-level language is named for the high level of abstraction it affords developers over low-level processor functions such as memory access and register storage, meaning such operations do not demand the developer's attention.

High-pass filter: In digital image processing, a spatial filter that blocks low-frequency (long-wave) radiation, resulting in a sharpened image.

Hillshading: [map design] Shadows drawn on a map to simulate the effect of the sun's rays over the varied terrain of the land.

[map design] The hypothetical illumination of a surface according to a specified azimuth and altitude for the sun. Hillshading creates a three-dimensional effect that provides a sense of visual relief for cartography, and a relative measure of incident light for analysis.

Histogram: [statistics] 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.

Histogram equalization: [digital image processing] The redistribution of pixel values in an image so that each range contains approximately the same number of pixels. A histogram showing this distribution of values would be nearly flat.

Historic parcel: [ESRI software] In Survey Analyst – Cadastral Editor, a parcel that has been replaced with a new parcel by subdivision, merge, or other means due to a change in the survey record.

Historical marker: [ESRI software] In ArcMap, a user-created reference to a time and date stamp. Historical markers can be used to easily connect to a historical version for a specific date and time.

Historical version: [ESRI software] In ArcMap, a version that a user connects to by using a historical marker or indicating a particular date and time. Once connected, the version provides a read-only view of the geodatabase for the chosen time.

History model: [ESRI software] A model created, dated, and saved when the application is closed to document the tools and parameter values used for each session. The history model is contained within the history toolbox and can be viewed when the application is reopened.

[Hk]

HKCR: [non-ESRI software] HKEY_CLASSES_ROOT registry hive. A Windows registry root key that points to the HKEY_LOCAL_MACHINE\Software\Classes registry key. It displays essential information about OLE and association mappings to support drag-and-drop operations, Windows shortcuts, and core aspects of the Windows user interface.

[Ho]

Hole: [data quality] A small gap in a raster line feature, usually considered to be an error caused by the poor quality of a source document or by the scanning process.

Honor: [network analysis] In network datasets, a type of junction connectivity policy in which junctions connect to other junctions based on the edge connectivity policy set by the user; junctions "honor" the existing edge connectivity policy.

Horizon: [navigation] The apparent or visible junction of land and sky.

[astronomy] The horizontal plane tangent to the earth's surface and perpendicular to the line through an observer's position and the zenith of that position. The apparent or visible horizon approximates the true horizon only when the point of vision is very close to sea level.

[astronomy] The great circle in which an observer's horizon meets the celestial sphere.

[map projections] The edge of a map projection.

Horizon circle: The circle containing all points equidistant from the center of an azimuthal projection.

Horizontal angle: [navigation] The angle formed by the intersection of two lines in a horizontal plane.

Horizontal control: A network of known horizontal geographic positions, referenced to geographic parallels and meridians or to other lines of orientation such as plane coordinate axes.

Horizontal geodetic datum: [geodesy] A geodetic datum for any extensive measurement system of positions, usually expressed as latitude-longitude coordinates, on the earth's surface. A horizontal geodetic datum may be local or geocentric. If it is local, it specifies the shape and size of an ellipsoid representing the earth, the location of an origin point on the ellipsoid surface, and the orientation of x- and y-axes relative to the ellipsoid. If it is geocentric, it specifies the shape and size of an ellipsoid, the location of an origin point at the intersection of x-,y-, and z-axes at the center of the ellipsoid, and the orientation of the x-,y-, and z-axes relative to the ellipsoid. Examples of local horizontal geodetic datums include the North American Datum of 1927, the European Datum of 1950, and the Indian datum of 1960; examples of geocentric horizontal geodetic datums include the North American Datum of 1983 and the World Geodetic System of 1984.

Host: [computing] In a computer network, the computer that contains data being accessed by other computers.

[computing] A computer connected to a TCP/IP network such as the Internet. Each host has a unique IP address.

[ESRI software] In ArcIMS, the combination of the ArcIMS user interface (Author, Designer, and Administrator, and Service Administrator), the Application Server Connectors, and the ArcIMS Application Server.

Hot link: [ESRI software] 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 on screen.

[Hr]

HRESULT: [non-ESRI software] A 32-bit integer returned from any member of a COM interface indicating success or failure, often written in hexadecimal notation. An HRESULT can also give information about the error that occurred when calling a member of a COM interface. Visual Basic translates HRESULTS into errors; Visual C++ developers work directly with HRESULT values.

[Hs]

HSV: [graphics map display] A color model that uses hue, saturation, and value. Hue specifies the perceived color, such as red or green. Saturation specifies the intensity, or how vivid the color appears. Value specifies the brightness, or white intensity, with higher values being perceived as lighter.

[Ht]

HTML: [Internet] Acronym for Hypertext Markup Language. A markup language used to create Web pages for publication on the Internet. HTML is a system of tags that define the function of text, graphics, sound, and video within a document, and is now an Internet standard maintained by the World Wide Web Consortium.

HTML document: [Internet] A computer file formatted with HTML tags so that it may be viewed in a Web browser and published on the World Wide Web. An HTML document may incorporate text, images, sound, video, and other media components. Characteristically, it also has embedded references, called hypertext links, to other HTML documents. These links enable a person viewing a document in a Web browser to open other documents which may be stored on other computers anywhere in the world by clicking on the link using a mouse.

HTML viewer: [ESRI software] An ArcIMS viewer that uses a single ArcMap image or standard image service. The HTML viewer does not require a Java plug-in.

HTTP: [Internet] Acronym for Hypertext Transfer Protocol. The protocol maintained by the World Wide Web Consortium for communicating between servers and clients to exchange HTML documents across the Internet.

HTTPS: [Internet] Acronym for Hypertext Transfer Protocol (Secure). A variant of HTTP enhanced by a security mechanism. It allows transactions such as e-commerce and data sharing to take place on the World Wide Web in a protected way.

[Hu]

Hub: [network analysis] A central node in a network for routing goods to their destinations.

Hue: The dominant wavelength of a color, by which it can be distinguished as red, green, yellow, blue, and so forth.

Human geography: [geography] The field of geography concerning a range of social, cultural, and political aspects of human life as related to their distribution through physical space.

[Hy]

Hydrographic datum: [surveying] A plane of reference for depths, depth contours, and elevations of foreshore and offshore features.

Hydrographic survey: [geodesy] A survey of a water body, particularly of its currents, depth, submarine relief, and adjacent land.

Hydrography: [geodesy] The measurement and description of water features and their related land areas for the purposes of safe marine navigation.

Hydrologic cycle: [geography] The circulation of water from the earth through the atmosphere and back again. Its major stages are evaporation, condensation, precipitation, run-off, transpiration, infiltration, and percolation.

Hydrology: The study of water, its behavior, and its movements across and below the surface of the earth, and through the atmosphere.

Hyperlink: A reference (link) from one point in an electronic document to another document or another location in the same document (the target). Activating the link, usually by clicking it with the mouse, causes the browser to display the target of the link.

Hypsography: [cartography] The study and representation of elevation and the earth's topography.

Hypsometric curve: [cartography] A curve showing the relationship of area to elevation for specified terrain. A hypsometric curve is plotted on a graph on which the x-axis represents surface area and the y-axis represents elevation above or below a datum (normally sea level). The curve shows how much area lies above and below marked elevation intervals.

Hypsometric map: [cartography] A map showing relief, whether by contours, hachures, shading, or tinting.

Hypsometric tinting: [map design] Relief or depth depicted by a gradation of colors, usually between contour lines. Each color represents a different range of elevation.

Hypsometry: [geodesy] The science that determines the spatial distribution of elevations above an established datum, usually sea level.

[geodesy] The determination of terrain relief, by any method.

H

[Ic]

ICAO: [navigation] Acronym for International Civil Aviation Organization. A member organization that represents the worldwide body of nations for standardizing flight rules, regulations, and requirements.

Icon: [ESRI software] In MOLE, the innermost graphic component of a graphic. Icons represent the Function ID position of a Symbol ID code.

[Id]

ID: [empty] An ID assists with the design and flow of the course, helping the author with the organization of the content, determining the best way to present a particular concept, and identifying ways to engage the student. They also evaluate learning objectives (and, if necessary, helps craft them) and help determine how best to ensure that learners achieve those objectives.

IDD: [programming] Acronym for interface identifier. A string that provides the unique name of an interface. An IID is a type of globally unique identifier (GUID).

IDE: [programming] Acronym for integrated development environment. A software development tool for creating applications, such as desktop and Web applications. IDEs blend user interface design and layout tools with coding and debugging tools.

Identifier: [computing] A unique character string or numeric value associated with a particular object.

Identify: [ESRI software] In ArcGIS, a tool that, when applied to a feature (by clicking it), opens a window showing that feature's attributes.

Identity: [analysis geoprocessing] In geoprocessing, a topological overlay that computes the geometric intersection of two datasets. The output dataset preserves all the features of the first dataset plus those portions of the second (polygon) dataset that overlap the first. For example, a road passing through two counties would be split into two arc features, each with the attributes of the road and the county it passes through.

Identity link: [data editing] An anchor that prevents the movement of features during rubber sheeting.

IDispatch: [non-ESRI software] A generic COM interface that has methods allowing clients to ask which members are supported. Classes that implement IDispatch can be used for late binding and DispID binding, which is a form of early binding.

IDL: [programming] Acronym for Interface Definition Language. A language used to define COM interfaces. The Microsoft implementation

of IDL may also be referred to as MIDL or Microsoft IDL.

[If]

IFSAR: [remote sensing] Acronym for interferometric synthetic aperture radar. A dual-antenna radar sensor mounted on an airborne or space-borne platform that collects a remotely sensed radar image, called an interferogram. There is a measured energy shift between the signals received by each antenna, and this interference can be colorized to measure elevation or changes in the topography on the earth's surface.

[Il]

Illumination: [cartography] The light incident on a surface or object, either natural or artificial, as determined by the surface's slope and aspect and by the sun's azimuth and altitude.

[Im]

Image: [data capture] A 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.

[ESRI software] In ArcGIS, a raster dataset.

Image coordinate: [data structures] An x,y coordinate pair specifying the location of a pixel, or cell, in terms of its row and column position. The x-coordinate gives the column number (commonly starting from 0 at the left edge of the data), and the y-coordinate gives the row number (commonly starting from 0 at the top of the data).

Image data: [data capture] Data produced by scanning a surface with an optical or electronic device. Common examples include scanned documents, remotely sensed data (for example, satellite images), and aerial photographs. An image is stored as a raster dataset of binary or integer values that represent the intensity of reflected light, heat, or other range of values on the electromagnetic spectrum.

Image division: A digital image processing technique for increasing the contrast between features in an image by dividing the pixel values in the image by the values of corresponding pixels in a second image. Image division is normally used to identify concentrations of vegetation.

Image scale: [data capture] The ratio between a distance in an image and the actual distance on the ground, calculated as focal length divided by the flying height above mean ground elevation. Image scale can vary in a single image from point to point due to surface relief and the tilt of the camera lens.

Image server: [ESRI software] In ArcGIS Server, an extension.

[ESRI software] In ArcIMS, a public ArcIMS virtual server for image services.

Image service: [ESRI software] In ArcIMS, a service that uses the spatial server image rendering capabilities. When a request is received, a map is generated on the server, and the response is sent back as a JPG, PNG, or GIF image. A new map image is generated each time a client requests new information.

[ESRI software] In ArcGIS Image Server, a rendered image that users load from the server. The image service appears to the user as a virtual image. Some properties of a service may be defined by the client application.

[ESRI software] In ArcGIS Server, a type of Web service that is generated from image data.

Image service definition: [ESRI software] In ArcGIS Image Server, a workspace created using the Image Service Definition Editor toolbar that defines the key properties of a service, including name and default spatial reference system. The image service definition workspace has a .ISDef extension.

Image service reference file: [ESRI software] In ArcGIS Image Server, a file that stores properties for reestablishing a connection to a service and setting up user-defined image service properties. Image service reference files have a .ISRef extension.

Image space: [data structures] The x,y coordinate space defined by the number of columns and rows in a raster dataset. The origin of image space is commonly the center of the top left pixel of the data and is labeled (0,0). The x-axis corresponds to the number of columns in the raster, and the y-axis to the number of rows. For raster data to be used in GIS software, image space must be transformed to a real-world coordinate system through georeferencing.

Impedance: [network analysis] A measure of the amount of resistance, or cost, required to traverse a path in a network, or to move from one element in the network to another. Resistance may be a measure of travel distance, time, speed of travel multiplied by distance, and so on. Higher impedance values indicate more resistance to movement, and a value of zero indicates no resistance. An optimum path in a network is the path of lowest impedance, also called the least-cost path.

Impedance model: [ESRI software] In ArcInfo, a routing model that determines the best route by finding the path of least resistance.

Impersonation: [Internet] A process by which a Web application assumes the identity of a particular user and thus gains all the privileges to which that user is entitled.

Implement: [programming] In programming an interface, to provide code for each of the methods of an interface (the interface is defined separately).

Import: [data conversion] To bring data from one computer system or application into another. Importing often involves some form of data conversion.

[In]

in-process: [computing] Within the process space of a client application, a class contained in a DLL is in-process, as objects are loaded into the process space of the client EXE. A component contained in a separate EXE is out-of-process.

Inbound interface: [programming] An interface implemented by a class, on which a client can call members.

Incident: [network analysis] In ArcGIS Network Analyst, a network location used in closest facility analysis. Car accidents, crime scenes, and fires are examples of incidents.

Incident energy: [physics] Electromagnetic radiation that strikes a surface.

INCITS: [standards] Acronym for International Committee for Information Technology Standards. An ANSI-accredited forum that creates and maintains information and communications technology standards through the participation and consensus of its industry members.

Independent variable: [statistics] One or a set of variables used to model or predict the dependent variable. For example, a prediction of annual purchases for a proposed store (the dependent variable) might include independent variables representing the number of potential customers, distance to competition, store visibility, and local spending patterns. In the regression equation, independent variables appear on the right side of the equal sign and are often referred to as explanatory variables.

Indeterminate flow direction: [network analysis] In networks, a flow direction that is unknown or undiscoverable. Indeterminate flow direction occurs when flow direction cannot be determined from the connectivity of the network, the locations of sources and sinks, and the enabled or disabled states of features.

Index: [computing] A data structure, usually an array, 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.

Index contour line: On a topographic map, a contour line that is thicker than the rest and usually labeled with the elevation that it represents. Depending on the contour interval, every fourth or fifth contour line may be an index contour.

Index map: [cartography] A schematic map used as a reference for a collection of map sheets, outlining the total area covered along with the coverage extent of, and usually a name or reference for, each map sheet.

Industry: [organizational issues] An organization with specific GIS needs. Examples of industries include government, transportation, health care, homeland security, and public safety.

INFO database: [ESRI software] A tabular database management system used by ArcInfo Workstation software to store and manipulate attributes of a GIS dataset in ArcInfo Workstation format. INFO databases are stored inside a workspace folder with subdirectories containing files that represent the geometry and topology that make up a coverage.

Information space: [cognition] A geometric representation of relationships between elements in a data domain, in which relative position indicates the degree of similarity between elements. Information spaces are often based on geographic metaphors and are used to provide more intuitive views of a complex, multidimensional data domain.

Informix: [non-ESRI software] A commercial relational database management system (RDBMS) supported by ArcSDE.

Infrared scanner: [data capture] A device that detects infrared radiation and nverts it into an electrical signal that can be recorded on film or magnetic tape.

Infrastructure: [government] The system of human-made physical structures, such as roads, bridges, canals, cables, wires, communications towers, hospitals, pipes, reservoirs, and sewers, that provide communication, transportation, public services, utilities, or all of the above to a populace.

Inheritance: [computing] In object-oriented programming, the acquisition of methods and properties by child classes or interfaces from their previously existing parent classes or interfaces. Inheritance is one of the defining characteristics of an object-oriented system.

Input data: [modeling] Data that is entered into a computer, device, program, or process.

Input event record: [ESRI software] In geocoding, a piece of information such as a customer address and location of an incident. Input event record types vary by application. They include customer addresses, location of the event or incident, location of equipment and facilities, and the monument offset.

Input feature: [analysis geoprocessing] In geoprocessing, data put into the system for processing, usually specified by a path in a dialog box, script, or at the command line.

Input table: [analysis geoprocessing] In geoprocessing, tabular data put into the system for processing, usually specified by a path in a dialog box, script, or at the command line.

Inset map: [map design] A small map set within a larger map. An inset map might show a detailed part of the map at a larger scale, or the extent of the existing map drawn at a smaller scale within the context of a larger area.

Instance: [computing] In object-oriented programming, a single object created based on the template or definition of the class to which it belongs.

[ESRI software] In ArcSDE, a single installation of ArcSDE associated with a single database.

[ESRI software] In ArcIMS, the fundamental processing unit of the Spatial Server. An instance takes a request and generates a response that can be sent back to a client.

Instantiation: [computing] In programming, the process of creating a single object based on the template or definition of the class to which it belongs.

Instrument setup field: [ESRI software] In the Survey Analyst for field measurements Survey Explorer, a field that allows the user to select the instrument setup or enter the name of a new instrument setup.

Integrated feature dataset: [ESRI software] In geodatabases, a feature dataset that stores topologically associated feature classes. The topological editing tools in ArcMap can be used to maintain the topological associations of features in an integrated feature dataset. Network feature classes do not participate in the topological associations within an integrated feature dataset.

Integration: [data transfer] A high degree of interconnection between two or more programs or datasets, in which they share a common schema, ontology, semantic approach, or method that allows information to be passed between them without being fully processed.

Intensity: In the IHS (intensity, hue, saturation) color model, the relative brightness of a color.

Interactive vectorization: [data conversion] A manual process for converting raster data into vector features that involves tracing raster cells.

Interchange format: [data sharing] A file format that allows the easy exchange of data between different software programs.

Interferogram: [remote sensing] A radar image that records interference patterns captured by two antennae a short distance apart.

Interior feature weight: [ESRI software] One of two weights that allow control of how labels are placed relative to polygon features in ArcMap. Higher feature weights prevent labels from being placed over features. A high interior weight prevent labels from occupying the interior of polygon features.

Intermediate data: [modeling] Any data in a process that did not exist before the process

existed and that will not be maintained after the process executes.

International date line: [coordinate systems] An imaginary line, generally following the meridian of longitude lying 180 degrees east and west of the Greenwich meridian, where the date changes. The time zone east of the international date line is twelve hours ahead of Greenwich mean time; the time zone west of the international date line is twelve hours behind Greenwich mean time. A traveler going west across the date line adds a day; a traveler going east across it subtracts a day.

Internationalization: [organizational issues] The process of creating software that can be adapted to the requirements of different languages and cultures without substantive changes to the source code.

Internet: The global network of computers that communicate through common protocols, such as TCP/IP.

Interoperability: [interoperability] The capability of components or systems to exchange data with other components or systems, or to perform in multiple environments. In GIS, interoperability is required for a GIS user using software from one vendor to study data compiled with GIS software from a different provider.

Interpolation: [mathematics] 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 spline and kriging.

[ESRI software] In the context of linear referencing, the calculation of measure values for a route between two known measure values.

Interrupted projection: [map projections] A world projection that reduces distortion by dividing the projected area into gores, each with its own central meridian.

Intersect: [analysis geoprocessing] A geometric integration of spatial datasets that preserves features or portions of features that fall within areas common to all input datasets.

Intersection: [data management] The point where two lines cross. In geocoding, most often a street crossing.

Interval data: [data structures] Data classified on a linear calibrated scale, but not relative to a true zero point in time or space. Because there is no true zero point, relative comparisons can be made between the measurements, but ratio and proportion determinations are not as useful. Time of day, calendar years, the Fahrenheit temperature scale, and pH values are all examples of interval measurements.

Intranet: [Internet] A computer network, often using the same software and serving the same functions as those found on the Internet, that is restricted to users within an organization.

Intrinsic stationarity: [spatial statistics use for geostatistics] In spatial statistics, the assumption that a set of data comes from a random process with a constant mean and a semivariogram that depends only on the distance and direction separating any two locations.

Inverse distance: [statistics] One divided by distance, often raised to some power (1/D or 1/D2, for example), where D is a distance value. By inverting the distance among spatial features, and using that inverted value as a weight, near

things have a larger weight or influence than things that are farther away.

Inverse distance weighted interpolation: An interpolation technique that estimates cell values in a raster from a set of sample points that have been weighted so that the farther a sampled point is from the cell being evaluated, the less weight it has in the calculation of the cell's value.

[Ip]

IP address: Acronym for Internet protocol address. A unique number, such as 10.48.6.8, that identifies each computer on the Internet. IP addresses are similar to phone numbers, and allow data to travel between one computer and another via the Internet.

[Is]

Isanomal: [cartography] A line on a map connecting points of equal difference from a normal value, usually a meteorological value such as average temperature.

Isarithm: [cartography] An isoline drawn according to values that can occur at points; an isometric line.

[cartography] A line connecting points of equal value on a map; an isoline.

ISO: [standards] Abbreviation for 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.

Isobar: A line on a weather map connecting places of equal barometric pressure.

Isochrones: [cartography] A line on a map connecting points of equal elapsed time; especially, travel time to or from a given location.

[cartography] A line on a map connecting points at which an event occurs, or a state of affairs exists, at the same time.

Isohyet: [cartography] A line on a map connecting points of equal rainfall.

Isolation level: [ESRI software] A setting in a database management system (DBMS) that defines how much an application process is isolated from other concurrently executing processes in a DBMS. It specifies the degree to which the rows read and updated by the application are available to other concurrently executing processes. It also specifies the degree to which updates from other concurrently executing application processes are available to the application.

Isoline: [cartography] A line connecting points of equal value on a map. Isolines fall into two classes: those in which the values actually exist at points, such as temperature or elevation values, and those in which the values are ratios that exist over areas, such as population per square kilometer or crop yield per acre. The first type of isoline is specifically called an isometric line or isarithm; the second type is called an isopleth.

Isometric line: [cartography] An isoline drawn according to known values, either sampled or derived, that can occur at points. Examples of sampled quantities that can occur at points are elevation above sea level, an actual temperature, or an actual depth of precipitation. Examples of derived values that can occur at points are the average of temperature over time for one point or the ratio of smoggy days to clear days for one point.

Isopleth: [cartography] An isoline drawn according to known values that can only be recorded for areas, not points. Examples include population per square mile or the ratio of residential land to total land for an area.

Isotherm: A line on a map connecting points of equal temperature.

Isotropic: [analysis geoprocessing] Having uniform spatial distribution of movement or properties, usually across a surface.

Isotropy: [spatial statistics use for geostatistics] A property of a natural process or data where spatial dependence (autocorrelation) changes only with the distance between two locations direction is unimportant.

[It]

Item: [ESRI software] An element in the Catalog tree. Items include data sources, such as shapefiles and geodatabases, and nonspatial elements, such as folders.

[ESRI software] In coverages, a field or attribute.

[ESRI software] A column of information in an INFO table.

[Internet] In ArcGIS Online, a map, layer, or tool that you find, use, or add to ArcGIS Online.

Iterative procedure: [computing] A repetitive or recurring procedure.

[Iu]

IUnknown: [programming] All COM interfaces inherit from the IUnknown interface. The default implementation of IUnknown controls object lifetime and provides runtime type support.

J

[Ja]

Java: [programming] An object-oriented cross-platform programming language developed by Sun Microsystems.

Java Connector: [ESRI software] An ArcIMS Application Server Connector. It can be used with Java Server Pages (JSP) or as part of a Java applet or application.

Java ME: [programming] The Java platform edition developed by Sun Microsystems for small, stand-alone, or connectable devices. Java ME enables development, deployment, and management of applications that can scale from mobile devices to desktop computers. In 2007, Sun replaced J2ME with Java ME.

Java ME Wireless Toolkit: [non-ESRI software] A toolkit for building applications that run on devices compliant with the Java specification for wireless devices.

JavaScript: [programming] A scripting language that runs within a Web browser and interacts with HTML code to enable Web developers to add functionality to their Web sites.

JavaServer Faces: [programming] A framework for building user interfaces for Java Web applications.

JavaServer Pages: Acronym for JavaServer Pages. A Java technology that enables rapid development of platform-independent, Web-based applications. JSP separates the user interface from content generation, enabling designers to change the overall page layout without altering the underlying dynamic content.

JavaServer Pages Standard Tag Library: [programming] A Java technology that encapsulates core functionality common to many Web-based applications as simple tags. JSTL includes tags for structural tasks such as iteration and conditionals, manipulation of XML documents, internationalization and locale-sensitive formatting, and SQL.

[Jd]

JDK: [non-ESRI software] Acronym for Java Development Kit. A set of Java development tools from Sun Microsystems that provide basic tools needed for writing, testing, and debugging Java applications and applets.

[Je]

Jenks' optimization: [cartography] A method of statistical data classification that partitions data into classes using an algorithm that calculates groupings of data values based on the data distribution. Jenks' optimization seeks to reduce variance within groups and maximize variance between groups.

[Jo]

Job: [computing] A task scheduled on a computer for immediate or future processing. A job can involve a single task or a batch mode operation.

Job book: [ESRI software] In Survey Analyst – Cadastral Editor, a tool that facilitates the viewing and management of cadastral fabric jobs.

JOG: [defense] Acronym for joint operations graphic. A 1:250,000-scale topographic map used by militaries worldwide. Joint operations graphics use a common base graphic to facilitate operations involving air, ground, and naval forces.

Joined parcel: [ESRI software] In Survey Analyst – Cadastral Editor, a parcel that is connected to the cadastral fabric, and shares common points with neighboring parcels.

Joining: [database structures] 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.

[analysis geoprocessing] Connecting two or more features from different sets of data so that they become a single feature.

[ESRI software] In Survey Analyst – Cadastral Editor, the process of connecting the points from an unjoined parcel to their corresponding points in the cadastral fabric.

[Js]

JSON: [programming] Acronym for JavaScript Object Notation. A lightweight, human-readable data interchange format. An alternative to XML, JSON is language independent but relies on common programming language structures such as objects and arrays.

JSP: [programming] Acronym for JavaServer Pages. A Java technology that enables rapid development of platform-independent, Web-based applications. JSP separates the user interface from content generation, enabling designers to change the overall page layout without altering the underlying dynamic content.

[Jt]

JTX: [ESRI software] Acronym for Job Tracking for ArcGIS. ESRI software used to track and manage database production workflow. It provides the ability to define tasks, set up production environments, manage geodatabase

versioning and track database changes at the feature level. JTX also provides tools for allocating resources and tracking the status and progress of jobs.

[Ju]

Junction: [network analysis] For network data models in a geodatabase, a point at which two or more edges meet.

[network analysis] In a coverage, a node joining two or more arcs.

K

[Ke]

Key: [database structures] An attribute or set of attributes in a database that uniquely identifies each record.

Keyboard shortcut: [hardware] A keystroke combination that executes a command that might otherwise require the use of a mouse. For example, Ctrl + C is a well-known keyboard shortcut for copying a selection in Windows.

Keycode: [intellectual property rights] A unique number in the feature line of a license or authorization file that controls access to software. Keycodes are based on a unique identifier. In ArcEditor Concurrent Use on Windows, for example, the hardware key number provides this unique identifier. The License Manager compares the keycodes in the license file and the unique identifier for a computer to allow access to the software. If the keycode and the unique identifier agree, then software access is granted.

Keyframe: [ESRI software] In an animation in ArcMap, ArcScene, or ArcGlobe, a snapshot of an object's properties at a certain time.

Keyword: [computing] A significant word from a document that is used to index or search content.

[computing] A word searched for in a search command. Keywords are searched for in any order. When defining metadata, users can enter theme and place keywords.

[Ki]

Kinematic positioning: [GPS] Determining the position of an antenna on a moving object such as a ship or an automobile.

[Kn]

Knockout: [printing] In offset printing, an area that has been defined to cut through or mask specific layers of colored inks. Knockouts are used to ensure that certain ink colors are not mixed with inks that are laid down after them.

Knowledge base: [computing] A database of information about a subject, used in expert systems.

[ESRI software] In PLTS, a series of tables used for database and cartographic production. Knowledge base tables contain validation rules for feature attribution, data collection, and symbology.

Known point: [surveying] A surveyed point that has an established x,y coordinate value. Known points are used in survey operations to extend survey computations into a project area.

[Ko]

Kohonen map: [cartography] A map that uses a neural network algorithm to classify and illustrate associations in complex datasets, and reveal multidimensional patterns. A similar set of methods produces maps referred to as self-organizing maps (SOMs). Kohonen maps are named for the Finnish engineer Teuvo Kohonen.

[Kr]

Kriging: An interpolation technique in which the surrounding measured values are weighted to derive a predicted value 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. Kriging is unique among the interpolation methods in that it provides an easy method for characterizing the variance, or the precision, of predictions. Kriging is based on regionalized variable theory, which assumes that the spatial variation in the data being modeled is homogeneous across the surface. That is, the same pattern of variation can be observed at all locations on the surface. Kriging was named for the South African mining engineer Danie G. Krige (1919-).

L

[L-]

L-band: [GPS] The group of radio frequencies that carry data from GPS satellites to GPS receivers.

[La]

Label: [cartography] In cartography, text placed on or near a map feature that describes or identifies it.

[ESRI software] In ArcGIS, descriptive text, usually based on one or more feature attributes. Labels are placed dynamically on or near features based on user-defined rules and in response to changes in the map display. Labels cannot be individually selected and modified by the user. Label placement rules and display properties (such as font size and color) are defined for an entire layer.

[ESRI software] In MOLE, text based on attribute data. Labels are placed dynamically on or near features based on the military specifications that MOLE supports. In MOLE, labels are often referred to as modifiers.

Label class: [ESRI software] In ArcMap, a category of labels that represents features with the same labeling properties. For example, in a roads layer, label classes could be created to define information and style for each type of road: interstate, state highway, county road, and so on.

Label expression: [ESRI software] A statement that determines the label text. Label expressions typically concatenate or modify the contents of one or more fields, and may add additional text strings to create more informative labels. They can contain Visual Basic script or JScript to add logic, text processing, and formatting for the labels.

Label Fitting Strategy tab: [ESRI software] In Maplex for ArcGIS, a tab on the Label Placement dialog box that allows control of the ways the label engine can fit more labels into a limited area. Methods that can increase label placement are stacking labels, reducing the font size of labels in congested areas, or abbreviating labels.

Label Manager: [ESRI software] In ArcMap, the tool used to display and set labeling properties for the currently active data frame. The Label

Manager is accessible through the Labeling toolbar.

label offset: [ESRI software] The distance a label should be from the feature it labels. A label offset and a maximum label offset can be set for point features. Maximum label offsets are expressed as a percentage of the label offset. For line features, a label offset can be set from the line (similar to the label offset for point features) and along the line (which controls the position of the label relative to the ends of the line). Label offsets are not available for all label position options.

Label offset constraint: [ESRI software] The maximum distance away from a point feature that a label may be placed, beyond the specified offset.

Label orientation: [ESRI software] The angle or direction of alignment for feature labels. Labels for features are usually placed horizontally, but they may also be oriented to an angle stored as an attribute, an angle defined by the orientation of the feature geometry, or along the graticule of the data frame.

Label placement property: [ESRI software] A parameter used to define a placement property for a label. Label placement properties include such properties as label offset, label placement zone, label fitting strategy, label prioritiy, label stacking, and label weight.

Label placement zone: [ESRI software] One of eight designated areas on a map, radiating from a point, in which labels may be placed. The user can indicate in which of eight zones labels should be placed, relative to the point. These preferences are taken into account when placing point labels using the Best Position placement option.

Label point: [ESRI software] In a coverage, a feature class used to represent points or identify polygons. When representing points, the x,y location of the point describes the location of the feature. When identifying polygons, the point can be located anywhere within the polygon.

Label Position tab: [ESRI software] In Maplex for ArcGIS, a tab on the Label Placement dialog box that allows control of how labels are placed relative to features. The position of a label is determined by such parameters as: the orientation, offset, and position style for a given feature geometry.

label priority: [ESRI software] In ArcGIS, a ranking system that determines the order in which labels will be placed on a map. Labels with higher priority will be placed before labels with lower priority. Labels placed last will have a greater chance of being crowded out or placed in an alternate position.

Label stacking: [ESRI software] The splitting of long labels to place the text on two or more lines. Maplex for ArcGIS allows specification of which characters trigger a split and whether or not they show up in the label.

Label weight: [ESRI software] An ESRI Standard Label Engine ranking system that indicates whether labels from a given label class may be covered by another label in cases in which label placement conflicts occur. Labels with higher weight are less likely to be overlapped than labels with lower weight.

Lag: [ESRI software] In the creation of a semivariogram, the sample distance used to group or bin pairs of points. Using an appropriate lag distance can be helpful in revealing scale-dependent spatial correlation.

LAN: [computing] Acronym for local area network. Communications hardware and software that connect computers in a small area, such as a room or a building. Computers in a LAN can share data and peripheral devices, such as printers and plotters, but do not necessarily have a link to outside computers.

Land cover: [geography] The classification of land according to the vegetation or material that covers most of its surface; for example, pine forest, grassland, ice, water, or sand.

Land information system: [government] A geographic information system for cadastral and land-use mapping, typically used by local governments.

Land use: [geography] The classification of land according to what activities take place on it or how humans occupy it; for example, agricultural, industrial, residential, urban, rural, or commercial.

Landform: [geography] Any natural feature of the land having a characteristic shape, including major forms such as plains and mountains and minor forms such as hills and valleys.

Landmark: [geography] Any prominent natural or artificial object in a landscape used to determine distance, bearing, or location.

[geography] A building or location that has historical, architectural, or cultural value.

Landmark: [geography] Any prominent natural or artificial object in a landscape used to determine distance, bearing, or location.

[geography] A building or location that has historical, architectural, or cultural value.

Landsat: [satellite imaging] Multispectral, earth-orbiting satellites developed by NASA (National Aeronautics and Space Administration) that gather imagery for land-use inventory, geological and mineralogical exploration, crop and forestry assessment, and cartography.

Landscape ecology: [environmental GIS] The study of spatial patterns, processes, and change across biological and cultural structures within areas encompassing multiple ecosystems.

Large scale: [cartography] Generally, a map scale that shows a small area on the ground at a high level of detail.

Large-format printer: [printing] A printing device capable of producing an image on large paper or other media sized between 36 and 87 inches (91 and 220 centimeters) wide. Modern large format printers typically use inkjet printing technology to print an image on a roll of paper that is automatically cut to the desired length. Large-format printers may also be called plotters or wide-format printers.

LAS: [3D GIS] An industry-standard binary file format that maintains information related to lidar data.

LAS dataset: [database structures] A geodataset that references LAS files and surface constraints, and enables a person to examine LAS files in their native format.

Late binding: [programming] A COM technique that an application uses for determining an object's properties and methods at run time, rather than when the code is compiled. Late binding is generally used by scripting languages.

Latitude: The angular distance, usually measured in degrees north or south of the equator. Lines of latitude are also referred to as parallels.

Latitude of center: The latitude value that defines the center, and sometimes the origin, of a projection.

Latitude of origin: The latitude value that defines the origin of the y-coordinate values for a projection.

Latitude-longitude: [coordinate systems] A reference system used to locate positions on the earth's surface. Distances eastwest are measured with lines of longitude (also called meridians), which run northsouth and converge at the north and south poles. Distance measurements begin at the prime meridian and are measured positively 180 degrees to the east and negatively 180 degrees to the west. Distances northsouth are measured with lines of latitude (also called parallels), which run eastwest. Distance measurements begin at the equator and are measured positively 90 degrees to the north and negatively 90 degrees to the south.

Lattice: A representation of a surface using an array of regularly spaced sample points (mesh points) that are referenced to a common origin and have a constant sampling distance in the x and y directions. Each mesh point contains the z-value at that location, which is referenced to a common base z-value, such as sea level. Z-values for locations between lattice mesh points can be approximated by interpolation based on neighboring mesh points.

Layer: [data structures] 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 might be considered different layers.

[ESRI software] In ArcGIS, a reference to a data source, such as a shapefile, coverage, geodatabase feature class, or raster, 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.

Layer file: [data structures] In ArcGIS, a file with a .lyr extension that stores the path to a source dataset and other layer properties, including symbology.

Layer package: [Internet] A special file (layer_name.lpk) that contains a layer, a copy of the data, and an XML file that has a brief description of the layer. It can be opened in ArcGIS Desktop (9.3.1 or later) and ArcGIS Explorer 900 using an automatic unpacking process called a "file handler". Layer packages are created in ArcMap (9.3.1 or later) or ArcGlobe (9.3.1 or later).

Layout: [map design] The arrangement of elements on a map, possibly including a title, legend, north arrow, scale bar, and geographic data.

[ESRI software] In ArcGIS, a presentation document incorporating maps, charts, tables, text, and images.

[ESRI software] 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.

Layout view: [ESRI software] In ArcMap and ArcReader, a view that shows the virtual page upon which geographic data and map elements, such as titles, legends, and scale bars, are placed and arranged for printing.

[Le]

Leader: [ESRI software] In MOLE, typically two or more force elements grouped together and placed on a line based on user-specified rules. Leaders are often used to clean up the map display in cases where many symbols overlap, to group related units together, and to define perimeters or areas of interest for formations.

Least-cost path: [network analysis] The path between two locations that costs the least to traverse, where cost is a function of time, distance, or some other criteria defined by the user.

Least-squares adjustment: [surveying] A statistical method for providing a best fit for survey point locations and detecting measurement error by minimizing the sum of the squares of measurement residuals. The method allows many measurements to participate simultaneously in a single computation.

Least-squares corrections: [surveying] The final measurement residuals of a least squares adjustment.

Left-right topology: [ESRI software] The topological data structure in an ArcInfo coverage that stores, for each arc, the identity of the polygons to the left and right of it. Left-right topology supports analysis functions, such as adjacency.

Legend patch shape: [ESRI software] The geometric shape of either a line or a polygon that is used to represent a specific kind of feature in a legend and in the ArcMap table of contents.

Level of detail: [ESRI software] An abstraction of a layer in ArcGlobe portraying the layer at some degree of resolution between simplified and unsimplified.

Leveling: In surveying, the measurement of the heights of objects and points according to a specified elevation, usually mean sea level.

[Li]

LIBID: [ESRI software] Acronym for Library Identifier. A type of GUID consisting of a unique string assigned to a type library.

Library: [programming] In object-oriented programming, a logical grouping of classes, usually with a header section that lists the classes in the library.

[ESRI software] In ArcInfo, a collection of spatially related ArcStorm or Map Librarian layers. A library has a spatial extent that applies to all layers in the library.

License: [intellectual property rights] The grant to a party of the right to use a software package or component. A license differs from a sale in that the user does not necessarily purchase the software but is granted the legal right to use it.

License file: [ESRI software] A file that contains License Manager license data. Each license file contains information such as the SERVER, ESRI_SENTINEL_KEY number (Windows only), Version, the number of seats, and so on.

LIDAR: [remote sensing] Acronym for light detection and ranging. A remote-sensing technique that uses lasers to measure distances to reflective surfaces.

Lighting normal: [ESRI software] In ArcScene and ArcGlobe, vectors normal to a geometry's surface, stored in that geometry to help define how lighting affects it.

Limits: [ESRI software] In Survey Analyst for field measurements, restrictions that define an acceptable level of measurement error for each computation.

Line: [Euclidean geometry] On a map, a shape defined by a connected series of unique x,y coordinate pairs. A line may be straight or curved.

Line connection: [ESRI software] A procedure that combines groups of individual lines with the same name into a single line for the label engine. This is often necessary because lines such as roads and rivers are usually digitized as many small segments that must be connected together to represent a single real-world feature.

Line event: [linear referencing] In linear referencing, a description of a portion of a route using a from- and to-measure value. Examples of line events include pavement quality, salmon spawning grounds, bus fares, pipe widths, and traffic volumes.

Line feature: [symbology] A map feature that has length but not area at a given scale, such as a river on a world map or a street on a city map.

Line of sight: [3D analysis] A line drawn between two points, an origin and a target, that is compared against a surface to show whether the target is visible from the origin and, if it is not visible, where the view is obstructed.

[visualization] In a perspective view, the point and direction from which a viewer looks into an image.

Line simplification: [cartography] A generalization technique in which vertices are selectively removed from a line feature to eliminate detail while preserving the line's basic shape.

Line smoothing: The process of adding extra points to lines to reduce the sharpness of angles between line segments, resulting in a smoother appearance.

Line-on-line overlay: [linear referencing] In linear referencing, the overlay of two line event tables to produce a single line event table. The new event table can be the logical intersection or union of the input tables.

Line-on-point overlay: [linear referencing] In linear referencing, the overlay of a line event table and a point event table to produce a single point event table. The new event table can be the logical intersection or union of the input tables.

Lineage: [ESRI software] A collection of states representing the changes that have occurred over time in a versioned geodatabase.

Linear dimension: A measurement of the horizontal or vertical dimension of a feature. Linear dimensions may not represent the true distance between beginning and ending dimension points because they do not take angle into account as aligned dimensions do.

Linear interpolation: [spatial statistics use for geostatistics] The estimation of an unknown value using the linear distance between known values.

Linear referencing: [linear referencing] A method for storing geographic data by using a relative position along an already existing line feature; the ability to uniquely identify positions along lines without explicit x,y coordinates. In

linear referencing, location is given in terms of a known line feature and a position, or measure, along the feature. Linear referencing is an intuitive way to associate multiple sets of attributes to portions of linear features.

Linear unit: [cartography] The unit of measurement on a plane or a projected coordinate system, often meters or feet.

Link: [photogrammetry] In georeferencing, connections added between known points in a dataset being georeferenced and corresponding points in the dataset being used as a reference.

[computing] An operation that relates two tables using a common field, without altering either table.

[Internet] In a hyperlinked document, a graphic or piece of text that, when selected by a user, causes the display to move to another document or to another location within the same document.

[ESRI software] In Survey Analyst for field measurements, an operation in which existing features can be connected to survey points. An association between survey points and feature vertices is created; feature locations are not updated automatically.

Link command: [ESRI software] In Survey Analyst for field measurements, a command that finds nearby survey points for each feature vertex and automatically creates links. The command allows the user to specify the search tolerance for finding the survey points. With the Link command, users may perform batch links; it is useful to use if there are many unlinked features that need to be associated with nearby survey points.

Link lines: [ESRI software] In Survey Analyst for field measurements, lines displayed on a map after a survey point and a feature vertex are linked.

Link tool: [ESRI software] In Survey Analyst for field measurements, a tool that allows the user to make a link between a survey point and a feature vertex by snapping and clicking a feature vertex, then snapping to and clicking the related survey point. With the Link tool, users must make each individual link manually.

List page: [ESRI software] In Survey Analyst for field measurements, one of two types of pages in the Survey Explorer. The List page lists multiple survey objects.

Little endian: [hardware] A computer hardware architecture in which, within a multibyte numeric representation, the least significant byte has the lowest address and the remaining bytes are encoded in increasing order of significance.

[Lo]

Load balance: [software] The act of distributing application, network, and/or server resources to optimize performance.

Local analysis: [data editing] The computation of an output raster where the output value at each location is a function of the input value at the same location.

Local check method: [ESRI software] In Survey Analyst for field measurements, one of two ways to apply the Coordinate Out of Tolerance command. The Local check method searches for coordinates out of tolerance within each survey project.

Local datum: [geodesy] A horizontal geodetic datum that serves as a basis for measurements over a limited area of the earth; that has its origin at a location on the earth's surface; that

uses an ellipsoid whose dimensions conform well to its region of use; and that was originally defined for land-based surveys. A local datum in this sense stands in contrast to a geocentric datum. Examples include the North American Datum of 1927 and the Australian Geodetic Datum of 1966.

[geodesy] A horizontal or vertical datum used for measurements over a limited area of the earth, such as a nation, a supranational region, or a continent. A horizontal datum that is local in this sense may or may not be geocentric. For example, the North American Datum of 1983 and the Geocentric Datum of Australia 1994 are local in that they are applied to a particular part of the world; they are also geocentric. All vertical datums are local in that there is, at present, no global vertical datum

Local polynomial interpolation: [spatial statistics use for geostatistics] In ArcGIS Geostatistical Analyst, a deterministic interpolation method. The interpolated surface is not required to conform to the sample data points, and the method does not have standard errors associated with it.

Localization: [organizational issues] The process of adapting software to the requirements of a different language or culture, including translating user interfaces, documentation, and help systems; customizing features; and accommodating different character sets.

Location: [geography] An identifier assigned to a region or feature.

[geography] A position defined by a coordinate value.

Location Aware Services: [non-ESRI software] Services that allow IBM WebSphere Everywhere Access (WEA) application providers to use location-based services from multiple vendors, by providing an application programming interface (API).

Location-allocation: The process of finding the best locations for one or more facilities that will service a given set of points and then assigning those points to the facilities, taking into account factors such as the number of facilities available, their cost, and the maximum impedance from a facility to a point.

Location-based services: [location-based services] Information or a physical service delivered to multiple channels, exclusively based on the determined location of a wireless device. Some location-based applications include emergency services, information services, and tracking services.

Locked parcel: [ESRI software] In Survey Analyst – Cadastral Editor, a parcel that has been locked for editing. Locked parcels cannot be edited simultaneously in a multiuser environment.

Locomotion: [wayfinding] The movements of a person following a route. Locomotion is the physical component of navigation.

Log file: [computing] A database file that records changes in data, often used as part of a database restoration.

Logarithm: [mathematics] The power to which a fixed number (the base) must be raised to equal a given number. The three most frequently used bases for logarithms are base 10, base e, and base 2.

Logical expression: [mathematics] A string of numbers, constants, variables, operators, and functions that returns a value of true or false.

Logical network: [ESRI software] An abstract representation of a network, implemented as a collection of hidden tables. A logical network

contains edge, junction, and turn elements, the connectivity between them, and the weights necessary for traversing the network. It does not contain information about the geometry or location of its elements; this information is one of the components of a network system.

Logical operator: [mathematics] An operator used to compare logical expressions that returns a result of true or false. Examples of logical operators include less than (<), greater than (>), equal to (=), and not equal to (<>).

Logical query: [analysis geoprocessing] The process of using mathematical expressions to select features from a geographic layer based on their attributes; for example, "select all polygons with an area greater than 16,000 units" or "select all street segments named Green Apple Run."

Long transaction: [ESRI software] An edit session on a feature dataset that may last from a few minutes to several months. Long transactions are managed by the ArcSDE versioning mechanism.

Long-range variation: [spatial statistics use for geostatistics] In a spatial model, coarse-scale variation that is usually modeled as the trend.

Longitude: The angular distance, usually expressed in degrees, minutes, and seconds, of the location 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.

Longitude of center: The longitude value that defines the center, and sometimes the origin, of a projection.

Longitude of origin: The longitude value that defines the origin of the x-coordinate values for a projection.

Loose coupling: A relatively unstructured relationship between two software components or programs that work together to process data, which requires little overlap between methods, ontologies, class definitions, and so on.

Loosely coupled replication: [ESRI software] A replication model that does not require the parent and child replicas to be directly connected for synchronization to occur. Loosely coupled replication is an asynchronous model, so edits made in one replica have no effect on other related replicas until synchronization. Synchronization can be executed manually, or it can be automated.

Lossless compression: [data transfer] Data compression that has the ability to store data without changing any of the values, but is only able to compress the data at a low ratio (typically 2:1 or 3:1). In GIS, lossless compression is often used to compress raster data when the pixel values of the raster will be used for analysis or deriving other data products.

Lossy compression: [data transfer] Data compression that provides high compression ratios (for example 10:1 to 100:1), but does not retain all the information in the data. In GIS, lossy compression is used to compress raster datasets that will be used as background images, but is not suitable for raster datasets used for analysis or deriving other data products.

Lot: [empty] A measured parcel of land having fixed boundaries and designated on a plot or survey.

Low-level language: [programming] A programming language that uses keywords and statements that are little more complex than the

ones and zeros of machine language. Low-level language technically includes machine language, but more commonly refers to an assembly language that uses symbols to make machine instructions easier for programmers to read and understand. Each statement in assembly language represents a single command to the processor, affording the developer only a low level of abstraction in regard to mundane functions such as memory access and register storage, meaning such operations demand the developer's close attention.

Low-pass filter: [remote sensing] A spatial filter that blocks high-frequency (shortwave) radiation, resulting in a smoother image.

M

[M-]

M-value: [linear referencing] In linear referencing, a measure value that is added to a line feature. M-values are used to measure the distance along a line feature from a vertex (a known location) to an event.

[ESRI software] Vertex attributes that are stored with x,y point coordinates in ESRI's Geometry Engine. Every type of geometry (point, polyline, polygon, and so on) can have attributes for every vertex.

Macro: [programming] A computer program, usually a text file, containing a sequence of commands that are executed as a single command. Macros are used to perform commonly used sequences of commands or complex operations.

Magnetic bearing: [navigation] A bearing measured relative to magnetic north.

Magnetic declination: [geodesy] The angle between magnetic north and true north observed from a point on the earth. Magnetic declination varies from place to place, and changes over time, in response to changes in the earth's magnetic field.

Magnetic north: [geography] The direction from a point on the earth's surface following a great circle toward the magnetic north pole, indicated by the north-seeking end of a compass.

Magnetometer: [physics] An instrument used to measure variations in the strength and direction of the earth's magnetic field.

Magnifier window: [ESRI software] A secondary window in ArcMap data view that shows a magnified view of a small area without changing the map extent. Moving the Magnifier window around will not affect the current map display.

Maintenance license: [ESRI software] A license that has a current maintenance contract with ESRI Customer Service. ESRI software users who have maintenance licenses are eligible for upgrade to the latest version of the software.

Maintenance renewal: [computing] The date a maintenance contract expires for a particular product. Multiple copies of the same product may expire on different dates.

Major axis: The longer axis of an ellipse or spheroid.

Majority resampling: [spatial statistics use for geostatistics] A technique for resampling raster data in which the value of each cell in an output is calculated, most commonly using a 2×2 neighborhood of the input raster. Majority resampling does not create any new cell values, so it is useful for resampling categorical or integer data, such as land use, soil, or forest type. Majority resampling acts as a type of low-

pass filter for discrete data, generalizing the data and filtering out anomalous data values.

Make permanent: [ESRI software] In ArcGIS Spatial Analyst, an option that creates a permanent raster (one that is saved to disk) from a temporary result.

Managed raster catalog: [data structures] A raster catalog in which the raster datasets are copied to a location assigned by a geodatabase. When a row is deleted from a managed raster catalog, the data is deleted as well.

Many-to-many relationship: [database structures] An association between two linked or joined tables in which one record in the first table may correspond to many records in the second table, and vice versa.

Many-to-one relationship: [database structures] An association between two linked or joined tables in which many records in the first table may correspond to a single record in the second table.

Map: [cartography] A graphic representation of the spatial relationships of entities within an area.

[cartography] Any graphical representation of geographic or spatial information.

[ESRI software] The document used in ArcMap to display and work with geographic data. In ArcMap, a map contains one or more layers of geographic data, contained in data frames, and various supporting map elements, such as a scale bar.

Map algebra: [data analysis] A language that defines a syntax for combining map themes by applying mathematical operations and analytical functions to create new map themes. In a map algebra expression, the operators are a combination of mathematical, logical, or Boolean operators (+, >, AND, tan, and so on), and spatial analysis functions (slope, shortest path, spline, and so on), and the operands are spatial data and numbers.

Map annotation: [ESRI software] In ArcGIS, text or graphics stored within the map data frame in an annotation group. Map annotation may be manually entered or generated from labels, and can be individually selected, positioned, and modified.

Map cache: [ESRI software] A setting used in ArcMap that allows temporary storage of geodatabase or ArcIMS feature service features from a given map extent in the desktop computer's RAM, which may result in performance improvements in ArcMap for editing, feature rendering, and labeling.

Map configuration file: In ArcIMS, the file that contains the core site information. ArcIMS configuration files contain all the basic information about the content to be delivered, such as location of the data and layer symbology. Typically, a configuration file contains data that defines map content and has a file extension of .axl, but it can also be used to deliver metadata or route data (as .axl files) and to serve maps created in ArcMap (.mxd or .pmf files). Regardless of their type, configuration files contain content that the service registers to the ArcIMS spatial server and Web server for processing.

Map display: [graphics map display] A graphic representation of a map on a computer screen.

Map document: [cartography] In ArcMap, the file that contains one map, its layout, and its associated layers, tables, charts, and reports. Map documents can be printed or embedded in other documents. Map document files have an .mxd extension.

Map element: [map design] In digital cartography, a distinctly identifiable graphic or object in the map or page layout. For example, a map element can be a title, scale bar, legend, or other map-surround element. The map area itself can be considered a map element; or an object within the map can be referred to as a map element, such as a roads layer or a school symbol.

Map extent: [cartography] The limit of the geographic area shown on a map, usually defined by a rectangle. In a dynamic map display, the map extent can be changed by zooming and panning.

Map generalization: [cartography] Decreasing the level of detail on a map so that it remains uncluttered when its scale is reduced.

Map library: [ESRI software] In ArcInfo Workstation Map Librarian, a collection of geographic data partitioned spatially as a set of tiles and thematically as a set of layers, indexed by location for rapid access.

Map reading: The activity of viewing a map in a way that allows the viewer to make sense of or gain information from it. Map reading involves interpreting the meanings of codes and cartographic representations used on the map.

Map series: A collection of maps usually addressing a particular theme.

Map service: [Internet] A type of Web service that generates maps.

Map sheet: [cartography] A single map or chart in a map series, such as any one of the approximately 57,000 USGS 7.5-minute topographic maps of the United States and its territories.

Map surround: [map design] Any of the supporting objects or elements that help a reader interpret a map. Typical map surround elements include the title, legend, north arrow, scale bar, border, source information and other text, and inset maps.

Map template: [ESRI software] In ArcMap, a kind of map document that provides a quick way to create a new map. Templates can contain data, a custom interface, and a predefined layout that arranges map elements, such as north arrows, scale bars, and logos, on the virtual page. Map templates have a .mxt file extension.

Map topology: [graphics map display] A temporary set of topological relationships between coincident parts of simple features on a map, used to edit shared parts of multiple features.

Map unit: The ground unit of measurement for example, feet, miles, meters, or kilometers in which coordinates of spatial data are stored.

MapServer: [ESRI software] An ArcGIS Server software component that provides programmatic access to the contents of a map document on disk and creates images of the map contents based on user requests. It is designed for use in building map-based Web services and Web applications using ArcGIS Server.

MapTip: [ESRI software] In ArcGIS, a user-assistance component that displays an on-screen description of a map feature when the mouse is paused over that feature.

Marker symbol: A symbol used to represent a point location on a map.

Market area: A geographic zone containing the people who are likely to purchase a firm's goods or services.

Market penetration analysis: A process that determines the percentage of a market area being reached based on the number of customers within an area divided by the total population in that area.

Marshalling: [programming] The process that enables communication between a client object and server object in different apartments of the same process, between different processes, or between different processes on different machines by specifying how function calls and parameters are to be passed over these boundaries.

Mashup: [ESRI software] In Internet mapping, the combination of content from more than one data source into one dynamic map service.

Mask: [cartography] In digital cartography, a means of covering or hiding features on a map to enhance cartographic representation. For example, masking is often used to cover features behind text to make the text more readable.

[ESRI software] In ArcGIS, a means of identifying areas to be included in analysis. Such a mask is often referred to as an analysis mask, and may be either a raster or feature layer.

Mass point: An irregularly distributed sample point, with an x-, y-, and z-value, used to build a triangulated irregular network (TIN). Ideally, mass points are chosen to capture the more important variations in the shape of the surface being modeled.

Master checkout version: [database structures] In ArcGIS 9.1 and previous versions, the data version in the master geodatabase, created when data is checked out, that represents the state of the data at the time it was checked out.

Master geodatabase: [database structures] In ArcGIS 9.1 and previous versions, a geodatabase from which data has been checked out.

Master site: [ESRI software] In Business Analyst, the site of a known, well-performing business.

Match score: [geocoding] In geocoding, a value assigned to all potential candidates for an address match. The match score is based on how well the location found in the reference data matches with the address data being searched.

Matching: [geocoding] In geocoding, the process of linking a record, such as an address, to a set of reference data. The matched record in the reference data is used to determine the location of the input address.

Mathematical expression: A kind of expression that evaluates to a number which is then typically stored in a variable, a field on a table row, or a cell in a raster dataset. Mathematical expressions are generally part of an algebraic equation:Result = Expression[PropertyTax] = ([LandValue] * 0.75) + ([StructureValue] * 0.50)

Mathematical function: [ESRI software] In ArcGIS Spatial Analyst, a function that applies a mathematical operation to the values of a single input raster. There are four groups of mathematical functions available: logarithmic, arithmetic, trigonometric, and powers.

Mathematical model: [ESRI software] In Survey Analyst for field measurements, a set of relations between measurements and unknown coordinates.

Matrix: [mathematics] A rectangular arrangement of data, usually numbers, in rows

and columns. In computer science, a two-dimensional array is called a matrix. In GIS, matrices are used to store raster data.

MAUP: [spatial analysis] Acronym for modifiable areal unit problem. A challenge that occurs during the spatial analysis of aggregated data in which the results differ when the same analysis is applied to the same data, but different aggregation schemes are used. MAUP takes two forms: the scale effect and the zone effect. The scale effect exhibits different results when the same analysis is applied to the same data, but changes the scale of the aggregation units. For example, analysis using data aggregated by county will differ from analysis using data aggregated by census tract. Often this difference in results is valid: each analysis asks a different question because each evaluates the data from a different perspective (different scale). The zone effect is observed when the scale of analysis is fixed, but the shape of the aggregation units is changed. For example, analysis using data aggregated into one-mile grid cells will differ from analysis using one-mile hexagon cells. The zone effect is a problem because it is an analysis, at least in part, of the aggregation scheme rather than the data itself.

Max extent: [map display] The maximum bounding rectangle (in x,y coordinates) of an on-screen map. Users cannot zoom out beyond the max extent.

[Me]

Mean: [mathematics] The average for a set of values, computed as the sum of all values divided by the number of values in the set.

Mean center: [spatial statistics use for geostatistics] The location of a single x,y coordinate value that represents the average x-coordinate value and the average y-coordinate value of all features in a study area.

Mean sea level: [geodesy] The average height of the surface of the sea for all stages of the tide over a nineteen-year period, usually determined by averaging hourly height readings from a fixed level of reference.

Mean stationarity: [spatial statistics use for geostatistics] In geostatistics, a property of a spatial process in which a spatial random variable has the same mean value at all locations.

Measure location fields: [linear referencing] In linear referencing, either one or two fields in a table that describe the position of an event along a route.

Measurement: [standards] An observed numerical value that is an appraisal of size, extent, or amount according to a set criteria.

Measurement error: [surveying] In surveying, the noise that is expected in every measurement. It occurs because the observer makes estimates and uses measuring equipment that is unpredictable in an environment that is also unpredictable.

Measurement residual: [surveying] The difference between a measured quantity and its theoretical true value as determined during each iteration of a least-squares adjustment.

Median: [mathematics] The middle value of a set of values when they are ordered by rank. Half the values in a set are higher than the median, and half are lower. When there are two middle values (if the set has an even number of elements) the median is the mean of these two values.

[spatial statistics use for geostatistics] The location of a single x,y coordinate value that represents the median x-coordinate value and

the median y-coordinate value for all features in a study area.

Median center: [spatial statistics use for geostatistics] A location representing the shortest total distance to all other features in a study area.

Medium-format printer: [printing] A printing device capable of producing an image on paper or other media sized between 15 and 35 inches (38 and 90 centimeters) wide. Medium-format printers typically use inkjet printing technology to print an image on a roll or sheet-fed media. While most large-format printers are large, free-standing units, most medium-format printers are small enough to fit on a desk.

Members: [programming] Refers collectively to the properties and methods, or functions, of an interface or class.

[Internet] In ArcGIS Online, ArcGIS users who have registered for ArcGIS Online. Members can also belong to groups.

Memory cache: [computing] In ArcGlobe, the amount of system memory that the application will use.

Memory leak: [computing] In computer programming, the loss of computer memory that occurs when an application or component fails to free a section of computer memory when it has finished using it. During a memory leak, the section of memory allocated by one application or component may not be used by any other application.

Mental map: [mental maps] A person's perception of a place. A mental map may include the physical characteristics of a place, such as boundaries of a neighborhood, or the attributes of a place, such as a neighborhood's perceived unsafe areas. A mental map is primarily a psychological construct, although it may also be rendered as an actual map.

Menu: [software] A list of available commands or operations displayed on a computer screen from which a user can make a selection.

Menu item: [software] An item in a list of commands displayed on a menu.

Mereing: [surveying] Establishing a boundary relative to ground features present at the time of a survey.

Merge policy: [ESRI software] In geodatabases, rules that dictate what happens to the respective attributes of features that are merged together during editing in ArcMap. A merge policy can be set to assign a default value to the new attribute, summarize the values of the merged attributes, or create a weighted average from the merged attributes.

Merging: [analysis geoprocessing] Combining features from multiple data sources of the same data type into a single, new dataset.

Meridian: A great circle on the earth that passes through the poles, often used synonymously with longitude. Meridians run northsouth between the poles. By convention, meridians are labeled with positive numbers that ascend as one moves eastward from the prime meridian, and negative numbers as one moves westward from the prime meridian until the east and west hemispheres meet at the 180-degree line. Meridians can also, however, be labeled with all positive or negative numbers, including positive numbers increasing westward from the prime meridian.

Metadata: Information that describes the content, quality, condition, origin, and other characteristics of data or other pieces of information. Metadata for spatial data may

describe and document its subject matter; how, when, where, and by whom the data was collected; 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).

Metadata element: [data transfer] A unit of information within metadata, used to describe a particular characteristic of the data.

Metadata Explorer: [ESRI software] A Web application, developed using the ArcIMS Java Connector, that can be used to view metadata included in an ArcIMS metadata service.

Metadata profile: [standards] A modification of an existing metadata standard to adapt to data issues, cultural issues, or both. A profile is typically a subset of a base standard that tailors the metadata elements in the base standard to better describe the data to the community that uses it. Metadata profiles allow communities to follow a metadata standard, while at the same time enhancing the standard so that it is more appropriate for a particular use or locale.

Metadata server: [ESRI software] A public ArcIMS virtual server that provides the capability to manage and search a central metadata repository. Data producers can publish their metadata to the repository while data consumers are able to search the repository to locate appropriate data.

Metadata service: [ESRI software] A service that uses the spatial server metadata capabilities, allowing users to publish and share metadata documents over the Internet or an intranet.

Metes and bounds: A surveying method in which the limits of a parcel are identified as relative distances and bearings from landmarks. Metes and bounds surveying often resulted in irregularly shaped areas.

Method: [programming] In object-oriented programming, an action that an object is capable of performing. Objects that belong to the same class all have the same methods. For example, all Visual Basic form objects can execute a method called “Show and Hide.”

Metropolitan statistical area: [federal government] A geographic entity defined by the U.S. Office of Management and Budget for use by federal statistical agencies, including the U.S. Census Bureau. A metropolitan statistical area is based on the concept of a core area with a large population nucleus, plus adjacent communities having a high degree of economic and social integration with that core area. According to the 1990 standards, to qualify as a metropolitan statistical area, the area must include at least one city or urbanized area with 50,000 or more inhabitants and a total metropolitan population of at least 100,000 (75,000 in New England).

[Mi]

Microdensitometer: [graphics map display] A densitometer that can read densities in minute areas, used particularly for studying spectroscopic and astronomical images.

Micrometer: [physics] An instrument for measuring minute lengths or angles.

Micron: [physics] One millionth of a meter, represented by the symbol m. Microns are used to measure wavelengths in the electromagnetic spectrum.

Micropolitan statistical area: [government] A geographic region containing at least one urban

area with a population between 10,000 and 50,000, defined by the U.S. Office of Management and Budget for use by federal statistical agencies, including the U.S. Census Bureau. Micropolitan statistical areas include adjacent communities having a high degree of economic and social integration with the core area.

MIDP: [programming] Acronym for Mobile Information Device Profile. A set of J2ME APIs for wireless devices.

MIL-STD-2525B Change 1: [defense] The military specification for common war fighting symbology; the U.S. military standard that provides guidelines and criteria for the development and display of standard C4I war fighting symbology.

Military Analyst extension: [ESRI software] An ArcGIS extension that optimizes the effectiveness of core ArcGIS as a toolset foundation for military planners and intelligence analysts. Military Analyst is COM-compliant and extensible with ArcObjects.

Mimetic symbol: [symbology] A symbol that imitates or closely resembles the thing it represents, such as an icon of a picnic table that represents a picnic area.

Min/max scale: [ESRI software] The smallest and largest scales at which a layer is visible on a map. Scale ranges are used to prevent detailed layers from displaying when zoomed out and to prevent general layers from displaying when zoomed in.

Minimum bounding rectangle: [ESRI software] A rectangle, oriented to the x- and y-axes, that bounds a geographic feature or a geographic dataset. It is specified by two coordinate pairs: xmin, ymin and xmax, ymax.

Minimum candidate score: [geocoding] In geocoding, the minimum score a potential match record requires to be considered a candidate. This value is adjustable on the Address Locator Properties dialog box.

Minor axis: The shorter axis of an ellipse or spheroid.

Minute: [geodesy] An angle equal to 1/60 of a degree of latitude or longitude and containing sixty seconds.

[mathematics] An angle equal to 1/60 of a degree of arc.

Mixed list: [ESRI software] In Survey Analyst for field measurements, one of two types of lists in the List page. The mixed list has a mixed set of rows that might have, for instance, survey points, coordinate geometry measurements, and a mix of different computations.

Mixed pixel: In remote sensing, a pixel whose digital number represents the average of several spectral classes within the area that it covers on the ground, each emitted or reflected by a different type of material. Mixed pixels are common along the edges of features.

[Mo]

Model: [data models] An abstraction of reality used to represent objects, processes, or events.

[modeling] A set of rules and procedures for representing a phenomenon or predicting an outcome.

[data models] A data representation of reality, such as the vector data model.

[ESRI software] In geoprocessing in ArcGIS, one process or a sequence of processes connected together, that is created in ModelBuilder.

Model parameter: [ESRI software] In ArcGIS, a type of parameter exposed in a geoprocessing model that displays in a model's dialog box and allows for input.

ModelBuilder: [ESRI software] The interface used to build and edit geoprocessing models in ArcGIS.

Modifier: [ESRI software] In MOLE, text or graphics that display around a symbol, or a value that changes the appearance of a symbol. In some military specifications, attributes are referred to as modifiers.

MODIS: [satellite imaging] Acronym for moderate resolution imaging spectro-radiometer. A bundle of remote-sensing equipment housed on two NASA (National Aeronautics and Space Administration) satellites, Terra and Aqua, in orbit around Earth. These two MODIS-equipped satellites constantly record multiple images of the globe in various wavelengths and resolutions, imaging the earth's entire surface in less than two days.

MOLE: [ESRI software] Acronym for Military Overlay Editor. An ESRI software application that allows users to create, display, and edit military symbology in their maps.

Monochromatic: [physics] Related to a single wavelength or a very narrow band of wavelengths.

[graphics computing] A color scheme made up of lighter and darker shades of the same color.

Monte Carlo method: [modeling] An algorithm for computing solutions to problems that contain a large number of variables by performing iterations with different sets of random numbers until the best solution is found. The Monte Carlo method is usually applied to problems too complex for analysis by anything but a computer.

Mosaic: [remote sensing] A raster dataset composed of two or more merged raster datasetsfor example, one image created by merging several individual images or photographs of adjacent areas.

[visualization] Maps of adjacent areas with the same spatial reference and scale whose boundaries have been matched and dissolved.

Mosaic dataset: [data management] In ArcGIS, a collection of raster datasets (images) stored as a catalog and viewed as a mosaicked image.

Mouse mode: [data capture] A way of using a digitizing tablet in which the digitizer puck behaves like a mouse; the puck is used to point to interface elements rather than to trace shapes on the surface of the digitizing tablet.

[Mp]

MPS: [ESRI software] Acronym for Map Production System. The cartographic component of the Production Line Tool Set (PLTS). MPS is designed to facilitate large-volume cartographic production by providing the ability to create dynamic map layouts, batch symbology, and enhanced cartographic editing tools.

[Ms]

MSDN: [non-ESRI software] Acronym for Microsoft Developer Network. A set of services designed to help developers write applications using Microsoft products and technologies.

[Mt]

MTA: [programming] Acronym for multiple threaded apartment. An apartment that can

have multiple threads running. A process can only have one MTA.

[Mu]

Multichannel receiver: [remote sensing] A receiver that tracks several satellites at a time, using one channel for each satellite.

Multidimensional data: [data models] Data that is comprised of multiple dimensions, such as space and time. For example, a temperature dataset could have dimensions of latitude, longitude, altitude, and time.

Multimodal network: [network analysis] A network in which two or more types of transportation modes (such as walking, riding a train, or driving a car) are modeled. In a network dataset, multiple connectivity groups are required to create a multimodal network.

Multipart feature: [ESRI software] In ArcGIS, a digital representation of a place or thing that has more than one part but is defined as one feature because it references one set of attributes. In a layer of states, for example, the state of Hawaii could be considered a multipart feature because its separate geometric parts are classified as a single state. A multipart feature can be a point, line, or polygon.

Multipatch: [ESRI software] In ArcGIS, a type of geometry consisting of planar three-dimensional rings and triangles, used in combination to model objects that occupy discrete area or volume in three-dimensional space. Multipatches may represent geometric objects like spheres and cubes, or real-world objects like buildings and trees.

Multipatch feature: [ESRI software] In ArcGIS, a real-world geographic feature modeled using multipatch geometry.

Multipath error: [satellite imaging] Errors caused when a satellite signal reaches the receiver from two or more paths, one directly from the satellite and the others reflected from nearby buildings or other surfaces. Signals from satellites low on the horizon will produce more error.

Multiple regression: [statistics] Regression in which the dependent variable is measured against two or more independent variables.

Multiple Setup page: [ESRI software] In the Survey Analyst for field measurements Survey Explorer, one of two types of setup pages. The Multiple Setup page is used for computations that process more than one instrument setup.

Multiplexing channel receiver: [remote sensing] A receiver that tracks several satellite signals using a single channel.

Multipoint: [ESRI software] In ArcGIS software, a geometric element defined by an unordered set of x,y coordinate pairs.

Multipoint feature: [ESRI software] In ArcGIS software, a digital map feature that represents a place or thing that has neither area nor length at a given scale, and that is treated as a single object with multiple locations. For example, the entrances and exits to a prairie dog den might be represented as a multipoint feature. A multipoint feature is associated with a single record in an attribute table.

Multipoint feature class: [3D GIS] A feature class that can store many points per shape or row, thereby saving storage space and improving read-write performance.

Multispectral: [physics] Related to two or more frequencies or wavelengths in the electromagnetic spectrum.

Multispectral image: [remote sensing] An image created from several narrow spectral bands.

Multispectral scanner: [satellite imaging] A device carried on satellites and aircraft that records energy from multiple portions of the electromagnetic spectrum.

Multiuser geodatabase: [database structures] A geodatabase managed in an RDBMS server by ArcSDE. Multiuser geodatabases can be very large and support multiple concurrent editors. They are supported on a variety of commercial RDBMS, including IBM DB2, IBM Informix, Oracle, Microsoft SQL Server, and PostgreSQL.

Multivariate analysis: [statistics] Any statistical method for evaluating the relationship between two or more variables.

Multiversioned view: [ESRI software] In ArcGIS and ArcSDE, a view that uses stored procedures and triggers to access a specified version of data in a single business table in the geodatabase. A multiversioned view includes all the records in the business table that have been selected and merged with records from the delta tables. The schema of a multiversioned view is identical to that of the business table on which it is based.

[My]

My Output Data folder: [ESRI software] A computer file that contains all the work done in Business Analyst: study areas; analyses; and customer, store, and extracted data.

My Toolboxes folder: [ESRI software] In the catalog tree, a convenient place for creating and managing custom toolboxes.

N

[N-]

N-ary association: [programming] A UML term that describes how two classes have a relationship with one or more other classes. In an N-ary association, instances of the classes in question usually exist together, but can exist on their own. For example, a three-way valve usually has one size of pipe coming in and two other sized pipes going out. Before the pipes and valve are connected into the water system they are separate parts; therefore, they have an N-ary association.

[Na]

NAD 1927: Acronym for North American Datum of 1927. The primary local horizontal geodetic datum and geographic coordinate system used to map the United States during the middle part of the twentieth century. NAD 1927 is referenced to the Clarke spheroid of 1866 and an origin 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.

NAD 1983: Acronym for 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.

Nadir: [aerial photography] In aerial photography, the point on the ground vertically beneath the perspective center of the camera lens.

[astronomy] In astronomy, the point on the celestial sphere directly beneath an observer.

Both the nadir and zenith lie on the observer's meridian; the nadir lies 180 degrees from the zenith and is therefore unobservable.

NAICS: [data structures] Acronym for North American Industry Classification System. A system for classifying individual business locations by their types of economic activity. The statistics agencies of Canada, Mexico, and the United States collaborated on NAICS to standardize the industry statistics produced by the three countries. NAICS is used as an identification system by all federal statistical agencies, as well as many state and local agencies, trade associations, private businesses, and other organizations. NAICS replaced Standard Industrial Classification (SIC) codes in 1997.

NaN: [mathematics] Acronym for not a number.

National Geodetic Vertical Datum of 1929: [coordinate systems] The datum established in 1929 by the U.S. Coast and Geodetic Survey as the surface against which elevation data in the United States is referenced.

Natural breaks classification: [cartography] A method of manual data classification that seeks to partition data into classes based on natural groups in the data distribution. Natural breaks occur in the histogram at the low points of valleys. Breaks are assigned in the order of the size of the valleys, with the largest valley being assigned the first natural break.

Natural neighbors: An interpolation method for multivariate data in a Delaunay triangulation. The value for an interpolation point is estimated using weighted values of the closest surrounding points in the triangulation. These points, the natural neighbors, are the ones the interpolation point would connect to if inserted into the triangulation.

Navigate: [ESRI software] To interactively change the observer's or target's position using a tool designed for this purpose, such as the navigate or fly tool. There are three contexts in which a user can navigate: in a scene of ArcScene, in a preview of ArcCatalog, and in a globe of ArcGlobe.

Navigation: [wayfinding] The combined mental and physical activities involved in traveling to a destination, often a distant or unfamiliar one. Navigation comprises wayfinding and locomotion.

[geography] The activity of guiding a ship, plane, or other vehicle to a destination, along a planned or improvised route, according to reliable methods.

Navstar: [GPS] The name of the U.S. Department of Defense's Global Positioning System (GPS).

[Ne]

Nearest neighbor resampling: A technique for resampling raster data in which the value of each cell in an output raster is calculated using the value of the nearest cell in an input raster. Nearest neighbor assignment does not change any of the values of cells from the input layer; for this reason it is often used to resample categorical or integer data (for example, land use, soil, or forest type), or radiometric values, such as those from remotely sensed images.

Neatline: [cartography] The border delineating and defining the extent of geographic data on a map. It demarcates map units so that, depending on the map projection, the neatline does not always have 90-degree corners. In a properly made map, it is the most accurate element of the data; other map features may be moved slightly or exaggerated for generalization or readability, but the neatline is never adjusted.

Neighborhood functions: [mathematics] Methods of defining new values for locations using the values of other locations within a given distance or direction.

NetBeans IDE: [programming] An open-source development environment that supports all Java application types.

Network: [network analysis] An interconnected set of points and lines that represent possible routes from one location to another. For geometric networks, this consists of edge features, junction features, and the connectivity between them. For network datasets, this consists of edge, junction, and turn elements and the connectivity between them. For example, an interconnected set of lines representing a city streets layer is a network.

[computing] In computing, a group of computers connected in order to share software, data, and peripheral devices, as in a local or wide area network.

Network analysis: [network analysis] Any method of solving network problems such as traversability, rate of flow, or capacity, using network connectivity.

Network analysis class: [ESRI software] In ArcGIS Network Analyst, a feature class or table containing network analysis objects that is stored within a network analysis layer. Network Analyst solvers read input from, and write output to, network analysis classes.

Network analysis layer: [ESRI software] A composite layer that contains the properties and network analysis classes used in the analysis of a network problem, and the results of the analysis.

Network analysis object: [ESRI software] In ArcGIS Network Analyst, a feature or row in a network analysis class. Network analysis objects are used as input and written as output during network analysis. A network location is a specific type of network analysis object that has a defined position on a network dataset.

Network ancillary role: [ESRI software] An auxiliary or additional function performed by a junction feature within a geometric network. Junction features can act as sources or sinks for calculating flow direction. If a junction is a source or a sink, it is said to have an ancillary role in the network.

Network attribute: [ESRI software] A type of attribute associated with a network element in a network dataset. Network attributes are used to help control flow through a network (similar to a weight in a geometric network). All network elements in a network dataset have the same set of attributes. There are four types of network attributes: cost, descriptor, hierarchy, and restriction.

Network dataset: [ESRI software] A collection of topologically connected network elements (edges, junctions, and turns) that are derived from network sources, typically used to represent a linear network, such as a road or subway system. Each network element is associated with a collection of network attributes. Network datasets are typically used to model undirected flow systems.

Network element: [ESRI software] A component in a network dataset: an edge, junction, or turn. All elements in a network dataset share the same set of network attributes. Network elements are used to model topological relationships in undirected flow networks such as traffic flow systems. Network elements are generated from point, line, and turn features. When the network dataset is built, point features become junctions, line features become edges, and turn features become turn elements.

Network feature: [ESRI software] A component in a geometric network: an edge or a junction. Features in a geometric network are used to model topological relationships, typically in directed flow networks such as hydrologic or utility systems. Network features are generated from points and lines when the geometric network is built: point features become junctions, and line features become edges.

Network layer: [ESRI software] A layer that references a network dataset. In a geodatabase, a network dataset is a collection of network elements (edges, junctions and turns) that are derived from network sources.

Network location: [network analysis] A geographic position in a network system. 2 [ESRI software] In ArcGIS Network Analyst, a type of network analysis object that is zero-dimensional and has a defined position on a network dataset. It can be used during a network analysis operation, such as delivery stops for a route analysis. There are eight types of network locations: stops, barriers, facilities, incidents, origins, destinations, orders and depots.

Network node: [ESRI software] A connecting point in a geometric network, such as an intersection or interchange of a road network, confluence of streams in a hydrologic network, or switch in a power grid.

Network port: [Internet] A number that is used to specify direct communication over a network to an Internet application.

Network source: [ESRI software] Feature classes in a geodatabase that are used to generate and define a network dataset.

Network trace: [network analysis] A function that performs network analysis on a geometric network. Specific kinds of network tracing include finding features that are connected, finding common ancestors, finding loops, tracing upstream, and tracing downstream.

[Nm]

NMEA: Acronym for National Marine and Electronics Association. A nonprofit association composed of manufacturers, distributors, dealers, educational institutions, and others interested in peripheral marine electronics occupations. The NMEA has created a standard that defines an electrical interface and data protocol for communications between marine instrumentation that has been adopted as an industry standard by the GPS industry.

[No]

NoData: [data capture] In raster data, the absence of a recorded value. NoData does not equate to a zero value. While the measure of a particular attribute in a cell may be zero, a NoData value indicates that no measurements have been taken for that cell at all.

Node: [ESRI software] In a geodatabase, the point representing the beginning or ending point of an edge, topologically linked to all the edges that meet there.

[ESRI software] In a coverage, the beginning or ending point of an arc, topologically linked to all the arcs that meet there.

[data structures] In a TIN, one of the three corner points of a triangle, topologically linked to all triangles that meet there. Each sample point in a TIN becomes a node in the triangulation that may store elevation z-values and tag values.

[mathematics] In graph theory, any vertex in a graph.

[hardware] The point at which a computer, or other addressable device, attaches to a communications network.

Noise: [remote sensing] In remote sensing, any disturbance in a frequency band.

[data quality] Any irregular, sporadic, or random oscillation in a transmission signal.

[telecommunications] Random or repetitive events that interfere with communication.

[data quality] In a raster, irrelevant or meaningless cells that exist due to poor scanning or imperfections in the original source document.

Nominal data: [data structures] Data divided into classes within which all elements are assumed to be equal to each other, and in which no class comes before another in sequence or importance; for example, a group of polygons colored to represent different soil types.

Nonsimple polygon: [data editing] A polygon that violates topological integrity by crossing its own boundary (usually by making a small loop).

Nonspatial data: [data management] Data without inherently spatial qualities, such as attributes.

Normal distribution: [statistics] A theoretical frequency distribution of a dataset in which the distribution of values can be graphically represented as a symmetrical bell curve. Normal distributions are typically characterized by a clustering of values near the mean, with few values departing radically from the mean. There are as many values on the left side of the curve as on the right, so the mean and median values for the distribution are the same. Sixty-eight percent of the values are plus or minus one standard deviation from the mean; 95 percent of the values are plus or minus two standard deviations; and 99 percent of the values are plus or minus three standard deviations.

Normal form: [database structures] A set of guidelines for designing table and data structures in a relational database. When followed, normal form guidelines prevent data redundancy, increase database efficiency, and reduce consistency errors. A database is said to be in first normal form (1NF), second normal form (2NF), third normal form (3NF), and so on, depending on the level of normal form guidelines followed in its design. In practice, 3NF is commonly used, but higher levels are rarely used.

Normal template: [ESRI software] The template that is automatically loaded in ArcMap and contains all the standard toolbar and command default settings. User interface customization that is saved in the Normal template is loaded each time ArcMap is launched.

Normalization: [data management] The process of organizing, analyzing, and cleaning data to increase efficiency for data use and sharing. Normalization usually includes data structuring and refinement, redundancy and error elimination, and standardization. [statistics] 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.

North arrow: [symbology] A map symbol that shows the direction of north on the map, thereby showing how the map is oriented.

Northing: [coordinate systems] The distance north of the origin that a point in a Cartesian coordinate system lies, measured in that system's units.

[coordinate systems] The positive y-value in a rectangular coordinate system.

NOTAM: [navigation] Acronym for Notice to Airmen. An advisory bulletin containing information about the National Airspace System, typically time-sensitive information between publishing cycles, or corrections to published documents and charts.

Notification: [Internet] In ArcGIS Online, status message about your group membership request.

[Ns]

NSDI: Acronym for National Spatial Data Infrastructure. A federally mandated framework of spatial data that refers to U.S. locations, as well as the means of distributing and using that data effectively. Developed and coordinated by the FGDC, the NSDI encompasses policies, standards, procedures, technology, and human resources for organizations to cooperatively produce and share geographic data. The NSDI is developed by the federal governments; state, local, and tribal governments; the academic community; and the private sector.

NSDI Clearinghouse Network: [data sharing] A community of digital spatial data providers that maintain NSDI Clearinghouse Nodes as part of the U.S. National Spatial Data Infrastructure.

NSDI Clearinghouse Node: An Internet server that hosts a collection of metadata and data maintained and stored on a computer server by a data provider. An NSDI Clearinghouse Node provides information about geographic data within the data provider's areas of responsibility. Nodes must host FGDC-compliant metadata and data and use a common access protocol.

[Nt]

NTM: [navigation] Acronym for Notice to Mariners. A periodical update to existing nautical charts, issued by maritime authorities.

[Nu]

Nugget: [spatial statistics use for geostatistics] A parameter of a covariance or semivariogram model that represents independent error, measurement error, or microscale variation at spatial scales that are too fine to detect. The nugget effect is seen as a discontinuity at the origin of either the covariance or semivariogram model.

Null constraint: [ESRI software] A DBMS-defined restriction specifying that a column cannot contain a null value.

Null hypothesis: [statistics] A statement that essentially outlines an expected outcome when there is no pattern, no relationship, and/or no systematic cause or process at work; any observed differences are the result of random chance alone. The null hypothesis for a spatial pattern is typically that the features are randomly distributed across the study area. Significance tests help determine whether the null hypothesis should be accepted or rejected.

Null value: [spatial statistics use for geostatistics] The absence of a recorded value for a field. 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.

N

[Ob]

Object: [data models] In GIS, a digital representation of a spatial or nonspatial entity. Objects usually belong to a class of objects with common attribute values and behaviors.

[programming] In object-oriented programming, an instance of the data structure and behavior defined by a class.

[software] In computing, a piece of software that performs a specific task and is controlled by another piece of software, called a client. For example, an object is often the interface by which an application program accesses an operating system and other services.

[ESRI software] In ArcMap, ArcScene, or ArcGlobe, the camera, view, table or layer to which an animation track is attached.

object class: [ESRI software] In a geodatabase, a collection of nonspatial data of the same type or class. While spatial objects (features) are stored in feature classes in a geodatabase, nonspatial objects are stored in object classes.

[data models] A table in a geodatabase used to store a collection of objects with similar attributes and behavior. Objects with no locational information are stored as rows or records in object classes. Spatial objects, or features, are stored as rows in feature classes, which are a specialized type of object class in which objects have an extra attribute to define their geographic location.

Object model diagram: [programming] A graphical representation of the types in a library and their relationships.

Object pooling: [programming] The process of precreating a collection of instances of classes, such that the instances can be shared between multiple application sessions at the request level. Pooling objects allows the separation of potentially costly initialization and acquisition of resources from the actual work the object does. Pooled objects are used in a stateless manner.

Object view: [cognition] A philosophical view of geographic space in which space is seen as empty except where occupied by objects. In this view, every spatial location is either something (an object) or nothing.

Object-oriented database: [database structures] A data management structure that stores data as objects (instances of a class) instead of as rows and tables as in a relational database.

Object-oriented programming: [programming] A programming model in which related tasks, properties, and data structures are enclosed inside an object, and work is done when objects make requests and receive results from other objects. For example, a billing program may contain an object that maintains customer records. That object may pass information to another object that handles mailing statements, and another object that handles customer payments may ask it to update a customer record when a payment is received.

Oblate ellipsoid: An ellipsoid created by rotating an ellipse around its minor axis. The shape of the earth approximates an oblate ellipsoid with a flattening ratio of 1 to 298.257.

Oblique photograph: An aerial photograph taken with the axis of the camera held at an angle between the horizontal plane of the ground and the vertical plane perpendicular to the ground. A low oblique image shows only the surface of the earth; a high oblique image includes the horizon.

Oblique projection: [map projections] A planar or cylindrical projection whose point of tangency is neither on the equator nor at a pole.

[map projections] A conic projection whose axis does not line up with the polar axis of the globe.

[map projections] A cylindrical projection whose lines of tangency or secancy follow neither the equator nor a meridian.

Observer: [ESRI software] In ArcScene and ArcGlobe, the position of the camera in a scene or globe.

Observer offset: [ESRI software] In ArcScene and ArcGlobe, the height of the observer point above a surface used in analysis when calculating lines of sight and viewsheds.

[Od]

ODL: [programming] Acronym for Object Definition Language. Similar to Interface Definition Language, but used to define the objects contained in an object library.

[Of]

Off-nadir: [remote sensing] Any point not directly beneath a scanner's detectors, but rather off at an angle.

Offset: [cartography] In cartography, the displacement or movement of features so that they do not overlap when displayed at a given scale. For example, a road can be offset from a river if the symbols are wide enough that they overlap.

[symbology] In symbology, the shift of the origin or insertion point of a symbol in an x and/or y direction.

[ESRI software] In ArcGIS, a change in or the act of changing the z-value for a surface or features in a scene by a constant amount or by using an expression. Offsets may be applied to make features draw just above a surface.
Offset: [cartography] In cartography, the displacement or movement of features so that they do not overlap when displayed at a given scale. For example, a road can be offset from a river if the symbols are wide enough that they overlap.

[symbology] In symbology, the shift of the origin or insertion point of a symbol in an x and/or y direction.

[ESRI software] In ArcGIS, a change in or the act of changing the z-value for a surface or features in a scene by a constant amount or by using an expression. Offsets may be applied to make features draw just above a surface.

[Og]

OGC: [standards] Acronym for Open Geospatial Consortium. An international consortium of companies, government agencies, and universities participating in a consensus process to develop publicly available geospatial and location-based services. Interfaces and protocols defined by OpenGIS specifications support interoperability and seek to integrate geospatial technologies with wireless and location-based services.

OGIS: Acronym for Open Geodata Interoperability Specification. A specification, developed by the Open Geospatial Consortium, Inc., to support interoperability of GIS in a heterogeneous computing environment.

[Ol]

OLB: [programming] Acronym for object library. A binary file that stores information about a

logical collection of COM objects and their properties and methods in a form that is accessible to other applications at run time. Using a type library, an application or browser can determine which interfaces an object supports and invoke an object's interface methods.

OLE: [programming] Acronym for Object Linking and Embedding. A protocol from Microsoft that allows the development of reusable objects that can be exchanged by multiple applications. 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.

OLE custom control: [programming] Also known as an ActiveX control, an OLE custom control is contained in a file with the extension .ocx. The ArcGIS controls are ActiveX controls.

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.

OLE View: [ESRI software] A utility, available as part of Microsoft Visual Studio, that can be used to view type information stored in a type library or object library or inside a DLL.

[On]

On-demand cache: [ESRI software] In ArcGlobe, a temporary layer cache that is placed on disk and built as areas of the layer are viewed.

One-to-many relationship: [database structures] An association between two linked or joined tables in which one record in the first table corresponds to many records in the second table.

One-to-one relationship: [database structures] An association between two linked or joined tables in which one record in the first table corresponds to only one record in the second table.

One-way replication: [ESRI software] A type of geodatabase replication that allows data changes to be sent multiple times from the parent replica to the child replica. In a one-way replication, the data in the parent replica is editable, and the data in the child replica is read-only. During synchronization, edits are applied directly to the child replica so that no conflicts occur. ArcSDE geodatabases are used to create one-way replicas.

Ontology: [ocial context of GIS] In computer science, a data model that represents a domain by detailing the entities that comprise it and the semantic relationships between them. Ontologies generally include individuals, classes, attributes and relations.

[Op]

Open traverse: [surveying] In surveying, a traverse that does not close back upon itself or on another point of known position. As such, it does not provide a means of checking for errors.

OpenLS: [data sharing] Acronym for OpenGIS Location Services. A protocol, designed to work across the many different wireless networks and devices, that allows seamless access to multiple content repositories and service frameworks.

Operand: A data value or the symbolic representation of a data value in an expression. Operands may be numbers, character strings,

functions, variables, parenthetical expressions in the body of a larger expression, and so on. Symbolic representations of operands, such as variables and functions, are evaluated before they are operated upon by the operators in the expression. For example, in the expression "1 + 2", the operands are 1 and 2, and are operated upon by the + (plus) operator, which adds the operands together and returns the value 3.

Operation codes: [surveying] In surveying, an alphanumeric or numeric value included in an instrument vendor's data collector file format. Operation codes are used to describe such elements as new instrument setups and numeric values for horizontal angles, zenith angles, slope distance measurements, height of instrument, and height of target. These basic operation codes are supported in Survey Analyst for field measurements for the following formats: Geoserial Interface (GSI), TDS raw, TDS coordinate, Geodimeter, and Sokkia SDR.

Operator: [mathematics] The symbolic representation of a process or operation performed against one or more operands in an expression, such as "+" (plus, or addition) and ">" (greater than). When evaluated, operators return a value as their result. If multiple operators appear in an expression, they are evaluated in order of their operator precedence.

Operator precedence: [mathematics] The order in which operators are evaluated in an expression; operators with a higher precedence are evaluated before those with a lower precedence. If all operators in an expression have the same precedence, they are evaluated in the order in which they appear, from left to right. Parentheses may be used to override operator precedence; portions of an expression within parenthesis are evaluated first, and parenthetical expressions may be nested.

Optimization: [IS technology] The process of fine-tuning data, software, or processes to increase efficiency, improve performance, and produce the best possible results.

[Or]

Oracle: [computing] A database company that produces a relational database management system (also called Oracle), which allows data and other objects to be stored in tables. Oracle provides client/server access to data and uses indexes, sequences, and other database objects to facilitate rapid data creation, editing, and access. ESRI uses Oracle's RDBMS to store vector and raster data for use by ArcSDE.

Order: [ESRI software] In ArcGIS Network Analyst, a network location used to determine routes in vehicle routing problem (VRP) analysis. Users can specify multiple orders. Orders may represent any combination of service locations or pickup/delivery locations to be visited along a route.

Order pair: [ESRI software] In ArcGIS Network Analyst, an object used in vehicle routing problem (VRP) analysis. An order pair defines a relationship between two orders. The first order in the order pair represents a pickup which must then be delivered to the second order in the order pair on the same route.

Ordinal data: [data structures] Data classified by comparative value; for example, a group of polygons colored lighter to darker to represent less to more densely populated areas.

ordinary kriging: A kriging method in which the weights of the values sum to unity. It uses an average of a subset of neighboring points to produce a particular interpolation point.

Ordinate: [Euclidean geometry] In a rectangular coordinate system, the distance of the y-coordinate along a vertical axis from the

horizontal or x-axis. For example, a point with the coordinates (7,3) has an ordinate of 3.

Ordnance Survey: [cartography] The national mapping and cartographic agency of the United Kingdom. Now a civilian organization, the Ordnance Survey is one of the world's largest producers of maps and was the first national mapping organization in the world to complete a large-scale program of digital mapping.

Orientation: [geography] An object's position or relationship in direction with reference to points of the compass. 2 [ESRI software] In Survey Analyst for field measurements, the method by which horizontal angle readings for TPS measurements are converted into azimuths.

Orientation of vertical labels: [ESRI software] An option that controls whether a label can be placed in an upside-down or sideways position. A small angle prevents labels from switching their reading order in the labeling of nearly vertical lines.

Origin: [coordinate systems] A fixed reference point in a coordinate system from which all other points are calculated, usually represented by the coordinates (0,0) in a planar coordinate system and (0,0,0) in a three-dimensional system. The center of a projection is not always its origin.

[ESRI software] The primary object in a relationship, such as a feature class containing points where measurements are taken. The measurements are stored in another table.

[ESRI software] In a network in ArcInfo Workstation, the beginning of a path. 4 [ESRI software] In ArcGIS Network Analyst, a network location used in origin-destination cost matrix analysis that specifies a starting location.

Origin-destination cost matrix: [ESRI software] In ArcGIS Network Analyst, a type of network analysis that computes a table containing the total impedance from each origin to each destination. Additionally, it ranks the destinations that each origin connects to in ascending order of the time it takes to travel from that origin to each destination.

Orthogonal: [Euclidean geometry] Intersecting at right angles.

Orthogonal offset: [Euclidean geometry] A line that is perpendicular to another line at its point of tangency, often used to measure distance from a line to a separate point that does not lie along the original line.

Orthographic projection: A planar projection, tangent to the earth at one point, that views the earth's surface from a point approaching infinity, as if from deep space.

Orthographic view: [ESRI software] In 3D Analyst, a perspective that allows viewing of data in a scene as a two-dimensional plane seen from above. There is no perspective foreshortening in orthographic view, so scale is constant across the entire display.

Orthophoto: [aerial photography] An aerial photograph from which distortions owing to camera tilt and ground relief have been removed. An orthophoto has the same scale throughout and can be used as a map.

Orthophotoquad: An orthophotograph that has been formatted as a USGS 1:24,000 topographic quadrangle with little or no cartographic enhancement.

Orthophotoscope: [aerial photography] A photomechanical or optical-electronic device that creates an orthophotograph by removing

geometric and relief distortion from an aerial photograph.

Orthorectification: [satellite imaging] The process of correcting the geometry of an image so that it appears as though each pixel were acquired from directly overhead. Orthorectification uses elevation data to correct terrain distortion in aerial or satellite imagery.

[Ou]

Out-of-process: [ESRI software] Within the process space of a client application, a component contained in an EXE is out-of-process; instantiated classes are loaded into the process space of the EXE in which they are defined rather than into that of the client.
Outbound interface: [programming] An interface implemented by a class, on which that object can make calls to its clients; analogous to a callback mechanism.

Outlier: [statistics] An unusual or extreme data value in a dataset. In data analysis, outliers can potentially have a strong effect on results and so must be analyzed carefully to determine if they represent valid or erroneous data.

[geology] In geology, a feature that lies apart from the main body or mass to which it belongs: for example, a rock or stratum that has been separated from a formation by erosion.

Outline: [data models] The path that follows the boundary of an object. Outlines are also called strokes.

outline vectorization: [data conversion] A vectorization method that generates lines along the borders of connected cells. It is typically used for vectorizing scanned land-use and vegetation maps.

Output: [map display] A satellite image, aerial photograph, or scanned map over which vector data is displayed. Although a background image can be used to align coordinates, it is not linked to attribute information and is not part of the spatial analysis in a GIS.

Output coordinate system: [ESRI software] Acronym for output coordinate system. In ArcWeb Services, a user-defined map projection.

Output data: [modeling] Data that is the result of a computer, device, program, or process.

Output directory: [ESRI software] In ArcIMS, the folder designated during installation to hold files being served to users for display in a browser.

[Ov]

Overflow list: [ESRI software] A list of labels that could not be placed, generated during the process of converting labels to annotation. This list allows the manual placement or deletion of these labels.

Overlapping rings: [spatial analysis] A method of defining the rings in an analysis so that the values inside the rings are cumulative. For example, if you had an analysis with three concentric rings and 10 households in each, the total number of households for ring 1 would be 10, the total for ring 2 would be 20 (ring 1 + ring 2), and the total for ring 3 would be 30 (ring 1 + ring 2 + ring 3).

Overlay: [analysis geoprocessing] A spatial operation in which two or more maps or layers registered to a common coordinate system are superimposed, either digitally or on a transparent material, for the purpose of showing the relationships between features that occupy the same geographic space.

[analysis geoprocessing] In geoprocessing, the geometric intersection of multiple datasets to combine, erase, modify, or update features in a new output dataset.

Overlay Wizard: [ESRI software] In ArcGIS 8.3 and previous versions, an ArcToolbox wizard that uses overlay operations to create a new coverage by computing the geometric intersection of two coverages: an input coverage and an overlay coverage.

Overprinting: [cartography] In cartography, portraying cartographic updates on a map by printing new or modified information over the original cartography, usually in a distinctive color.

[printing] In offset printing, printing a color on top of areas already inked with a different color. Overprinting is often used to print thin lines, such as contours, or small intricate graphics, such as text characters, to reduce the effect of registration problems. Overprinting can also be used to create the effect of mixing two colors where they are coincident. For example, yellow printed over cyan will appear green.

Override: [ESRI software] In network datasets, a type of junction connectivity policy in which the way junctions connect to other junctions is not based on the existing edge connectivity policy; junctions "override" the edge connectivity policy.

[ESRI software] In ArcGIS, an exception made to a property of a feature representations representation rule so that the feature is drawn differently than others sharing the same rule.

Overshoot: [data structures] The portion of an arc digitized past its intersection with another arc.

Overview: [data management] In ArcGIS, a lower-resolution image created to increase display speed and reduce CPU usage when viewing a mosaicked image from a mosaic dataset.

Overview map: [cartography] A generalized, smaller-scale map that shows the limits of another map's extent along with its surrounding area.

Overview terrain: [3D GIS] Coarsest representation of the terrain dataset, intended for fast drawing at small scales.

Overview window: [ESRI software] A secondary window in ArcMap data view that shows the full extent of the data, without changing the map extent. A red box in the window represents the current map extent.

[Ow]

Owner: [ESRI software] The person or organization responsible for creating and maintaining data or a map. The owner determines who has access to the content and the content permissions. 2 [Internet] In ArcGIS Online, the person responsible for creating and managing an item of content or a group. The owner determines who has access to the content or group.

P

[P-]

P-code: [GPS] The PRN code used by United States and allied military GPS receivers.

P-value: [statistics] A probability resulting from a statistical test of the coefficient associated with each independent variable in a regression model. The null hypothesis for this statistical test states that the coefficient is not significantly different from zero. Small p-values reflect small probabilities. They suggest that the coefficient is significantly different from zero, and consequently, that the associated explanatory variable is helping to model or predict the dependent variable. Variables with coefficients near zero do not help predict or model the dependent variable; they are almost always removed from the regression equation (unless there are strong theoretical reasons to keep them).

[Pa]

Packet: [ESRI software] In Survey Analyst – Cadastral Editor, an XML stream or file containing the portion of the cadastral fabric that has been extracted by a cadastral fabric job for editing.

Page unit: The unit of measure, 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.

Pan: [map display] To shift a map image relative to the display window without changing the viewing scale.

Pan sharpening: [digital image processing] Sharpening a low-resolution multiband image by merging it with a high-resolution panchromatic image.

Panchromatic: [remote sensing] Sensitive to light of all wavelengths in the visible spectrum.

Paneled map: [map design] A map spliced together from smaller maps of neighboring areas.

Parallax: [photogrammetry] The apparent shift in an object's position when it is viewed from two different angles.

Parallel: [geodesy] An imaginary east-west line encircling the earth, parallel to the equator and connecting all points of equal latitude. Also, the representation of this line on a globe or map.

Parallel: processing [computing] In computer data communications, a method of storing or sending data side by side, in groups of bits. Parallel data transmission is most often used for printer ports.

Parameter: [map projections] One of the variables that define a specific instance of a map projection or a coordinate system. Parameters differ for each projection and can include central meridian, standard parallel, scale factor, or latitude of origin.

[mathematics] A variable that determines the outcome of a function or operation.

[ESRI software] In geoprocessing in ArcGIS, a characteristic of a tool. Values set for parameters define a tool's behavior during run time.

Parametric curve: [mathematics] A curve that is defined mathematically rather than by a series of connected vertices. A parametric curve has only two vertices, one at each end.

Parcel: [cadastral and land records] A piece or unit of land, defined by a series of measured straight or curved lines that connect to form a polygon.

[ESRI software] In Survey Analyst – Cadastral Editor, a group of point, line and polygon features in the cadastral fabric that contain information such as dimensions on the line features, area on the polygon features and other administrative data. Parcels may be used to model lots, blocks, and many other land units.

Parcel construction: [ESRI software] In Survey Analyst – Cadastral Editor, a set of dimensions entered to create a set construction line work.

Parcel group: [ESRI software] In Survey Analyst – Cadastral Editor, a set of parcels that exist as a group instead of individually in a cadastral fabric job.

Parcel PIN: [cadastral and land records] Acronym for parcel identification number. In Survey Analyst – Cadastral Editor, a unique identifier for a parcel. The format of an identifier is defined by the government's organization, and may contain numerical values, alpha characters, or both.

Parcel type: [cadastral and land records] A classification for parcels, used to provide additional information about them and how they must be treated for least squares adjustment. Standard parcels, blocks, and easements are all examples of parcel types.

Parent replica: [ESRI software] In geodatabase editing, data in a source geodatabase that is replicated.

Parse: [computing] In computing, to divide a sequence of letters and numbers into parts, especially to test their agreement with a set of syntax rules.

[education] To break a sentence into parts of speech and describe them grammatically.

Partial address support: [geocoding] The ability to return a list of geocoding candidates based on incomplete address information. For example, if a city name but no country is entered in a partial address support search, the result list contains cities whose names match the name entered.

Partial cache: [ESRI software] In ArcGlobe, an on-demand cache that contains levels of detail for areas that have been visited, or a pre-processed cache that has a specified, incomplete, level of detail range for the entire layer.

Partial sill: [spatial statistics use for geostatistics] A parameter of a covariance or semivariogram model that represents the variance of a spatially auto-correlated process without any nugget effect. In the semivariogram model, the partial sill is the difference between the nugget and the sill.

Passive remote sensing: [remote sensing] A remote-sensing system, such as an aerial photography imaging system, that only detects energy naturally reflected or emitted by an object.

Passive sensors: [remote sensing] Imaging sensors that can only receive radiation, not transmit it.

Password: [computing] A string of characters that a user must enter to access a computer, program, database, or Web site. Passwords are a means of protecting and restricting access to information contained on networks, systems, or files.

Patch: [3D GIS] A single triangular face inside a multipatch geometry. In most cases, many patches (faces) are used together to create a complex 3D model. Examples include geometric shapes, such as spheres, cubes, and tubes; geographic features, such as buildings, cars, and

light poles; and other boundary representations, such as isosurfaces, used to represent geologic structures or environmental plumes. Patches in a multipatch geometry may or may not include an image (texture) displayed on them.

Path: [network analysis] The connecting lines, arcs, or edges that join an origin to a destination.

[computing] In computing, the location of a computer file, given as the drive, directories, subdirectories, and file name, in that order.

[data models] In ArcGIS software, a geometric element from which polylines and polygons are constructed. A path is a sequence of connected, nonintersecting segments, with no two segments having the same start point or the same endpoint.

[ESRI software] In ArcMap, ArcScene, and ArcGlobe, a single line feature or graphic used to define the movement of a camera, view or layer in an animation.

[ESRI software] In ArcInfo 7, the connecting arcs that join an origin to a destination.

Path distance analysis: [spatial analysis] In ArcGIS Spatial Analyst, a description of each cell's least accumulative cost relationship to a source or a set of sources, accounting for surface distance, horizontal cost factors and vertical cost factors.

Path label: [ESRI software] A label that describes the nature of the association between the objects in a relationship. The forward path label describes the relationship when navigating from the origin to the destination; for example, station points "have" measurements. The backward path label describes the same relationship naviga:ting from the destination to the origin, which might be "are taken at" in this example; measurements "are taken at" stations.

Pathfinding: [network analysis] The process of calculating the optimal path between an origin and a destination point or points in a network.

Pattern recognition: In image processing, the computer-based identification, analysis, and classification of objects, features, or other meaningful regularities within an image.

[Pd]

PDF: [data structures] Acronym for Portable Document Format. A proprietary file format from Adobe that creates lightweight text-based, formatted files for distribution to a variety of operating systems.

[Pe]

Peak: [geography] The highest point of a mountain or hill. 2 [modeling] In modeling, a point on a surface around which all slopes are negative.

Percent slope: [Euclidean geometry] A measurement of the rate of change of elevation over a given horizontal distance, in which the rise is divided by the run and then multiplied by one hundred. A 45-degree slope and a 100-percent slope are the same.

Performance: [computing] A measure of the speed at which a computer system works. Factors affecting performance include availability, throughput, and response time.

Perigee: [astronomy] In an orbit path, the point at which the object in orbit is closest to the center of the body being orbited.

Permanent dataset: [data management] A dataset permanently stored on disk.

Permanent license: [intellectual property rights] A license that has a time-out date listed as permanent, indicating that the license for a particular product does not expire.

Persistence: [computing] In computing, the process of saving or storing data; retaining the current state of an object in a memory storage medium such as a database or file on disk.

Personal geodatabase: [database structures] A geodatabase that stores data in Microsoft Access. A personal geodatabase can be read simultaneously by several users, but only one user at a time can edit the same data.

Perspective view: [3D GIS] A projection mode in 3D applications that allows viewing from a perspective that can be controlled by navigating the scene or globe from a specified location.

[Ph]

Photogeology: [aerial photography] The science of interpreting and mapping geologic features from aerial photographs or remote-sensing data.

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.

Photomap: [aerial photography] An aerial photograph or photographs, referenced to a ground control system and overprinted with map symbology.

Photometer: [physics] An instrument that records the intensity of light by converting incident radiation into an electrical signal and then measuring it.

Physical geography: [geography] The field of geography concerning the natural features of the earth's surface.

Physical network: [ESRI software] One of the two parts of a network system; the actual feature classes that participate in a network system.

[Pi]

Picture fill: [graphics computing] A type of fill pattern created by continuous tiling of either a .bmp (raster image) or a .emf (vector graphic) file.

Pie chart: [statistics] A chart shaped like a circle cut into wedges from a center point, that represents percentage values as proportionally sized "slices." Pie charts are used to represent the relationship between parts and the whole.

Pinning: [ESRI software] In ArcGlobe, anchoring a vector graphic element to the underlying globe surface so that it remains fixed.

Pit: [geography] A depression in the earth's surface.

[modeling] In modeling, a point on a surface around which all slopes are positive.

Pixel: [data models] The smallest unit of information in an image or raster map, usually square or rectangular. Pixel is often used synonymously with cell.

[remote sensing] In remote sensing, the fundamental unit of data collection. A pixel is

represented in a remotely sensed image as a cell in an array of data values.

[graphics computing] The smallest element of a display device, such as a video monitor, that can be independently assigned attributes, such as color and intensity. Pixel is an abbreviation for picture element.

Pixel size: [ESRI software] The dimensions on the ground of a single pixel in a raster, measured in map units. Pixel size is often used synonymously with cell size.

Pixel space: [graphics computing] The x,y coordinate space defined by the number of pixels in a computer's display area, with a pixel being a single unit of color on the screen. Most computer displays support several pixel configurations (800 x 600, 1024 x 768, 1600 x 1200, and so on). The more pixels there are, the smaller each pixel is for a given display size. Since a pixel is a piece of information, a configuration with more pixels can fit more information into a given display area.

[Pl]

Place: [government] In census geography, any incorporated or unincorporated city, town, or community.

Place-name alias: [geocoding] The formal or common name of a location, such as the name of a school, hospital, or other landmark. For example, "Memorial Hospital" is the place name for the address "893 Memorial Drive." In geocoding, the address locator can be set to accommodate the use of place-name aliases in place of their addresses for matching.

Plan: [surveying] In surveying, a high-level organization of parcels; a survey document containing data from a recorded subdivision survey plan, or from a legal description. Often, many parcels are defined in one plan. In the Survey Analyst – Cadastral Editor cadastral fabric, plans hold such information about the subdivision plan record as the date, surveyor, entry units, scale factor, and so on. Each parcel contains a reference to a plan.

Planar coordinate system: [coordinate systems] A two-dimensional measurement system that locates features on a plane based on their distance from an origin (0,0) along two perpendicular axes.

Planar enforcement: [data conversion] A set of rules used to define a consistent method of building point, line and polygon features from spaghetti-digitized data. For example, planar enforcement includes rules that polygons of differing soil types cannot overlap, and that lines must be split at intersections.

Planar projection: A projection that transforms points from a spheroid or sphere onto a tangent or secant plane. Because its directions are often true, the planar projection is also known as an azimuthal or zenithal projection.

Planarize: [data editing] The process of creating multiple line features by splitting longer features at the places where they intersect other line features. This process is often applied to non-topological line work that has been spaghetti digitized or imported from a CAD drawing.

Plane survey: A survey of a small area that does not take the curvature of the earth's surface into account.

Planimetric: [aerial photography] Two-dimensional; showing no relief.

Planimetric base: [aerial photography] A two-dimensional map that serves as a guide for contour mapping, usually prepared from aerial photographs.

Planimetric map: [cartography] A map that displays only the x,y locations of features and represents only horizontal distances.

Planimetric shift: [aerial photography] Deviations in the horizontal positions of features in an aerial photograph caused by differences in elevation. Planimetric shift causes changes in scale throughout a photograph.

Plat: A survey diagram, drawn to scale, of the legal boundaries and divisions of a tract of land.

Platform: [software] In computing, the operating system of a machine, such as the UNIX, Linux, or Windows operating systems. Platform may also refer to a programming language or development environment, such as COM, Java, or ArcGIS 9.

Playback mode: [ESRI software] The time mode in which data is displayed using the ArcGIS Tracking Analyst Playback Manager, replaying either real-time or fixed-time data.

Playback window: [ESRI software] The span of time defined by the Start and End text boxes in the ArcGIS Tracking Analyst Playback Manager. This window can be set to include the temporal extent of one or more layers.

Plotter: [printing] A printing device that draws an image onto large-size paper or transparencies. Although pen and electrostatic plotters have largely been replaced by large-format inkjet printers, the term plotter is still frequently used to refer to all large print devices.

PLSS: [surveying] Acronym for Public Land Survey System. The description of the location of land in the United States using a survey system established by the federal government in 1785. The system is based on the concept of a township, a square parcel of land measuring 6 miles on each side. The township's position is described as a number of 6-mile units east of a north-south line (called the meridian) and north or south of an east-west line (called the baseline). Each township is divided into 36 sections, each of which is 1 square mile. A section is divided into quarters equal to 160 acres. The quarter section may be further divided into four 40-acre parcels. The PLSS is also called the rectangular survey.

PLTS: [ESRI software] Acronym for Production Line Tool Set. A software package that allows users to prepare and maintain data for maps, perform quality assurance/quality control tasks, and create map sheets. Its base product, PLTS Foundation, is composed of three parts: Foundation Tools, GIS Data ReViewer, and Map Production System and MPS-Atlas. The tools can be used with different product specifications, and are available as solutions that have been created for nautical, defense, aeronautical, and mapping agencies.

PLTS data loader: [ESRI software] A tool used to batch load a personal or enterprise geodatabase from a variety of sources (coverages, shapefiles, or geodatabases). The PLTS data loader uses a cross-reference database to map the input schema to the output schema.

PLTS Map Gallery: [ESRI software] In PLTS, a tool for managing layer representation, such as symbology and label expressions.

Plug-in: [Internet] A small software application that extends the functionality of a Web browser.

Plug-in data source: [ESRI software] An additional read-only data source provided by either ESRI or a third-party developer. It may be a data source forming part of the core ArcObjects or an extension.

Plumb line: [surveying] A line that corresponds to the direction of gravity at a point on the earth's surface; the line along which an object will fall when dropped.

[Pm]

PMF: [ESRI software] Acronym for Published Map File. A file exported by the Publisher extension that can be read by ArcReader. Publisher Map Files end with a .pmf extension.

[Pn]

PNG: Acronym for Portable Network Graphics. A bitmapped graphics format similar to GIF.

[Po]

Point: [ESRI software] A geometric element defined by a pair of x,y coordinates.

Point and coordinate analysis: [ESRI software] In Survey Analyst, part of the validation of survey data. This type of analysis is used to authenticate the relationships between survey points, coordinates, and the physical locations they represent.

Point event: [linear referencing] In linear referencing, a feature that occurs at a precise point location along a route and uses a single measure value. Examples include accident locations along highways, signals along rail lines, bus stops along bus routes, and pumping stations along pipelines.

Point feature: [ESRI software] A map feature that has neither length nor area at a given scale, such as a city on a world map or a building on a city map.

[ESRI software] In ArcGIS software, a digital map feature that represents a place or thing that has neither length nor area at a given scale.

Point identifier field: [ESRI software] A field in the Survey Analyst Survey Explorer dialog box that allows a user to specify the name of a particular survey point.

Point mode digitizing: [data capture] A method of digitizing in which the digitizer selects particular points, or vertices, to encode.

Point name flag: [ESRI software] In Survey Analyst, a visual indicator, after each keystroke, of whether or not a point with the typed name already exists in the survey dataset.

Point name prefix: [ESRI software] In Survey Analyst, a unique part of every survey project. Points have a common name space across all projects of a survey dataset. However, different points in different projects can have the same name. When making use of these points, users can use the prefix of the survey project before the point's name to uniquely identify it. This ensures that the correct point is used.

Point size: [graphics map display] A unit of measure for fonts, nearly equal to 1/72 of an inch.

Point thinning: [3D GIS] Act of reducing point data in a dataset. Point thinning reduces the number of point measurements needed to represent a surface for a given area.

Point-in-polygon overlay: [spatial analysis] A spatial operation in which points from one feature dataset are overlaid on the polygons of another to determine which points are contained within the polygons.

Polar aspect: [map projections] A planar projection with its central point located at either the north or south pole.

Polar orbit: A satellite orbit with an inclination near 90 degrees that passes over each polar region.

Polar radius: [geodesy] The distance from the earth's geometric center to either pole.

Polygon: [data models] On a map, a closed shape defined by a connected sequence of x,y coordinate pairs, where the first and last coordinate pair are the same and all other pairs are unique.

[ESRI software] In ArcGIS software, a shape defined by one or more rings, where a ring is a path that starts and ends at the same point. If a polygon has more than one ring, the rings may be separate from one another or they may nest inside one another, but they may not overlap.

Polygon feature: [data models] A map feature that bounds an area at a given scale, such as a country on a world map or a district on a city map.

[ESRI software] In ArcGIS software, a digital map feature that represents a place or thing that has area at a given scale. A polygon feature may have one or more parts. For example, a building footprint is typically a polygon feature with one part. If the building has a detached unit, it might be represented as a multipart feature with discontinuous parts. If the detached unit is in an interior courtyard, the building might be represented as a multipart feature with nested parts. A multipart polygon feature is associated with a single record in an attribute table.

Polygon overlay: [data editing] The process of superimposing two or more geographic polygon layers and their attributes to produce a new polygon layer.

Polygon-arc topology: [data models] In a polygon coverage, the list of topologically connected arcs that define the boundary of a polygon feature and the label point that links it to an attribute record in the coverage point attribute table.

Polyhedron: A three-dimensional object or volume defined by a number of plane faces or polygons.

Polyline: [ESRI software] In ArcGIS software, a shape defined by one or more paths, in which a path is a series of connected segments. If a polyline has more than one path (a multipart polyline), the paths may either branch or be discontinuous.

Polyline feature: [ESRI software] In ArcGIS software, a digital map feature that represents a place or thing that has length but not area at a given scale. A polyline feature may have one or more parts. For example, a stream is typically a polyline feature with one part. If the stream goes underground and later reemerges, it might be represented as a multipart polyline feature with discontinuous parts. If the stream diverges around an island and then rejoins itself, it might be represented as a multipart polyline feature with branching parts. A multipart polyline feature is associated with a single record in an attribute table.

Portal: [Internet] A Web resource that provides access to a broad array of related resources and services.

Portlet: [Internet] A Web component that processes requests and generates dynamic content. Portlets are used in portals as pluggable user interfaces to add specialized content, such as weather information, news, or maps, to Web pages. Users can customize the content, appearance, and position of a portlet.

Position: [surveying] The latitude, longitude, and altitude (x,y,z coordinates) of a point, often accompanied by an estimate of error. Position may refer to an object's orientation (facing east, for example) without referring to its location.

Postal code: [geocoding] A series of letters or numbers, or both, in a specific format, used by the postal service of a country to divide geographic areas into zones in order to simplify delivery of mail.

Posting: [data editing] During versioned geodatabase editing, the process of applying the current edit session to the reconciled target version.

Power: [mathematics] The number of times a value is to be multiplied by itself, indicated by an exponent. For example, 2 3=2*2*2.

[Pr]

Precision: [data quality] The closeness of a repeated set of observations of the same quantity to one another. Precision is a measure of the control over random error. For example, assessment of the quality of a surveyor's work is based in part on the precision of their measured values.

[data quality] The number of significant digits used to store numbers, particularly coordinate values. Precision is important for accurate feature representation, analysis, and mapping.

[data quality] A statistical measure of repeatability, usually expressed as the variance of repeated measures about the mean.

Prediction: [spatial statistics use for geostatistics] In spatial modeling, the process of forming a statistic from observed data to assign values to random variables at locations where data has not been collected.

Prediction standard error: [spatial statistics use for geostatistics] A value quantifying the uncertainty of a prediction; mathematically, the square-root of the prediction variance. (The prediction variance is the variation associated with the difference between the true and predicted value.) As a rule, 95 percent of the time the true value will lie within the predicted value plus or minus two times the prediction standard error if data is normally distributed.

Preferences: [software] User-specified settings that determine how an application will act or appear when it is used.

Prefix pin: [ESRI software] Used within the Survey Analyst Survey Explorer's Point Identifier field to separate the prefix and point name strings.

Preliminary topology: [ESRI software] In coverages, refers to incomplete region topology. Region topology defines region-arc and region-polygon relationships. A topological region has both the region-arc relationship and the region-polygon relationship. A preliminary region has the region-arc relationship but not the region-polygon relationship. In other words, preliminary regions have no polygon topology. Coverages with preliminary topology have red in their icons in ArcCatalog.

Preprocessed cache: [ESRI software] In ArcGlobe, a cache that is built prior to viewing, using an independent process accessed from the shortcut menu of a layer.

Preview: [ESRI software] A live view of GIS data in ArcCatalog. Users can pan and zoom the preview, query features, and create thumbnail images to store in metadata.

Primary colors: [graphics computing] Colors from which all other colors are derived in a particular color system. On a display monitor,

these colors are red, green, and blue. In printing, they are cyan, magenta, and yellow. In traditional pigments, they are red, blue, and yellow.

Primary key: [database structures] An attribute or set of attributes in a database that uniquely identifies each record. A primary key allows no duplicate values and cannot be null.

Primary table: [database structures] In geocoding, the attribute table associated with the primary reference data. Based on the address locator style selected, certain address elements must be present in the primary table.

Prime meridian: [coordinate systems] In a coordinate system, any line of longitude designated as 0 degrees east and west, to which all other meridians are referenced. The Greenwich meridian is internationally recognized as the prime meridian for most official purposes, such as civil timekeeping.

Prime vertical: In astronomy and geodesy, the vertical circle that passes through an observer's zenith and through the east and west points of the horizon.

Private virtual server: [ESRI software] An ArcIMS virtual server that offers functionality not directly accessible when creating a Web site. The functionality associated with each of the three private ArcIMS virtual servers (geocode server, query server, and extract server) is called from within a service created using a public virtual server. For example, if you incorporate an image service with a geocodable street network into a Web site with the Geocode tool, a client can access the geocode server's functionality. The geocode virtual server works with the image virtual server to perform address matching and other geocoding functions.

PRJ: Usually a text file named prj.adf that is associated with a coverage, GRID, or TIN. The PRJ file contains the coordinate system information for the data. In a more general sense, PRJ can refer to the coordinate system of data even if the information is not stored in a prj.adf file. For example, "The PRJ of the shapefile is WGS 1984 UTM zone 15 north."

PRN code: [GPS] Acronym for pseudo-random noise code. A repeating radio signal broadcast by each GPS satellite and generated by each GPS receiver. In a given cycle, the satellite and the receiver start generating their codes at the same moment, and the receiver measures how much later the satellite's broadcast reaches it. By multiplying that time by the speed of radio waves, the receiver can compute the distance between the satellite's antenna and its own.

Probability: [statistics] A measure of the likelihood that a particular outcome, such as a spatial pattern or event, will occur given a set of possible outcomes. Probability values range from 0 for impossible outcomes to 1 for completely certain outcomes. The probability that a tossed coin will land heads-up, for example, is 0.5, since landing heads-up is one of two possible outcomes.

Probability map: [statistics] A surface that gives the probability that the variable of interest is above or below a specified threshold value.

Procedure: [programming] In software, a block of code that performs some task. Procedures are commonly used to organize code into reusable units. In object-oriented programming, a procedure that is specific to an object or class is called a method.

Process: [modeling] In geoprocessing in ArcGIS, a tool and its parameter values. One process, or multiple processes connected together, creates a model.

[ESRI software] In ArcGIS Image Server, applied to an image service definition or each raster within the image service definition.

Process chain: [ESRI software] In ArcGIS Image Server, a list of raster processes that are performed on the fly by the server on raster data. The full process chain contains the raster dataset process applied to the raster data before mosaicking, and the service process applied after mosaicking.

Profile graph: [cartography] A graph of the elevation of a surface along a specified line.

ProgID: [ESRI software] A string value, stored in the system registry, identifying a class by library and class name, for example esriCarto.FeatureLayer. The ProgID registry key also contains the human-readable name of a class, the current version number of the class, and a unique class identifier. ProgIDs are used in VB object instantiation.

Project: [ESRI software] In Survey Analyst, a specific task for capturing survey data. This can include anything from a field control survey to data entry from a subdivision plan. 2 [organizational issues] A specific plan, task, or scheme undertaken by a person or group of persons, usually for the purpose of problem identification and/or resolution, within a given time frame.

Project and Map Sheet Catalog: [ESRI software] A geodatabase designed to manage database and map production for the Production Line Tool Set (PLTS). The PMC stores metadata and geometries of projects, products and source material.

Project data: [modeling] Any data in a process that existed before the process existed.

Project repair: [ESRI software] In an ArcView 3.x project, the process of updating document paths when referenced document data is moved from one disk location to another. Project repair can be avoided if a system variable is entered as part of the document path and set within the necessary system file(s).

Projected 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.

Projected coordinates: A measurement of locations on the earth's surface expressed in a two-dimensional system that locates features 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. Projected coordinates are transformed from latitude and longitude to x,y coordinates using a map projection.

Projection: [coordinate systems] 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. Some projections can be visualized as a transparent globe with a light bulb at its center (though not all projections emanate from the globe's 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.

Projection transformation: [data conversion] The mathematical conversion of a map from one projected coordinate system to another, generally used to integrate maps from two or more projected coordinate systems into a GIS.

Projective transformation: [data conversion] A transformation used only to transform coordinates digitized directly from high-altitude aerial photographs of relatively flat terrain, assuming there is no systematic distortion in the photographs.

Prolate ellipsoid: [mathematics] An ellipsoid created by rotating an ellipse around its major axis.

Property: [ESRI software] An attribute of an object defining one of its characteristics or an aspect of its behavior.

Property file: [ESRI software] A file that stores attributes for a particular ArcIMS item or function. Property files have a .properties file extension.

Property page: [software] A user interface component that provides access to change the properties of an object or objects.

Proportional symbol: [symbology] A symbol whose size differs in relation to the phenomenon being mapped.

Proximity analysis: [spatial analysis] A type of analysis in which geographic features (points, lines, polygons, or raster cells) are selected based on their distance from other features or cells.

Proximity query: [spatial analysis] A form of spatial query in which geographic features within a specified distance of a particular feature are selected.

Proxy object: [programming] A local representation of a remote object, supporting the same interfaces as the remote object. All interaction with the remote object from the local process is mediated via the proxy object. A local object makes calls on the members of a proxy object as if it were working directly with the remote object.

[Ps]

Pseudo node: [ESRI software] In a geodatabase topology, a temporary feature marking the location where an edge has been split during an edit session. This type of pseudo node becomes a vertex when the edit is saved.

[ESRI software] In a geodatabase topology or ArcInfo coverage, a node connecting only two edges or arcs, or the endpoint of an edge or arc that connects to itself.

[Pu]

Public participation: The active involvement of stakeholders outside an organization in the decision-making or planning processes of that organization. Public participation in GIS processes may include making GIS tools and data accessible, at an appropriate technical level, to stakeholders, or it may result in knowledge gained from stakeholders being incorporated into GIS analyses.

Public virtual server: [ESRI software] An ArcIMS virtual server that must be specified when creating a new service. Three public virtual servers install with ArcIMS: image server, feature server, and metadata server. Two additional public virtual servers, ArcMap server and route server, are optional extensions to ArcIMS.

Publish: [output] To produce data and information in a distributable format, such as digital, Internet, or print media.

Publisher: [software] Software that converts raw information into a more usable format.

[ESRI software] An individual or organization that makes content available to users.

Puck: [data capture] The handheld device used with a digitizer to record positions from the tablet surface.

Pull check-in: [database structures] In ArcGIS 9.1 and previous versions, a check-in operation initiated from a master geodatabase.

Push check-in: [database structures] In ArcGIS 9.1 and previous versions, a check-in operation initiated from a checkout geodatabase.

[Py]

Pyramid: [data structures] In raster datasets, a reduced resolution layer that copies the original data in decreasing levels of resolution to enhance performance. The coarsest level of resolution is used to quickly draw the entire dataset. As the display zooms in, layers with finer resolutions are drawn; drawing speed is maintained because fewer pixels are needed to represent the successively smaller areas.

Q

[Qq]

QQ plot: [statistics] A scatter chart in which the quantiles of two distributions are plotted against each other.

[Qu]

Quadrangle: [cartography] A rectangular map bounded by lines of latitude and longitude, often a map sheet in either the 7.5-minute or 15-minute series published by the U.S. Geological Survey. Quadrangles are also called topo sheets.

Quadrant: [coordinate systems] In a rectangular coordinate system, any of the quarters formed by the central intersection of x and y axes that divide a plane into four equal parts.

[Euclidean geometry] One quarter of a circle measured from the center, having an arc of 90 degrees.

Quadrat: [spatial statistics use for geostatistics] In spatial sampling, one of a set of identically-sized areas, often rectangular, within which the members of a population are counted. The size, number, and location of quadrats within a study area are chosen by the sampler. Population counts in each quadrat are compared to determine distribution patterns.

Guadrat analysis: [spatial statistics use for geostatistics] Comparison of the statistically expected and actual counts of objects within spatial sampling areas (quadrats) to test for distribution patterns such as randomness and clustering.

Quadtree: A method for encoding raster data that reduces storage requirements and improves access speeds by storing values only for homogeneous regions rather than for every pixel. The raster is recursively subdivided into quadrants until all regions are homogeneous or until some specified level has been reached.

Qualitative data: [data structures] Data classified or shown by category, rather than by amount or rank, such as soil by type or animals by species.

Quality assurance: [quality assurance] A process used to verify the quality of a product after its production.

Quality Beta: [ESRI software] In ArcGIS Survey Analyst, when used together, the F test and W test are called the B method of testing, for which a power can be defined. This power is the Quality Beta, and can be defined as follows: the probability that the null hypothesis is accepted while, in fact, it is false, is equal to 1-b.

Quality control: [quality control] A process used during production of a product to ensure its quality.

Quantile: [statistics] In a data distribution, a value representing a class break, where classes contain approximately equal numbers of observations. The p-th quantile, where p is between 0 and 1, is that value that has a proportion p of the data below the value. For theoretical distributions, the p-th quantile is the value that has p probability below the value.

Quantile classification: A data classification method that distributes a set of values into groups that contain an equal number of values.

Quantitative data: [data structures] Data grouped or shown by measurements of number or amount, such as population per unit area.

Quantitative geography: [geography] The application of mathematical and statistical concepts and methods to the study of geography.

Query: [programming] A request to select features or records from a database. A query is often written as a statement or logical expression.

Query expression: A type of expression that evaluates to a Boolean (true or false) value, that is typically used to select those rows in a table in which the expression evaluates to true. Query expressions are generally part of a SQL statement.

Query interface: [ESRI software] A client may request a reference to a different interface on an object by calling the Query Interface method of the IUnknown interface.

Query language: [computing] A language for storing, retrieving, and editing data in a database.

Query server: [ESRI software] A private ArcIMS virtual server that works with an image server to support query functions. When a viewer requests an identify or find operation, the query server returns the related geographic or tabular data. It can be built against shapefiles, ArcSDE layers, and joined external tables.

Query table: [database structures] A table containing results from a query.

R

[R-]

R-squared: [statistics] A statistic computed by the regression equation to quantify model performance. The value of R-squared ranges from 0 to 100 percent. If a model fits the observed dependent variable values perfectly, the R-squared value is 1.0, although this is highly unlikely. An R-squared value like 0.49, for example, is far more likely, and means that the model explains 49% of the variation in the dependent variable.

R-tree: A tree data structure, similar to a B-tree, used for indexing spatial data within a database. In an R-tree structure, data is sorted into a set of hierarchical nodes that may overlap. Each node has a variable number of entries, each of which includes an identifier for child nodes or actual data elements and a bounding box for all entries within the child node or the data elements. Searching algorithms check the bounding boxes before searching within a child node, thus avoiding extensive searches.

[Ra]

Radar: [physics] Acronym for radio detection and ranging. A device or system that detects surface features on the earth by bouncing radio waves off them and measuring the energy reflected back.

Radar altimeter: [physics] An instrument that determines elevation, usually from mean sea level, by measuring the amount of time an electromagnetic pulse takes to travel from an aircraft to the ground and back again.

Radar interferometry: [remote sensing] The analysis of interferograms that have been created by IFSAR, or artificially. Radar interferometry involves the comparison of two or more images of the same area taken from different positions and calibrated with surveyed ground points to generate three-dimensional digital elevation models (DEMs), or models demonstrating slight movements of surface features.

Radial basis functions: [spatial statistics use for geostatistics] In ArcGIS Geostatistical Analyst, a deterministic interpolation method. The interpolated surface is forced to conform to the sample data points, and the method does not have standard errors associated with it. Spline interpolation is a special case of radial basis functions.

Radian: [Euclidean geometry] The angle subtended by an arc of a circle that is the same length as the radius of the circle, approximately 57 degrees, 17 minutes, and 44.6 seconds. There are 2 radians in one complete rotation.

Radiation: [physics] The emission and propagation of energy through space in the form of waves. Electromagnetic energy and sound are examples of radiation.

Radiometer: [physics] An instrument that measures the intensity of radiation in a particular band of wavelengths in the electromagnetic spectrum, such as infrared or microwave.

Radiometric correction: [remote sensing] Procedures that correct or calibrate aberrations in data values due to specific distortions from such things as atmosphere effects (such as haze) or instrumentation errors (such as striping) in remotely sensed data.

Radiometric resolution: [physics] The sensitivity of a sensor to incoming reflectance. Radiometric resolution refers to the number of divisions of

bit depth (for example, 255 for 8-bit, 65,536 for 16-bit, and so on) in data collected by a sensor.

Radius: [Euclidean geometry] The distance from the center to a point on the outer edge of a circle, circular curve, or sphere.

Random noise: [spatial statistics use for geostatistics] In a spatial model, variation in the value of a variable that cannot be described by a mathematical function and is not spatially correlated: it includes measurement error and micro scale variation (variation at a finer scale than that at which the data has been sampled). Random noise is one of the three main components along with drift and spatially correlated variation that contribute to the change in value of a variable over a surface. In a semivariogram, random noise is represented by the nugget. Random noise is sometimes called white noise.

Range: A parameter of a variogram or semivariogram model that represents a distance beyond which there is little or no autocorrelation among variables.

Range domain: [data structures] 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 1 and 32 inches.

Rank: [accuracy] A method of assigning an accuracy value to feature classes to avoid having vertices from a feature class collected with a high level of accuracy being snapped to vertices from a less accurate feature class. Vertices from higher ranking feature classes will not be moved when snapping with vertices with lower ranked feature classes. The highest rank is one; up to 50 different ranks can be assigned.

Raster: [data models] A spatial data model that defines space as an array of equally sized cells arranged in rows and columns, and composed of single or multiple bands. 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 the same type of geographic feature.

[ESRI software] In ArcGIS, an in-memory representation of a raster dataset. A raster may exist in memory as a subset of a raster dataset; it may have a different cell size than the raster dataset; or it may exist using a different transformation than the raster dataset.

Raster Calculator: [ESRI software] An ArcGIS Spatial Analyst tool for performing mathematical calculations with operators and functions, setting up selection queries, or typing Map Algebra syntax. Inputs to the Raster Calculator can be raster datasets, raster layers, coverages, shapefiles, tables, constants and numbers.

Raster catalog: [ESRI software] 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. Raster catalogs can be 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.

Raster cleanup: [ESRI software] The process of drawing, filling, and erasing raster cells using ArcScan Raster Cleanup and Raster Painting tools.

Raster data model: [data models] A representation of the world as a surface divided into a regular grid of cells. Raster models are useful for storing data that varies continuously,

as in an aerial photograph, a satellite image, a surface of chemical concentrations, or an elevation surface.

Raster dataset: [data models] In ArcGIS, a raster spatial data model that is stored on disk or in a geodatabase. Raster datasets can be stored in many formats, including TIFF, JPEG 2000, Esri Grid, and MrSid.

Raster dataset band: [remote sensing] One layer in a raster dataset that represents data values for a specific range in the electromagnetic spectrum (such as ultraviolet, blue, green, red, and infrared), or radar, or other values derived by manipulating the original image bands. A raster dataset can contain more than one band. For example, satellite imagery commonly has multiple bands representing different wavelengths of energy from along the electromagnetic spectrum.

Raster intersection: [data models] Three or more lines in a raster that meet at a common point.

Raster layer: [ESRI software] In ArcGIS, a layer that references a raster as its data source and a raster renderer that defines how the raster data should be rendered and any additional display properties.

Raster postprocessing: [data conversion] In ArcScan, the automatic correction of vector feature results immediately after batch vectorization is completed. Postprocessing involves generalizing lines, straightening angles, and smoothing lines.

Raster preprocessing: [data conversion] Simple raster editing that prepares images for viewing and analysis. Preprocessing includes georeferencing, clipping, positioning, resizing, enhancing, and mosaicking.

Raster process definition file: [ESRI software] In ArcGIS Image Server, an XML file that contains properties of the raster dataset, including metadata, as well as the definition of processes to be applied to one or more individual rasters. A raster process definition file has a .RPDef extension.

Raster statistics: [ESRI software] Statistics that are calculated from the cell values of each band in a raster. The statistics that are calculated include the minimum, maximum, mean, and standard deviation cell values, and if the dataset is thematic, the number of classes. Statistics are required for some rendering and geoprocessing operations.

Raster tracing: [data conversion] An interactive vectorization process that involves drawing along the boundary of contiguous raster cells to create vector features.

Raster type: [data models] In ArcGIS, identifies metadata, such as georeferencing, acquisition date, and sensor type, along with a raster format.

Rasterization: [data conversion] The conversion of points, lines, and polygons into cell data.

Rasterized feature layer: [ESRI software] A feature layer in ArcGlobe that exists as points, lines and polygons but is rendered as cell data. When layers are added to ArcGlobe, they may automatically be rendered in raster format to retain their cartographic symbology.

Ratio data: [data structures] Data classified relative to a fixed zero point on a linear scale. Mathematical operations can be used on these values with predictable and meaningful results. Examples of ratio measurements are age, distance, weight, and volume.

Ratioing: In digital image processing, enhancing the contrast between features in an image by dividing the values of pixels in one image by the values of corresponding pixels in a second image.

Ray tracing: [3D GIS] A technique that traces imaginary rays of light from a viewer's eye to the objects in a three-dimensional scene to determine which parts of the scene should be displayed from that perspective.

[Rd]

RDBMS: [database structures] Acronym for relational database management system. A type of database in which data is organized across one or more tables. Tables are associated with each other through common fields called keys. In contrast to other database structures, an RDBMS requires few assumptions about how data is related or how it will be extracted from the database.

[Re]

Real-time data: [data capture] Data that is displayed immediately, as it is collected. Real-time data is often used for navigation or tracking.

Real-time mode: [ESRI software] The time mode in ArcGIS Tracking Analyst in which data is automatically displayed on the map after being added.

Reclassification: [spatial analysis] The process of taking input cell values and replacing them with new output cell values. Reclassification is often used to simplify or change the interpretation of raster data by changing a single value to a new value, or grouping ranges of values into single valuesfor example, assigning a value of 1 to cells that have values of 1 to 50, 2 to cells that range from 51 to 100, and so on.

Reconcile: [database structures] In concurrency management, to merge all modified data in the current database edit session with a second version of the data.

Record: [database structures] A set of related data fields, often a row in a database, containing all the attribute values for a single feature. For example, in an address database, the fields that together provide the address for a specific individual comprise one record. In the SQL query language, a record is analogous to a tuple.

[database structures] A row in a table.

Rectification: [data conversion] The process of applying a mathematical transformation to an image so that the result is a planimetric image.

Rectilinear: [mathematics] Characterized by straight lines, usually parallel to orthogonal axes.

[map design] A map or image whose horizontal and vertical scales are identical.

Recycling: [programming] The process by which server instances in a pool are replaced by new instances of services. Recycling allows services that have become unusable to be destroyed and replaced with fresh services, and it reclaims resources taken up by stale services.

Redistricting: [government] The process of revising the boundaries of administrative, legislative, or election districts.

Redundancy: [ESRI software] In Survey Analyst, occurs when the number of observed measurements is greater than the number of computed coordinates in a measurement network.

Reference: [programming] A pointer to an object, interface, or other item allocated in memory. COM objects keep a running total of

the references to themselves via the IUnknown interface methods AddRef and Release.

Reference data: [geocoding] In geocoding, material containing the location and address information of specific features. Reference data consists of the spatial representation of the data and the related attribute table.

Reference data source: [ESRI software] In ArcGIS, a spatial data layer that a geocoding service uses to perform address geocoding. A reference data source can be any point, line, or polygon feature class that contains the necessary address attributes. Each address component is stored as a separate attribute. The address attributes can be contained in the reference data source itself or in a table joined to it.

Reference datum: [geodesy] Any datum, plane, or surface from which other quantities are measured.

Reference ellipsoid: [geodesy] An ellipsoid associated with a geodetic reference system or geodetic datum.

Reference map: [map design] A map designed to show where geographic features are in relation to each other.

Reference point: [ESRI software] In Survey Analyst, a point with known coordinates, used as input to a computation.

Reference scale: [symbology] The scale at which symbols appear on a digital page at their true size, specified in page units. As the extent is changed, text and symbols will change scale along with the display. Without a reference scale, symbols will look the same at all map scales.

Reference system: [coordinate systems] A method for identifying positions on the globe. This is often constructed with a grid that either refers to the earth's latitude and longitude (graticule), or a planar equivalent that divides grid lines by a fixed length from a predefined point of origin.

Reference theme: [ESRI software] In ArcView 3.x, a theme used to perform geocoding. A reference theme can be any point, line, or polygon theme that contains the necessary address fields. Each address component (such as street name, address range, street prefix, and street type) is stored as a separate field. The address fields can be contained in the reference theme itself or in a table joined to it. During geocoding, each address is matched to a feature in the reference theme that has matching address components (either the single address or address range), then coordinates for the new point features are determined.

Referencing: [ESRI software] In Survey Analyst, occurs when a copy of a coordinate from a different project is added to the survey point for exclusive use in your project. When this referencing happens, you must choose one of the following coordinates: the GIS coordinate or the current coordinate of the owning survey project.

Referential constraint: [ESRI software] A DBMS-defined restriction that ensures that foreign key values in the rows in the child table always have matching primary key values in the parent table.

Referential integrity: [data quality] A mechanism for ensuring that data remains accurate and consistent as a database changes. When changes are made to a table related to another table by a common key, the changes are automatically reflected in both tables.

Reflectance: [physics] The proportion of incident radiant energy that is reflected by a surface. Reflectance varies according to the wavelengths of the incident radiant energy and the color and composition of the surface.

Regedit: [non-ESRI software] A utility, part of the Windows operating system, that allows you to view and edit the system registry.

Region: [geography] In geography, an area usually distinguished by common cultural or physical characteristics, such as Southern California, Western Europe, or Southeast Asia.

[data models] A set of contiguous cells with the same value.

[ESRI software] In the coverage data structure, a polygon feature made up of multiple polygons that may be separate, overlapping, nested, or adjacent. The polygons that compose a region are stored in a polygon feature class, while the region is stored in a subclass of this feature class. A region has its own attributes but no shape geometry; its shape is defined by the shape geometry of the polygons that compose it.

Register: [data editing] To align two or more maps or images so that equivalent geographic coordinates coincide.

[geolocating] To link map coordinates to ground control points.

[software] In computing, to add information about a software component to the system registry, generally performed using the RegSvr32 utility. Programs search the system registry to locate software components. Registering is commonly used to make dynamic link libraries (DLLs) available to other programs. The Unregister command may be used to remove the component.

Registration number: [ESRI software] A three-letter, nine-digit number (ABC123456789, for example) that authenticates software with ESRI. Every single use and server product, including their extensions or options, has a unique registration number.

Registry: [computing] Stores information about system configuration for a Windows machine. COM uses the registry extensively, storing details of COM components including ProgIDs and ClassIDs, file location of the binary code, marshalling information, and categories in which they participate.

Registry file: [software] A file containing information in Windows Registry format. Double-clicking a .reg file in Windows will enter the information in the file into the system registry. Often used to register components to component categories.

Regression: [statistics] A statistical method for evaluating the relationship between a single dependent variable and one or more independent variables thought to influence the dependent variable. Regression is used to predict the value of the dependent variable or to determine whether an independent variable in fact influences the dependent variable, and to what extent.

Regression coefficient: [statistics] A value associated with each independent variable in a regression equation, representing the strength and type of relationship the independent variable has to the dependent variable. For example, fire frequency might be modeled as a function of solar radiation, vegetation, precipitation, and aspect. A positive relationship between fire frequency and solar radiation is likely (the more sun, the more frequent the fire incidents). When the relationship is positive, the sign for the associated coefficient is also positive. A negative relationship between fire

frequency and precipitation is also likely (places with more rain have fewer fires). Coefficients for negative relationships have negative signs. If the relationship is strong, the absolute value of the coefficient is large. Weak relationships are associated with coefficients near zero.

Regression equation: [statistics] The mathematical formula applied to independent variables to best predict the dependent variable being modeled. The notation in regression equations is always Y for the dependent variable and X for the independent variables. Each independent variable is associated with a regression coefficient describing the strength and sign of that variable's relationship to the dependent variable. A regression equation might look like this (where b represents a regression coefficient): Y = b0 + b1X1 + b2X2 + bnXn

RegSvr32: [software] A Windows utility that registers a DLL or similar component library to a system registry. A DLL and its components must be registered before it can be used.

Rehydrate: [programming] In programming, to reinstantiate an object and its state from persisted storage.

Reject processing: [geocoding] Handling unmatched addresses through fine-tuning the geocoding process. After a table of addresses are matched the first time, unmatched addresses can be reviewed or edited. Reject processing attempts to find possible matches by correcting errors or adjusting search criteria for the addresses that fail the first time.

Relate: [database structures] An operation that establishes a temporary connection between records in two tables using a key common to both.

Relate manager: [ESRI software] An ArcToolbox utility used to build, modify, save, and delete connections (relates) between tables. Saved connections can be reactivated in future ArcToolbox sessions.

Relational database: [database structures] A data structure in which collections of tables are logically associated with each other by shared fields.

Relational operator: [ESRI software] In ArcGIS Spatial Analyst, an operator that evaluates specific relational conditions. If a condition is TRUE, the output is assigned a value of 1. If the condition is FALSE, the output is assigned a value of 0.

[spatial analysis] An expression used to compare values associated with data: greater than, less than, maximum, minimum, contains, and so forth.

Relationship: [database structures] An association or link between two objects in a database. Relationships can exist between spatial objects (features), between nonspatial objects (rows in a table), or between spatial and nonspatial objects.

Relationship class: [database structures] An item in the geodatabase that stores information about a relationship. A relationship class is visible as an item in the ArcCatalog tree or contents view.

Relative accuracy: [accuracy] A measure of positional consistency between a data point and other, near data points. Relative accuracy compares the scaled distance of objects on a map with the same measured distance on the ground.

Relative bearing: [navigation] A bearing measured relative to a vessel or aircraft's heading.

Relative coordinates: [map projections] Coordinates identifying the position of a point with respect to another point.

Relative path: [computing] In computing, the location of a computer file given in relation to the current working directory.

Relative replica: [ESRI software] In geodatabase editing, the other replica in a replica pair of parent and child. The relative replica to a child replica is the parent replica, and vice versa.

Reliability diagram: [cartography] A map element that contains a simplified view of the sources used to compile a map.

Relief: [cartography] Elevations and depressions of the earth's surface, including those of the ocean floor. Relief can be represented on maps by contours, shading, hypsometric tints, digital terrain modeling, or spot elevations.

Rematching: [geocoding] The process of regeocoding a feature or features in a geocoded feature class.

Remote sensing: [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 device and reflected back to it. Examples of remote-sensing methods include aerial photography, radar, and satellite imaging.

Remote-sensing imagery: [remote sensing] Imagery acquired from satellites and aircraft, including panchromatic, radar, microwave, and multispectral satellite imagery.

Renderer: [graphics computing] A mechanism that defines how data appears when displayed. For example, the hillshade renderer for raster data in ArcMap calculates and applies shading based on existing data values for slope and aspect.

Rendering: [graphics computing] The process of drawing to a display; the conversion of the geometry, coloring, texturing, lighting, and other characteristics of an object into a display image.

Rendering tab: [ESRI software] In 3D Analyst, a tab on the Layer Properties dialog box that allows users to control whether or not a layer is displayed during scene navigation, how it is shaded, and its drawing priority. It also allows users to adjust how the computer's memory is allocated when rendering large images.

Repeatable read: [ESRI software] The isolation level in a database management system (DBMS) that ensures that when the same rows are read multiple times during the course of a transaction, the returned values are the same between subsequent reads.

Replica: [ESRI software] In geodatabase editing, the portion of the data in a geodatabase that is copied from a source geodatabase to a destination geodatabase during the replication process. The replica includes information needed to synchronize changes to the data. There are three types of replicas: one-way replicas, two-way replicas, and check-in/checkout replicas.

Replica pair: [ESRI software] In geodatabase editing, each combination child and parent replica.

Replica schema changes file: [ESRI software] An XML file that describes schema differences between the data in a replica and its relative replica.

Replica schema file: [ESRI software] A workspace document file that describes the schema of the data in a replica.

Replica version: [ESRI software] In geodatabase editing, the version being replicated during the replication process. For all replica types, the replica version for a parent replica is the version the user was connected to when the replica was created. For one-way and two-way replicas, the replica version for a child replica is always the default version. Changes made to replica versions may be synchronized between the replicas.

Replication: [ESRI software] A means of copying and distributing data from one database to local, remote, or mobile users and then synchronizing between these databases for consistency.

Repository: [ESRI software] In ArcGIS, a database that contains the schema information needed to create a geodatabase from a UML model created using a CASE tool.

[ESRI software] In ArcSDE, a collection of system tables that contain metadata needed to manage ArcSDE data.

Representation: [cartography] A method of illustrating data so it can be viewed and understood. In cartography, representation is used to depict likenesses of real-world features in such a way that the depictions symbolize or correspond to the real features. Representation is used to present information in a format that is viewable, storable, and transferable.

[cartography] A visual likeness or depiction of an entity that acts as a substitute for the actual entity.

[ESRI software] In ArcGIS, extra information added to a feature or feature class that defines rules and overrides for display on a map.

Representation control point: [ESRI software] In ArcGIS, a specialized geometry vertex that controls the phases of certain geometric effects in a representation rule.

Representation rule: [ESRI software] In ArcGIS, the combination of symbology and any geometric effects that together define the appearance of features sharing a common representation rule ID.

Representative fraction: [cartography] The ratio of a distance on a map to the equivalent distance measured in the same units on the ground. A scale of 1:50,000 means that one inch on the map equals 50,000 inches on the ground.

Resampling: [mathematics] The process of interpolating new cell values when transforming rasters to a new coordinate space or cell size.

Residual: [statistics] In a regression model, the difference between the observed Y value and the predicted Y value; the unexplained portion of the dependent variable. Predicted values rarely match observed values exactly. The residual is one measure of model fit. Large residuals indicate poor model fit.

Resolution: [cartography] 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.

[graphics computing] The dimensions represented by each cell or pixel in a raster.

[graphics computing] The smallest spacing between two display elements, expressed as dots per inch, pixels per line, or lines per millimeter.

[ESRI software] In ArcGIS, the smallest allowable separation between two coordinate values in a feature class. A spatial reference can include x, y, z, and m resolution values. The inverse of a resolution value was called a precision or scale value prior to ArcGIS 9.2.

Resource center: [ESRI software] ESRI Web site providing various online resources such as online help, user forums, blogs, samples, user communities, developer content, and so onto help users learn about and use a particular ESRI product. The Resource Center gateway is located at http://resources.esri.com.

REST: [Internet] Acronym for Representational State Transfer. An architecture for exchanging information between peers in a decentralized, distributed environment. REST allows programs on different computers to communicate independently of an operating system or platform by sending a Hypertext Transfer Protocol (HTTP) request to a uniform resource locator (URL) and getting back data in some format for example, XML, or inside a URL. REST is used in Web services.

Restriction: [network analysis] A Boolean network element attribute used for limiting traversal through a network dataset. “One way street,” “no trucks allowed,” and “buses only” are examples of restrictions.

Reverse geocoding: [geocoding] The process of finding a street address from a point on a map.

[Rg]

RGB: [graphics computing] A color model that uses red, green, and blue, the primary additive colors used to display images on a monitor. RGB colors are produced by emitting light, rather than by absorbing it as is the case with ink on paper. Adding 100 percent of all three colors results in white.

[Rh]

Rhumb line: [geodesy] A complex curve on the earth’s surface that crosses every meridian at the same oblique angle. A rhumb line path follows a single compass bearing; it is a straight line on a Mercator projection, or a logarithmic spiral on a polar projection. A rhumb line is not the shortest distance between two points on a sphere.

[Ri]

Rich client application: [programming] An application that stores and retrieves data locally rather than remotely, enabling easy interaction with other internal resources. Client-side applications maintain a consistent look and feel and support a complex user interface but do not offer the security of server-side applications.

Ring: [ESRI software] In ArcGIS, a geometric element from which polygons are constructed. A ring is a closed path (one that begins and ends at the same point).

Ring study: The simplest and most widely used type of market-area analysis, in which a circle is generated around an area on a map; then the underlying demographics are extracted from the area delineated by the circle. Generally, a ring study is used to generate a rough visualization of the market area around a point.

River addressing: [linear referencing] In hydrology applications, another name for linear referencing. River addressing allows objects such as gauging stations to be located by their relative positions along a line feature.

[Rm]

RMS error: Acronym for root mean square error. A measure of the difference between locations that are known and locations that have been

interpolated or digitized. RMS error is derived by squaring the differences between known and unknown points, adding those together, dividing that by the number of test points, and then taking the square root of that result.

[Ro]

Roamer: [navigation] A transparent gauge that represents easting and northing distances at a given map scale, used to locate positions on a map.

Roller-feed scanner: [data capture] A type of scanner that moves a document through a roller assembly over camera sensors that capture a digital image.

Route: [linear referencing] Any line feature, such as a street, highway, river, or pipe, that has a unique identifier.

[network analysis] A path through a network.

In ArcGIS Network Analyst, a path through a network that visits a set of specified network locations. In vehicle routing problem (VRP) analysis, a route may also refer to a vehicle and its associated properties and constraints.

Route analysis: [ESRI software] In ArcGIS Network Analyst, a type of network analysis that determines the best route from one network location to one or more other locations. It can also calculate the quickest or shortest route depending on the impedance chosen. The order of the stops may be determined by the user. For example, if the impedance is time, then the best route is the quickest route.

Route Editing toolbar: [ESRI software] A set of tools that allows users to create and modify routes in ArcMap.

Route event: [linear referencing] In linear referencing, linear, continuous or point features occurring along a base route system.

Route event source: [linear referencing] In linear referencing, the result of the dynamic segmentation process. A route event source serves an event table as a dynamic feature class. Every row in the table is served as a feature whose shape is calculated when needed. For example, a route event source can act as the basis of a feature layer in ArcMap.

Route event table: [linear referencing] In linear referencing, a table that stores route locations and their attributes. A route event table, at a minimum, consists of a route identifier field and a measure location field (point events) or fields (line events).

Route identifier: [linear referencing] In linear referencing, a numeric or character value used to identify a route.

Route location: [linear referencing] In linear referencing, a discrete location along a route (point) or a portion of a route (line). A point route location uses only a single measure value to describe a discrete location along a route. A line route location uses both a from- and to-measure value to describe a portion of a route.

Route measure: [linear referencing] In linear referencing, a value stored along a linear feature that represents a location relative to the beginning of the feature, or some point along it, rather than as an x,y coordinate. Measures are used to map events such as distance, time, or addresses along line features.

Route measure anomalies: [linear referencing] In linear referencing, route measure values that do not adhere to the expected behavior. Route measure anomalies can often be fixed with ArcMap route editing tools.

Route reference: [linear referencing] In linear referencing, a collection of routes with a common system of measurement stored in a single feature class (for example, a set of all highways in a county).

Route renewal: [ESRI software] In ArcGIS Network Analyst, an object used in vehicle routing problem (VRP) analysis. A route renewal object specifies a depot that can be used by a particular route to load/unload the vehicle along the route as necessary so that the capacity is reset and the route can service more orders.

Route seed point: [ESRI software] In ArcGIS Network Analyst, a feature used in vehicle routing problem (VRP) analysis. A route seed point can be used to cluster the orders for a specified route.

Route server: [ESRI software] A public ArcIMS virtual server that supports routing, reverse geocoding, and geocoding of Spatial Data Compressed (SDC) data. This server is available as an extension to ArcIMS.

Route service: [Internet] A type of Web service that determines driving directions between a set of route stops.

Route zone: [ESRI software] In ArcGIS Network Analyst, a feature used in vehicle routing problem (VRP) analysis. A route zone has a polygon geometry and can be used to define the area of coverage or available service for a specified route.

Rover: [GPS] A portable GPS receiver used to collect data in the field. The rover's position can be computed relative to a second, stationary GPS receiver.

Row: [database structures] A record in a table.

[database structures] The horizontal dimension of a table composed of a set of columns containing one data item each.

[data models] A horizontal group of cells in a raster, or pixels in an image.

Row standardization: [spatial statistics use for geostatistics] A technique for adjusting the weights in a spatial weights matrix. When weights are row standardized, each weight is divided by its row sum. The row sum is the sum of weights for a features neighbors.

[Rp]

RPF: [data structures] Acronym for Raster Product Format. A data format composed of rectangular pixel arrays (compressed or uncompressed), produced by the National Geospatial-Intelligence Agency and U.S. allies for military applications.

[Rs]

RSS: [Internet] Acronym for Really Simple Syndication, Resource Description Framework (RDF) Site Summary, or Rich Site Summary, depending on the source. A simple, structured XML format for sharing content among different Web sites. RSS documents include key metadata elements such as author, date, title, a brief description, and a hypertext link. This information helps a user (or an RSS publisher service) decide what materials are worth further investigation. Examples include news feeds, events lists, news stories, headlines, and excerpts from blogs and discussion forums.

RSS feed: [Internet] A text, audio, or media clip delivered over the Internet using RSS technology. RSS feeds can be delivered on demand to a browser with RSS-enabled software.

[Ru]

Rubber banding: A procedure for adjusting 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. Rubber sheeting preserves the interconnectivity between points and objects through stretching, shrinking, or reorienting their interconnecting lines.

Rubber sheeting: [data editing] A procedure for adjusting 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. Rubber sheeting preserves the interconnectivity between points and objects through stretching, shrinking, or reorienting their interconnecting lines.

[data capture] Error introduced by low-quality, flatbed scanners when scanning documents. For high-precision scanning, drum scanners are often used.

Run time: [programming] The time during which a program is running, or the time it takes to run a program.

Run-length encoding: A data compression technique for storing raster data. Run-length encoding stores data by row. If two or more adjacent cells in a row have the same value, the database stores that value once instead of recording a separate value for each cell. The more adjacent cells there are with the same value, the greater the compression.

Runtime environment: [programming] The host that provides the services required for compiled code to execute. The Service Control Manager (SCM) is effectively the runtime environment for COM. The Visual Basic Virtual Machine (VBVM) is the runtime environment that runs Visual Basic code.

S

[Sa]

Satellite constellation: [remote sensing] The arrangement of a set of satellites in space.

[GPS] All the satellites visible to a GPS receiver at one time.

[GPS] The set of satellites that a GPS receiver uses to calculate positions.

Saturation: [graphics map display] The intensity or purity of a color; the perceived amount of white in a hue relative to its brightness, or how free it is of gray of the same value.

[physics] The point at which energy flux exceeds the sensitivity range of a detector.

[Sc]

Scalable: [computing] The ability to grow in size or complexity without showing negative effects.

Scalar reference: [ESRI software] In Survey Analyst, used to define measurement units based on a common standard.

Scale: [cartography] 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.

[data quality] In reference to double precision, the number of digits to the right of the decimal point in a number. For example, the number 56.78 has a scale of 2.

Scale bar: [symbology] A map element used to graphically represent the scale of a map. A scale bar is typically a line marked like a ruler in units proportional to the map's scale.

Scale factor: [cartography] The reciprocal of the ratio used to specify scale on a map. For example, if the scale of a map is given as 1:50,000, the scale factor is 50,000.

[coordinate systems] In a coordinate system, a value (usually less than one) that converts a tangent projection to a secant projection, represented by "k0" or "k." If a projected coordinate system doesn't support a scale factor, the standard lines of the projection have a scale factor of 1.0. Other points on the map have scale factors greater or less than 1.0. If a projected coordinate system supports a scale factor, the defining parameters no longer have a scale factor of 1.0.

Scale range: [map display] The scales at which a layer is visible on a map. Scale ranges are commonly used to prevent detailed layers from displaying at small scales (zoomed out) and to prevent general layers from displaying at large scales (zoomed in).

Scanner: [data capture] A device that captures a print or hard-copy image, such as a text document or map, and records the information in digital format.

[remote sensing] A device that records the radiation reflected or emitted by the earth's surface.

Scanning: The process of capturing data from hard-copy maps or images in digital format using a device called a scanner.

Scatter chart: [statistics] A chart in which each data point is marked against perpendicular x- and y-axes. Scatter charts are frequently used in analysis to find data trends.

Scene: [ESRI software] In 3D Analyst, a document containing 3D data that can be viewed in perspective.

Schema: [computing] The structure or design of a database or database object, such as a table, view, index, stored procedure, or trigger. In a relational database, the schema defines the tables, the fields in each table, the relationships between fields and tables, and the grouping of objects within the database. Schemas are generally documented in a data dictionary. A database schema provides a logical classification of database objects.

[computing] A set of rules, stored in a file, that describe the structure of an XML document. The number, type, and order of elements allowed in an XML document are described in the schema. An XML parser can compare XML documents against the schema. An XML document that uses open and close tags properly is said to be well formed; if it also follows the rules of its designated schema, it is said to be valid.

Schema synchronization: [ESRI software] During geodatabase editing, the process of applying schema changes from a replica to the relative replica in a replica pair. Examples of schema changes include adding or dropping a field.

Schema-only checkout: [database structures] In ArcGIS 9.1 and previous versions, a type of checkout that creates the schema of the data being checked out in the checkout geodatabase but does not copy any data.

SCM: [software] Acronym for Service Control Manager. An administrative tool that enables the creation and modification of system services. It effectively serves as the runtime environment for COM.

Scratch file: [computing] A file, created by either a software user or an operating system, that holds temporary data or results during an operation. When the operation is complete, the file is deleted.

Scratch workspace: [ESRI software] A path to a container for file-based geographic data that can be set in the Environment Settings dialog box or at the command line, into which all automatically generated outputs will be placed.

Script: [programming] A set of computing instructions, usually stored in a file and interpreted at run time.

[ESRI software] In ArcView 3.x, one of the five types of documents that can be contained within a project file. An ArcView 3.x script contains Avenue code, which can be used to automate tasks, add new capabilities, and build complete applications.

Scrubbing: [quality control] Checking the accuracy of data before it is converted into a different format.

[quality control] Improving the appearance of data by closing open polygons, fixing overshoots and undershoots, refining thick lines, and so forth.

[Sd]

SDC dataset: [ESRI software] A collection of Smart Data Compression (SDC) feature classes sharing attribute information with different geometries. An SDC dataset is stored in a set of related files and contains multiple feature classes. SDC is the core data structure used in ArcGIS Street Map, ArcIMS RouteServer, Route MAP IMS, Business Analyst, and Business MAP.

SDC feature class: [ESRI software] A highly compressed, read-only data structure that can store spatial geometry (points, lines, and polygons), and attribute data. The SDC structure supports geocoding, routing, and most spatial operations. SDC is the core data structure used in ArcGIS StreetMap, ArcIMS RouteServer, RouteMAP IMS, ArcGIS Business Analyst, and BusinessMAP.

SDE user: [ESRI software] The account used to administer ArcSDE. The SDE user requires certain advanced database privileges to configure and manage ArcSDE geodatabases and ArcSDE services.

SDEHOME: [ESRI software] A system environment variable that defines the location where ArcSDE software is installed.

Sdesetup: [ESRI software] A program run by a database administrator during ArcSDE installation or upgrade. The sdesetup program creates or upgrades the ArcSDE system tables. It is named differently for different databases; for example, the program used with Oracle 9i is called sdesetupora9i.

SDI: [data sharing] Acronym for spatial data infrastructure. A framework of technologies, policies, standards, and human resources necessary to acquire, process, store, distribute, and improve the use of geospatial data across multiple public and private organizations.

SDK: [programming] Acronym for software development kit. A set of code libraries and related tools used to develop platform-specific applications.

SDTS: [standards] Acronym for Spatial Data Transfer Standard. A data exchange format for transferring different databases between dissimilar computing systems, preserving meaning and minimizing the amount of external information needed to describe the data. All federal agencies are required to make their

digital map data available in SDTS format upon request, and the standard is widely used in other sectors.

[Se]

Seamline: [ESRI software] In ArcGIS Image Server, a polygon that defines the mosaic boundary of the raster dataset used in an image service. Overlapping raster datasets can be blended along the seamline by a specified width. Seamlines are created with the Seamline extension tools, and are stored as shapefiles within the image service definition.

Search radius: [analysis geoprocessing] The maximum distance in coverage units a feature can be from the current point for consideration as the closest feature. The default is the width or height of the near coverage BND (boundary) divided by 100, whichever is larger.

Search tolerance: [network analysis] In network analysis, the threshold distance used to find the closest network element to a network location.

Searching neighborhood: [spatial statistics use for geostatistics] In spatial interpolation, a polygon that forms a subset of data around the prediction location. Only data within the searching neighborhood is used for interpolation.

Seat: [software] In software licensing, the number of simultaneous instances of software that can be used at one time. Most often, seats represent software users at individual computers. Seats may, however, also represent the simultaneous number of servers or connections in use.

Secant: [mathematics] A straight line that intersects a curve or surface at two or more points.

Secant projection: A projection whose surface intersects the surface of a globe. A secant conic or cylindrical projection, for example, is recessed into a globe, intersecting it at two circles. At the lines of intersection, the projection is free from distortion.

Second normal form: [database structures] The second level of guidelines for designing table and data structures in a relational database. The second-normal-form guideline incorporates the guidelines of first normal form; in addition, it recommends removing data that applies to multiple rows in a table into its own table and using a foreign key to create a relationship to the original table. A database that follows these guidelines is said to be in second normal form.

Second-order stationarity: [spatial statistics use for geostatistics] In geostatistics, the assumption that a set of data comes from a random process with a constant mean, and spatial covariance that depends only on the distance and direction separating any two locations.

Secondary reference data: [geocoding] All material used as reference data in an address locator beyond the primary reference data. Secondary reference data can consist of an Alternate Name table or a Place-Name Alias table.

Section: [network analysis] The arcs or portions of arcs used to define a route.

[cadastral and land records] One thirty-sixth of a township, bounded by parallels and meridians, equal to one square mile and containing 640 acres.

Section table: [ESRI software] The attribute table for the section feature class in a coverage, containing the route number and arc number to which the section belongs, the starting and ending positions expressed as percentages of

the arc length, the starting and ending positions expressed as measures along the route, an internal sequence number, a section feature identifier, and user-defined attributes.

Segment: [ESRI software] In ArcGIS, a geometric element from which paths are constructed. A segment consists of a start point, an endpoint, and a function that describes a straight line or curve between these two points. Curves may be circular arcs, elliptical arcs, or BΘzier curves.

Select: [data analysis] To choose from a number or group of features or records; to create a separate set or subset.

Selectable layers: [ESRI software] Layers from which features can be selected in ArcMap with the interactive selection tools. Selectable layers can be chosen using the Set Selectable Layers command in the Selection menu, or on the optional Selection tab in the table of contents.

Selected set: [ESRI software] A subset of features in a layer, or records in a table, that is chosen by the software user.

Selected values: [ESRI software] A subset of the features in a layer or records in a table. ArcMap provides several ways to select features and records graphically or according to their attribute values.

Selection anchor: [ESRI software] In an ArcMap editing session, a small "x" located in the center of selected features. The selection anchor is used in the snapping environment, or when rotating, moving, and scaling features.

Selection file: [ESRI software] An ArcInfo Workstation file that stores the specifications of the selection criteria to be applied against specific coverages and INFO tables. It does not store the actual selected features or records, only the selection methods. Selection files are created with the WRITESELECT command in ArcPlot.

Selective availability: [GPS] The intentional degradation by the U.S. Department of Defense of the GPS signal for civilian receivers, which could cause errors in position of up to 100 meters. Selective availability (S/A) was removed from the civilian signal in May 2000. Since the lifting of S/A restrictions, position accuracy levels have improved to 20 meters or less.

Semantics: [data models] The definition of the meaning of concepts within a data model by their relationships to other concepts.

Semimajor axis: [geodesy] The equatorial radius of a spheroid, often referred to as "a."

Semivariogram: [spatial statistics use for geostatistics] The variogram divided by two.

Sense of place: One's perception of the essential character of a place in which one resides or has resided, stemming from a personal response to the environment. Sense of place usually refers to perceptions of a neighborhood or city, but can also describe feelings about a larger region, state, or country.

Sensitivity analysis: [statistics] Analysis designed to test the robustness of model and analytical results to ensure that small changes in model parameters or data structure do not exhibit large changes in the results.

Sensor: [remote sensing] An electronic device for detecting energy, whether emitted or radiated, and converting it into a signal that can be recorded and displayed as numbers or as an image.

Sequential analysis: [statistics] Analysis based on a sample of an unfixed size in which testing

continues only until a trend is observed with a predefined level of certainty.

Serializable read: [ESRI software] The isolation level in a database management system (DBMS) that offers the highest degree of isolation from concurrent transactions. All reads in the transaction only see data committed before the transaction began, and never see concurrent transaction changes committed during transaction execution.

Serialization: [data conversion] A method of data conversion in which data is encoded as a sequence, stored in a file, memory buffer, or other medium, and transmitted across a network connection. Data is often serialized for transmission over phone lines or networks that require data to be sent one bit at a time.

Serialization file: [data conversion] A file that stores serialized data.

Server: [hardware] A computer that manages shared resources, such as disks, printers, and databases, on a network.

[software] Software that provides services or functionality to client software. For example, a Web server is software that sends Web pages to browsers.

Server account: [software] The operating system account that the server object manager service runs as. The server account is specified by the GIS server post installation utility.

Server context: [programming] In ArcGIS, the environment on the GIS server within which a service or server object and its associated objects are running. A server context runs within a server container process. A developer gets a reference to a server object through the server objects server context, and can create other objects within a server object's context.

Server directory: [data storage] A location on a file system used by a GIS server to retrieve map caches and write different types of output.

Server object: [programming] In ArcGIS, an object that manages and serves a GIS resource, such as a map or a locator. A server object is a high-level object that simplifies the programming model for doing certain operations and hides the fine-grained ArcObjects that do the work. Server objects also have SOAP interfaces, which makes it possible to expose server objects as Web services that can be consumed by clients across the Internet. At ArcGIS 9.3, there are seven types of server objects: MapServer, GeocodeServer, GeodataServer, GeometryServer, GlobeServer, GPServer, and ImageServer.

Server object isolation: [programming] In ArcGIS, a condition that describes whether multiple instances of a service can run within the same process. Services with high isolation run dedicated processes, whereas services with low isolation share processes with other services of the same type.

Server product: [software] Products that can be used on one enterprise server machine. Each server product requires a unique registration number used to generate the authorization file. The Software Authorization Wizard is then used to enter the authorization file and unlock the software for use.

Server-side address locator: [geolocating] An address locator in which processing is done on one computer with the results accessible to other computers. Server-side address locators consist of services available over the Internet, via local area networks, or via an ArcSDE server.

Service: [computing] A persistent software process that provides data or computing resources for client applications.

[ESRI software] In ArcWeb Services, any Web service or geographic data.

[computing] In ArcGIS, a GIS resourcesuch as a map, globe, locator, or geodatabase connectionthat is located on a server and is made available to client applications through well-known communication protocols such as HTTP.

Service area analysis: [ESRI software] In ArcGIS Network Analyst, a type of network analysis for determining the region that encompasses all accessible streets (streets that lie within a specified impedance). For example, the 20-minute service area for a network location (such as a fire station) includes all the streets that can be reached within 20 minutes from that location.

Service credit: [ESRI software] The currency for ArcGIS Online. Service credits are consumed when using certain functions, for example spatial analysis, routing, or geocoding. Also referred to as 'credits'.

Service provider: [software] A software program that receives service requests from clients, processes data, and serves it back to the client.

Service table: [ESRI software] In ArcGIS Image Server, a table defining links to multiple raster datasets and some service-specific attributes, including display range. A service table is stored as part of the footprint shapefile within an image service definition.

Servlet: [programming] A Java platform technology for extending Web servers that provides a component-based, platform-independent method for building Web-based applications.

Servlet Connector: [programming] In ArcIMS, the default connector used to connect the ArcIMS Application Server to a Web server.

Servlet engine: [programming] A Java platform technology that interfaces with a Web server and hosts servlets. Servlet engines provide a common application programming interface (API) that servlets use to build Web applications.

Session state: [programming] The process by which a Web application maintains information across a sequence of requests by the same client to the same Web application.

Sextant: A handheld navigational instrument that measures, from its point of observation, the angle between a celestial body and the horizon or between two objects. The angle is measured on a graduated arc that covers one sixth of a circle (60 degrees).

[Sg]

SGML: [programming] Acronym for Standard Generalized Markup Language. A markup language with a predefined vocabulary and structure. SGML is used to structure information in a DTD, or Document Type Definition format, for exchanging information between different programs and machines. SGML uses a tag structure, and was standardized by ISO in 1986.

[Sh]

SHA1: [Internet] Acronym for Secure Hash Algorithm v1. A Federal Information Processing Standards (FIPS) method for encoding sensitive information before sending the information over the Internet. The method jumbles data, such as passwords, so it is virtually impossible to recover the original information.

Shaded relief image: A raster image that shows changes in elevation using light and shadows on

terrain from a given angle and altitude of the sun.

Shading: Graphic patterns such as cross hatching, lines, or color or grayscale tones that distinguish one area from another on a map.

Shallowly stateful application: [programming] An application that uses the session state management capabilities of a Web server to maintain application state and makes stateless use of server objects. Shallowly stateful applications can use pooled server objects.

Shape: [data models] The characteristic appearance or visible form of a geographic object as represented on a map. A GIS uses points, lines, and polygons to represent the shapes of geographic objects.

Shapefile: [ESRI software] 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.

Shared boundary: [data models] A boundary common to two features. For example, in a parcel database, adjacent parcels share a boundary. Another example is a parcel that shares a boundary on one side with a river. The segment of the river that coincides with the parcel boundary shares the same coordinates as the parcel boundary.

Shared content: [ESRI software] Data layers, services, maps, applications, and so on that are available to more than one user.

Shared vertex: [data models] A vertex common to multiple features. For example, in a parcel database, adjacent parcels share a vertex at the common corner.

Shield: [symbology] A map symbol that serves as a route marker. Shields come in many varieties, but the most common shields in the United States are for interstate highways, U.S. routes, state routes, and county routes. A uniform standard exists for interstate highways, U.S. routes, and most county routes across the United States, while shields for state routes vary by state.

Short-range variation: [spatial statistics use for geostatistics] In a spatial model, fine-scale variation that is usually modeled as spatially-dependent random variation.

Shortest path: [network analysis] The best route or the route of least impedance between two or more points, taking into account connectivity and travel restrictions such as one-way streets and rush-hour traffic.

[ESRI software] In ArcGIS Spatial Analyst, the least-cost path from a destination point to the nearest least-cost source.

Showcase application: [software] A complete application that demonstrates a solution for a specific need.

[Si]

Side offset: [geocoding] An adjustable value that dictates how far away from either the left or right side of a line feature an address location should be placed. A side offset prevents a point feature from being placed directly over a line feature.

Side-shot course: [ESRI software] In Survey Analyst, used to compute a coordinate that is not a part of the main traverse course sequence.

Signal: [remote sensing] Information conveyed via an electric current or electromagnetic wave.

[physics] The modulation of an electric current, electromagnetic wave, or other type of flow in order to convey information.

Signal-to-noise ratio: [remote sensing] The ratio of the information content of a signal to its noninformation content (noise).

Significance level: [statistics] In statistical testing, the probability of an incorrect rejection of the null hypotheses.

Sill: [spatial statistics use for geostatistics] A parameter of a variogram or semivariogram model that represents a value that the variogram tends toward when distances become large. Under second-order stationarity, variables become uncorrelated at large distances, so the sill of the semivariogram is equal to the variance of the random variable.

Simple edge feature: [ESRI software] In a geodatabase, a line feature that corresponds to a single network element in the logical network.

Simple feature: [data models] A point, line, or polygon that is not part of a geometric network and is not an annotation feature, dimension feature, or custom object.

Simple junction feature: [ESRI software] In a geodatabase, a junction feature that corresponds to a single network element in the logical network.

Simple kriging: A kriging method in which the weights of the values do not sum to unity. Simple kriging uses the average of the entire dataset, which is less accurate than ordinary kriging but produces a smoother result.

Simple market area: An area defined by a generalized boundary drawn around the most distant set of customer points (a convex hull) that total to some value. The calculation may be unweighted (in which case every point has the same value) or weighted by a value in the underlying database, such as sales.

Simple measurement: [ESRI software] The simplest form in which measurements from COGO sources or TPS (Total Positioning System) sources can be stored.

Simple relationship: [data structures] A link or association between data sources that exist independently of each other.

Simple temporal event: [ESRI software] In ArcGIS Tracking Analyst, an event that contains all necessary information in one temporal data message (for real-time data) or record (for fixed-time data).

Simplification: [map design] A type of cartographic generalization in which the important characteristics of features are determined and unwanted detail is eliminated to retain clarity on a map whose scale has been reduced.

simultaneous conveyance: [cadastral and land records] A means of defining multiple units of land in a single survey document in such a way that all their boundaries have equal legal status. A common example of simultaneous conveyance is the modern subdivision.

Single precision: [data quality] 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 plus or minus 5 meters in an extent of 1,000,000 meters. Datasets can be stored in either single or double precision coordinates.

Single setup page:[ESRI software] One of two types of setup pages in the Survey Analyst Survey Explorer. The single setup page is used for computations that process single instrument setups.

Single use: [software] In software licensing, a software product that can be used on only one machine.

Single-user geodatabase: [database structures] A geodatabase that can handle a single editor and multiple readers.

Singleton: [programming] A class for which there can only be one instance in any process.

Sink: [analysis geoprocessing] The location or group of locations used as the endpoint for distance analysis.

[network analysis] A junction feature that pulls flow toward itself through the edges of a geometric network. For example, in a river network, the mouth of a river can be modeled as a sink, since gravity pulls all water toward it.

Site prospecting: The process of evaluating demographic data surrounding potential locations for a business, based on a user-defined trade area or areas.

Site starter: [ESRI software] A downloadable application that users can customize and use on their site.

[Sk]

Sketch: [data models] In ArcMap, a shape that represents a feature's geometry. Every existing feature on a map has this alternate form, a sketch, that allows visualization of that feature's composition, with all vertices and segments of the feature visible. When features are edited in ArcMap, the sketch is modified, not the original feature. A sketch must be created in order to create a feature. Only line and polygon sketches can be created, since points have neither vertices nor segments.

Sketch constraint: [ESRI software] In ArcMap editing, an angle or length limitation that can be placed on segments created using the Sketch tool.

Sketch operation: [ESRI software] In ArcMap, an editing operation that is performed on an existing sketch. Examples are Insert Vertex, Delete Vertex, Flip, Trim, Delete Sketch, Finish Sketch, and Finish Part. All of these operations are available from the Sketch shortcut menu.

Sketch tool: [ESRI software] Prior to ArcGIS 10, a tool that adds points, vertices, or segments to create an edit sketch. Sketch points can be defined by heads-up digitizing, snapping, or manually entering coordinates.

[Sl]

Sliver polygon: [data models] A small, narrow, polygon feature that appears along the borders of polygons following the overlay of two or more geographic datasets. Sliver polygons may indicate topology problems with the source polygon features, or they may be a legitimate result of the overlay.

Sliver removal: [data editing] The act of deleting unwanted sliver polygons.

Slope: [Euclidean geometry] The incline, or steepness, of a surface. Slope can be measured in degrees from horizontal (090), or percent slope (which is the rise divided by the run, multiplied by 100). A slope of 45 degrees equals 100 percent slope. As slope angle approaches vertical (90 degrees), the percent slope approaches infinity. The slope of a TIN face is the steepest downhill slope of a plane defined

by the face. The slope for a cell in a raster is the steepest slope of a plane defined by the cell and its eight surrounding neighbors.

[Sm]

Small circle: [geodesy] The circle made when a flat plane intersects a sphere anywhere but through its center. Parallels of latitude other than the equator are small circles.

Small scale: [cartography] Generally, a map scale that shows a relatively large area on the ground with a low level of detail.

Smart pointer: [programming] A Visual C++ class implementation that encapsulates an interface pointer, providing operators and functions that can make working with the underlying type easier and less error prone.

Smoothing: [digital image processing] In image processing, reducing or removing small variations in an image to reveal the global pattern or trend, either through interpolation or by passing a filter over the image.

[Sn]

Snap extent: [ESRI software] An ArcGIS geoprocessing option that snaps, or aligns, all layers to the cell registration of a specified raster. All layers will share the lower left corner and cell size of the specified raster. Snap extent is used to resample layers to the same registration and cell size in order to perform analysis.

Snap raster: [ESRI software] An option in the Environment Setting dialog box that ensures the cell alignment of the extent will match accurately with an existing raster. This is done by snapping the lower left corner of the specified extent to the lower left corner of the nearest cell in the snap raster, and snapping the upper right corner of the specified extent to the upper right corner of the nearest cell in the snap raster.

Snapping: [data editing] The process of moving a feature to match or coincide exactly with another point or feature's coordinates when your pointer is within a specified distance (tolerance). Commonly used to increase accuracy when using a variety of tools including editing, georeferencing, and measure tools. Snapping may also be used to adjust the extent of the cells in one raster to match the extent of the cells in another raster.

Snapping environment: [ESRI software] Settings in ArcGIS that define the conditions in which snapping will occur. These settings include snapping tolerance, snapping properties, and snapping priority. When you are editing, there are two snapping environments available to you: the Snapping toolbar (default) or classic snapping.

Snapping priority: [ESRI software] In classic snapping, the order in which snapping will occur by layer during an ArcGIS editing session, set from the Snapping Environment window.

Snapping properties: [ESRI software] In classic snapping, a combination of a shape to snap to and a method for determining what part of the shape will be snapped to. Snapping properties can be set to have a feature snap to a vertex, edge, or endpoint of features in a specific layer. For example, a layer snapping property might allow snapping to the vertices of buildings. A more generic, sketch-specific snapping property might allow snapping to the vertices of a sketch being created.

Snapping tolerance: [data editing] A specified distance within which points or features within are moved to match or coincide exactly with each others' coordinates. 2 [ESRI software] In an ArcGIS editing session, the distance within which

the pointer or a feature will snap to another location, including a point, vertex, edge, or endpoint.

SnapTip: [ESRI software] In ArcGIS, a user-assistance component that displays an on-screen description of the layer name or target being snapped to when the mouse pointer is paused over it. SnapTips only appear when they are enabled.

[So]

SOAP: [computing] An XML-based protocol developed by Microsoft, SAP, and IBM for exchanging information between peers in a decentralized, distributed environment. SOAP allows programs on different computers to communicate independently of an operating system or platform by using the World Wide Web's Hypertext Transfer Protocol (HTTP) and XML as the basis of information exchange. SOAP is used in Web services and is now a W3C specification. SOAP was originally an acronym for Simple Object Access Protocol, but the acronym has fallen out of use.

SOC: [software] Acronym for server object container. A process in which one or more services is running, or the machine hosting this process. SOC processes are started and shut down by the SOM. The SOC processes run on the GIS server's container machines. Each container machine is capable of hosting multiple SOC processes.

Solution: [software] A ready-to-use application geared toward a specific audience or industry.

Solver: [network analysis] A function that performs network analysis based on a set of network data.

SOM: [software] Acronym for server object manager. A Windows service that manages a set of server objects that are distributed across one or more server object container machines, or the machine on which this service is running. When an application makes a connection to an ArcGIS Server over a LAN, it is making a connection to the SOM.

Sonar: [remote sensing] Acronym for sound navigation and ranging. A system or device that measures the time lapse between emitting a sound and receiving a returned echo to determine the location, depth and shape of objects under water. Certain types of sonar consist only of a listening device that picks up sound emitted by underwater objects, such as submarines.

Soundex: [computing] A method of phonetic spelling used for searches and address matching. Soundex uses an algorithm to represent letters and numbers with similar phonetic equivalents to facilitate searching.

Source: [analysis geoprocessing] The location or group of locations used as the starting point for distance analysis.

[network analysis] A junction feature that pushes flow away from itself through the edges of a geometric network. For example, in a water distribution network, pump stations can be modeled as sources, since they drive the water through the pipes away from the pump stations.

Source table: [ESRI software] In ArcView 3.x, one of the two tables involved in a join operation. The source table must be the inactive table; its attributes are appended to the destination (active) table.

[Sp]

Space coordinate system: [coordinate systems] A three-dimensional, rectangular, Cartesian coordinate system that has not been adjusted

for the earth's curvature. In a space coordinate system, the x- and y-axes lie in a plane tangent to the earth's surface, and the z-axis points upward.

Spaghetti data: [data capture] Vector data composed of simple lines with no topology and usually no attributes. Spaghetti lines may cross, but no intersections are created at those crossings.

Spaghetti digitizing: [data capture] Digitizing that does not identify intersections as it records lines.

Spatial: [data models] Related to or existing within space.

Spatial adjustment: [ESRI software] An ArcMap editing function that allows transformation, rubber sheeting, and edgematching of data, as well as attribute transfer.

Spatial analysis: [spatial analysis] The process of examining the locations, attributes, and relationships of features in spatial data through overlay and other analytical techniques in order to address a question or gain useful knowledge. Spatial analysis extracts or creates new information from spatial data.

Spatial autocorrelation: [spatial statistics use for geostatistics] A measure of the degree to which a set of spatial features and their associated data values tend to be clustered together in space (positive spatial autocorrelation) or dispersed (negative spatial autocorrelation).

Spatial bookmark: [ESRI software] In ArcMap, a shortcut created by the user that identifies a particular geographic location to be saved for later reference.

Spatial cognition: The mental processes involved in gaining and using knowledge and beliefs about spatial environments. Spatial cognition includes issues of perception, memory, language, learning, and problem solving, and is an object of study in humans, nonhuman animals, and machines.

Spatial data: [data structures] Information about the locations and shapes of geographic features and the relationships between them, usually stored as coordinates and topology.

[data models] Any data that can be mapped.

Spatial database: [database structures] A structured collection of spatial data and its related attribute data, organized for efficient storage and retrieval.

Spatial domain: [standards] For a spatial dataset in ArcGIS 9.1 and previous versions, the defined precision and allowable range for x- and y-coordinates and for m- and z-values, if present.

[ESRI software] In ArcGIS Survey Analyst, a constraint that sets the minimum and maximum values for the geometry attributes. The extents of this domain define the precision at which geometry attributes (x, y, z, m, id) can be stored as integers. There is a finite number of integers available in the system, so the x,y spatial domain is analogous to a square grid that always contains the same number of rows and columns.

Spatial function: [ESRI software] In ArcGIS Spatial Analyst, an operation that performs spatial analysis. All Spatial Analyst tools in the Spatial Analyst toolbox, and operations on the ArcGIS Spatial Analyst toolbar, are classified as spatial functions. For example, distance, slope, and density are examples of spatial functions.

Spatial grid: [data models] A two-dimensional grid system that spans a feature class. It is used to quickly locate features in a feature class that might match the criteria of a spatial search.

Spatial index: [ESRI software] In a geodatabase, a mechanism for optimizing access to data based on the spatial column of the business table. In most geodatabases, a system of grids is used for the spatial index. Exceptions to this are spatial indexes used in Oracle Spatial or Informix databases, which use R-tree indexes.

Spatial join: [spatial analysis] 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.

Spatial modeling: [modeling] A methodology or set of analytical procedures used to derive information about spatial relationships between geographic phenomena.

Spatial overlay: [analysis geoprocessing] The process of superimposing layers of geographic data that cover the same area to study the relationships between them.

Spatial overlay analysis: [analysis geoprocessing] A type of analysis in which data is extracted from one layer (such as block groups) to an overlay layer (such as a trade area).

Spatial query: [spatial analysis] A statement or logical expression that selects geographic features based on location or spatial relationship. For example, a spatial query might find which points are contained within a polygon or set of polygons, find features within a specified distance of a feature, or find features that are adjacent to each other.

Spatial reference: [ESRI software] In ArcGIS 9.2 or later, the coordinate system, tolerance, and resolution used to store a spatial dataset.

Spatial statistics: [statistics] The field of study concerning statistical methods that use space and spatial relationships (such as distance, area, volume, length, height, orientation, centrality and/or other spatial characteristics of data) directly in their mathematical computations. Spatial statistics are used for a variety of different types of analyses, including pattern analysis, shape analysis, surface modeling and surface prediction, spatial regression, statistical comparisons of spatial datasets, statistical modeling and prediction of spatial interaction, and more. The many types of spatial statistics include descriptive, inferential, exploratory, geostatistical, and econometric statistics.

Spatial weights matrix: [spatial statistics use for geostatistics] A file that quantifies spatial relationships among a set of features. Typical examples of such relationships are inverse distance, contiguity, travel time, and fixed distance.

Spatialization: The transformation of complex, multivariate, nonspatial data into a spatial representation located in an information space. The relative positioning of data elements within the spatial representation shows relationships between them. Spatialization is used to allow exploration of nonspatial data using spatial metaphors and spatial analysis.

Specialty: [ESRI software] In ArcGIS Network Analyst, an object used in vehicle routing problem (VRP) analysis. A specialty is used to represent a specific capability that may be required by certain orders and supported by certain routes. Orders requiring a given specialty may only be assigned to routes that also support that specialty. For example, an order may require an electrician, so it can only be serviced by a route that also supports the electrician specialty.

Spectral resolution: [satellite imaging] The range of wavelengths that an imaging system can detect.

Spectral signature: [physics] The pattern of electromagnetic radiation that identifies a chemical or compound. Materials can be distinguished from one another by examining which portions of the spectrum they reflect and absorb.

Spectrophotometer: [physics] A photometer that measures the intensity of electromagnetic radiation as a function of its frequency. Spectrophotometers are usually used for measuring the visible portion of the spectrum.

Spectroscopy: [physics] The scientific study of how different chemicals and other substances absorb and reflect different parts of the electromagnetic spectrum.

Spelling sensitivity: [geolocating] In geocoding, the degree to which the spelling variation of a street name is allowed during a search for likely match candidates. The lower the value, the more likely it is that additional candidates will be retrieved, and vice versa. This value is adjustable on the Address Locator Properties dialog box.

Sphere: [Euclidean geometry] A three-dimensional shape whose center is equidistant from every point on its surface, made by revolving a circle around its diameter.

Spherical coordinate system: [coordinate systems] A reference system using positions of latitude and longitude to define the locations of points on the surface of a sphere or spheroid.

Spheroid: [Euclidean geometry] A three-dimensional shape obtained by rotating an ellipse about its minor axis, resulting in an oblate spheroid, or about its major axis, resulting in a prolate spheroid.

[geodesy] When used to represent the earth, a three-dimensional shape obtained by rotating an ellipse about its minor axis, with dimensions that either approximate the earth as a whole, or with a part that approximates the corresponding portion of the geoid.

Spike: [statistics] An anomalous data point that protrudes above or below an interpolated surface.

[data capture] An overshoot line created erroneously by a scanner and its rasterizing software.

Spline: In mathematics, a piecewise polynomial function used to approximate a smooth curve in a line or surface.

Spline interpolation: [spatial statistics use for geostatistics] An interpolation method in which cell values are estimated using a mathematical function that minimizes overall surface curvature, resulting in a smooth surface that passes exactly through the input points.

Split character: [ESRI software] A user-designated character that divides long labels into two or more lines during the labeling process. There can be more than one split character.

split policy: [ESRI software] All attribute domains in geodatabases have a split policy associated with them. When a feature is split into two new features in ArcMap, the split policies dictate what happens to the value of the attribute with which the domain is associated. Standard split policies are duplicate, default value, and geometry ratio.

SPOT: [satellite imaging] Acronym for Satellite Pour lObservation de la Terre. Earth observation satellites developed by Centre National d'Etudes Spatiales (CNES), the space agency of France. The SPOT satellites gather high-resolution imagery used in natural resource management, climatology, oceanography, environmental

monitoring, and the monitoring of human activities.

Spot elevation: [surveying] An elevation measurement taken at a single location.

[Sq]

SQL: [programming] Acronym for Structured Query Language. A syntax for retrieving and manipulating data from a relational database. SQL has become an industry standard query language in most relational database management systems.

[Ss]

SSL: [Internet] Acronym for Secure Sockets Layer. An encryption protocol for the secure transfer of private information over the Internet.

[St]

STA: [programming] Acronym for single threaded apartment. An apartment that has only a single thread. User interface code is usually placed in an STA.

Stable base: [cartography] In cartography, any material such as a Mylar sheet or film that is more durable than paper and less likely to shrink or stretch.

Stack: [computing] In computing, a data storage structure that operates on last in, first out (LIFO) protocol. As with a stack of dishes, the item placed on top of the stack last must be removed before the others may be manipulated.

[ESRI software] In MOLE, two or more force elements grouped together and placed one on top of another. Like leaders, stacks allow users to quickly make a map easier to read by allowing graphics to be grouped according to user-specified rules.

Stand-alone application: [software] An application that runs by itself, not within an ArcGIS application.

Standard annotation: [ESRI software] Annotation that is stored in the geodatabase, consisting of geographically placed text strings that are not associated with features in the geodatabase.

Standard deviation: A statistical measure of the spread of values from their mean, calculated as the square root of the sum of the squared deviations from the mean value, divided by the number of elements minus one. The standard deviation for a distribution is the square root of the variance.

Standard deviation classification: A data classification method that finds the mean value, then places class breaks above and below the mean at intervals of either .25, .5, or 1 standard deviation until all the data values are contained within the classes. Values that are beyond three standard deviations from the mean are aggregated into two classes, greater than three standard deviations above the mean and less than three standard deviations below the mean.

Standard distance: [spatial statistics use for geostatistics] A measure of the compactness of a spatial distribution of features around its mean center. Standard distance (or standard distance deviation) is usually represented as a circle where the radius of the circle is the standard distance.

Standard Industrial Classification codes: [standards] The federal U.S. standard for classifying establishments by their primary type of business activity. Standard Industrial Classification codes (SIC codes) are used as an identification system in business directories, publications, and statistical sources. The classification system was officially replaced by

NAICS in 1997, but it is still used by some organizations outside the federal government.

Standard line: [map projections] A line on a sphere or spheroid that has no length compression or expansion after being projected; usually a standard parallel or central meridian.

Standard parallel: [map projections] The line of latitude in a conic or cylindrical projection in normal aspect where the projection surface touches the globe. A tangent conic or cylindrical projection has one standard parallel, while a secant conic or cylindrical projection has two. At the standard parallel, the projection shows no distortion.

Star diagram: [cartography] A type of diagram that consists essentially of a central point from which lines radiate outward. The central point usually represents a geographic location while the length of each line represents an attribute value or ratio. The direction of the line may represent a compass direction, a period of time, or some other attribute classification. A wind rose is a common example of a star diagram.

Starter application: [software] A ready-to-use Web application that is designed for a specific purpose, such as a store locator or a map viewer. Starter applications do not require customization before use.

State: [programming] In programming, the current data contained by an object.

[government] An autonomous political and administrative division of geography. The United States is composed of 50 states.

[ESRI software] A discrete snapshot of a database whenever a change is made. Every edit operation creates a new database state, and all geodatabase versions reference one of these database states and evolve over time through a series of states.

State plane coordinate system: [coordinate systems] A group of planar coordinate systems based on the division of the United States into more than 130 zones to minimize distortion caused by map projections. Each zone has its own map projection and parameters and uses either the NAD27 or NAD83 horizontal datum. The Lambert conformal conic projection is used for states that extend mostly east-west, while transverse Mercator is used for those that extend mostly north-south. The oblique Mercator projection is used for the panhandle of Alaska.

State tree: [ESRI software] A logical organization of all the states in the geodatabase. A state tree illustrates and maintains the logical relationship between states of a versioned geodatabase.

Stateful operation: [programming] In programming, an operation that makes changes to an object or one of its associated objects, such as removing a layer from a map.

Stateless: [programming] In programming, not retaining changes between calls. A stateless object or application does not store parameters or values from the last time it was called, so it is always in its original state.

Stateless operation: [programming] An operation that does not make changes to an object, such as drawing a map.

Static positioning: [GPS] Determining a position on the earth by averaging the readings taken by a stationary antenna over a period of time.

Stationarity: [spatial statistics use for geostatistics] In geostatistics, a property of a spatial process in which all statistical properties

of an attribute depend only on the relative locations of attribute values.

Stationing: [linear referencing] In the pipeline industry, another name for linear referencing. Stationing allows any point along a line feature representing a pipeline to be uniquely identified by its relative position along the line feature.

Statistical surface: [statistics] Ordinal, interval, or ratio data represented as a surface in which the height of each area is proportional to a numerical value.

Steepest path: [network analysis] A line that follows the steepest downhill direction on a surface. Paths terminate at the surface perimeter or in surface concavities or pits.

Steradian: [Euclidean geometry] The solid (conical) angle subtended at the center of a sphere of radius r by a bounded region on the surface of the sphere having an area r squared. There are 4 steradians in a sphere.

Stereocompilation: [map design] A map produced with a stereoscopic plotter using aerial photographs and geodetic control data.

Stereographic projection: [map projections] A tangent planar projection that views the earth's surface from a point on the globe opposite the tangent point.

[map projections] A secant planar projection that views the earth from a point on the globe opposite the center of the projection.

Stereometer: [photogrammetry] A stereoscope containing a micrometer for measuring the effects of parallax in a stereoscopic image.

Stereomodel: [photogrammetry] The three-dimensional image formed where rays from points in the images of a stereoscopic pair intersect.

Stereopair: [photogrammetry] Two aerial photographs of the same area taken from slightly different angles that when viewed together through a stereoscope produce a three-dimensional image.

Stereoplotter: [photogrammetry] An instrument that projects a stereoscopic image from aerial photographs, converts the locations of objects and landforms on the image to x-, y-, and z-coordinates, and plots these coordinates as a drawing or map.

Stereoscope: [photogrammetry] A binocular device that produces the impression of a three-dimensional image from two overlapping images of the same area.

Sticky move tolerance: [ESRI software] When editing in ArcMap, a setting that defines the minimum number of pixels the pointer must move on the screen before a selected feature is moved.

Stochastic model: [modeling] A model that includes a random component. The random component can be a model variable, or it can be added to existing input data or model parameters.

[ESRI software] In Survey Analyst, a model that describes the expected error distribution of the measurements.

Stop: [ESRI software] In ArcGIS Network Analyst, a network location used to determine a route in route analysis. Users can specify multiple stops, of which two must be used to represent an origin and a destination. Stops in between (known as intermediary stops) are visited en route from the first to the last stop.

Stop impedance: [network analysis] In network analysis, the time it takes for a stop to occur, used to compute the impedance of a path or tour. For example, when a school bus drops children off or picks them up at their homes, the stop impedance might be 2 minutes at each stop.

Storage keywords: [database structures] A set of parameters that specify how data and indexes are stored in an ArcSDE database. Keywords are stored in a table in the ArcSDE database.

Store market analysis: [analysis geoprocessing] A type of business analysis that uses mostly data about a store or stores, rather than about customers. Examples include ring studies and analyses of equal competition areas and drive-time areas.

Store prospecting: A type of business analysis that assesses the potential of a site by performing simple ring or drive-time analysis.

Straight-line allocation: [ESRI software] An ArcGIS Spatial Analyst function that identifies which cells belong to which source, based on closest proximity in a straight line.

Straight-line direction: [ESRI software] An ArcGIS Spatial Analyst function that identifies the azimuth direction from each cell to the nearest source.

Straight-line distance: [ESRI software] An ArcGIS Spatial Analyst function that calculates the distance in a straight line from every cell to the nearest source.

Stream: [import-export] A mode of data delivery in which objects provide data storage. Stream objects can contain any type of data in any internal structure.

Stream mode digitizing: [data capture] A method of digitizing in which, as the cursor is moved, points are recorded automatically at preset intervals of either distance or time.

Stream tolerance: [data capture] During stream mode digitizing, the minimum interval between vertices. Stream tolerance is measured in map units.

Streaming: [importexport] A technique for transferring data, usually over the Internet, in a real-time flow as opposed to storing it in a local file first. Streaming allows large multimedia files to be viewed before the entire file has been downloaded to a client's computer. When received by the client (local computer) the data is uncompressed and displayed using software designed to interpret and display the data rapidly.

Street network: [network analysis] A system of interconnecting lines and points that represent a system of roads for a given area. A street network provides the foundation for network analysis; for example, finding the best route or creating service areas.

Street-based mapping: [address matching] A form of digital mapping that links information to geographic locations and displays address locations as point features on a map.

Stretch: [visualization] A display technique applied to the histogram of raster datasets, most often used to increase the visual contrast between cells.

String: [data structures] A set of coordinates that defines a group of linked line segments.

[programming] A sequence of letters or numbers, or both, sometimes with a fixed length.

Structure line: [3D analysis] A line feature enforced in a TIN. There are two types of structure lines: hard and soft. Hard structure lines, also known as break-lines, represent interruptions in the slope of the surface. Soft structure lines are used to add information about the surface without implying a change in the surface behavior across the line.

Study area: [analysis geoprocessing] The geographic area treated in an analysis.

Style: [cartography] An organized collection of predefined colors, symbols, properties of symbols, and map elements. Styles promote standardization and consistency in mapping products.

Style Manager: [ESRI software] The tool used to create new styles and edit existing ones. The Style Manager displays the contents of all the styles that are currently referenced by the map. It also contains personal and additional styles that may be used in ArcMap.

Style sheet: [Internet] A file or form that provides style and layout information, such as margins, fonts, and alignment, for tagged content within an XML or HTML document. Style sheets are frequently used to simplify XML and HTML document design, since one style sheet may be applied to several documents. Transformational style sheets may also contain code to transform the structure of an XML document and write its content into another document.

[Su]

Subfield: [programming] In ArcGIS, a subset of all the fields associated with a layer or data.

Subject Matter Expert: [empty] (Pronounced “smee”) This person is usually from Development or Products who specializes in the software, workflow, or subject matter on which the course is based.

Sublayer: [ESRI software] One of several layers that are part of a group layer in a map document.

Subsumption: [ESRI software] Within a geometric network, the replacement of an orphan junction by a non-orphan junction from a user-defined feature class. The original junction is deleted from the network, and the non-orphan junction assumes the connectivity of the subsumed orphan junction.

Subtractive primary colors: [graphics computing] In printing, the three primary colorscyan, magenta, and yellowthat when used as filters for white light remove blue, green, and red light, respectively.

Subtype: [database structures] In geodatabases, a subset of features in a feature class or objects in a table that share the same attributes. For example, the streets in a streets feature class could be categorized into three subtypes: local streets, collector streets, and arterial streets. Creating subtypes can be more efficient than creating many feature classes or tables in a geodatabase. For example, a geodatabase with a dozen feature classes that have subtypes will perform better than a geodatabase with a hundred feature classes. Subtypes also make editing data faster and more accurate because default attribute values and domains can be set up. For example, a local street subtype could be created and defined so that whenever this type of street is added to the feature class, its speed limit attribute is automatically set to 35 miles per hour.

Suitability model: [modeling] A model that weights locations relative to each other based on given criteria. Suitability models might aid in

finding a favorable location for a new facility, road, or habitat for a species of bird.

Supplemental contour: [cartography] A contour line placed between regularly spaced contours, used when the terrain change is not large enough to be depicted with consistent contour intervals.

Surface: [data models] A geographic phenomenon represented as a set of continuous data (such as elevation, geological boundaries, or air pollution); a spatial distribution which associates a single value with each position in a plane, usually associated with continuous attributes.

Surface fitting: [spatial statistics use for geostatistics] Generating a statistical surface that approximates the values of a set of known x,y,z points.

Surface smoothness: [ESRI software] Perpendicular or normal to the slope of the surface in 3D Analyst. As changes in slope are approached across the surface, the degree of smoothness is defined by how gradual or abrupt the normals to that surface change. A smooth surface has gradual changes in the normals to the surface; a planar surface has abrupt changes.

Survey class: [ESRI software] In Survey Analyst for field measurements, a collection of survey objects of a particular type. A survey dataset contains a set of survey classes for each of the different types of measurements and computations. There is also a survey class for coordinates and a survey class for survey points.

Survey data converters: [ESRI software] In Survey Analyst for field measurements, importers that interpret operation codes and feature codes when a data collector file is imported. Users choose the converter that matches the data collector file format.

Survey dataset: [ESRI software] In Survey Analyst for field measurements, a dataset that stores survey objects.

Survey Explorer: [ESRI software] In Survey Analyst for field measurements, the main interface for working with stored survey information. Data may be explored and edited directly in the Survey Explorer. Users can add lists of coordinates, measurements, and computations to the Survey Explorer so they can view and analyze numerical values of measurements and coordinates created in their survey dataset.

Survey layers: [ESRI software] In Survey Analyst for field measurements, layers that are created whenever survey datasets or survey projects are added to the map. Survey layers appear in the table of contents of a map document and comprise a set of sublayers for survey points and measurements.

Survey monument: [ESRI software] An object, such as a metal disk, permanently mounted in the landscape to denote a survey station.

Survey objects: [ESRI software] In Survey Analyst for field measurements, a collective term referring to measurements, computations, survey points, and coordinates in the survey dataset.

Survey points: [ESRI software] In Survey Analyst for field measurements, named locations that are observed through various surveys. Survey points can be observed multiple times and by many surveys over time. They represent multiple coordinates, but each identifies discrete physical locations on the earth's surface.

Survey project: [ESRI software] In Survey Analyst for field measurements, a subset of the survey dataset that represents a unit of work. A survey project is used as a logical structure that owns and manages a group of measurements, points, coordinates, and computations that function and belong together.

Survey station: [surveying] A location on the earth that has been accurately determined by geodetic survey.

Survey-aware feature classes: [ESRI software] In Survey Analyst for field measurements, the feature classes in the geodatabase that contain survey-aware features.

Survey-aware features: [ESRI software] In Survey Analyst for field measurements, features that are associated with survey data.

Surveying: [surveying] Measuring physical or geometric characteristics of the earth. Surveys are often classified by the type of data studied or by the instruments or methods used. Examples include geodetic, geologic, topographic, hydrographic, land, geophysical, soil, mine, and engineering surveys.

[Sv]

SVG: [graphics computing] Acronym for scalable vector graphics. An XML-based graphics file format that describes two-dimensional vector images, including animation. SVG images scale to fit the display window without compromising quality.

[Sw]

SWF: [data structures] A vector-based Flash file format that supports text, audio, video, and end-user interaction. SWF files are often used to publish animations on the Web.

[Sx]

SXD: [data structures] Scene document. A document saved by ArcScene that has an .sxd extension.

[Sy]

Sybase: [database structures] A commercial RDBMS.

Symbol: [symbology] A graphic used to represent a geographic feature or class of features. Symbols can look like what they represent (trees, railroads, houses), or they can be abstract shapes (points, lines, polygons) or characters. Symbols are usually explained in a map legend.

Symbol ID code: [defense] A 15-character identifier that provides the information necessary to display or transmit a tactical symbol between MIL-STD-2525B compliant systems.

Symbol level drawing: [ESRI software] In ArcGIS, a setting that determines the drawing order of features based on their symbol. When symbols have more than one layer, symbol level drawing can be used to specify the order in which each layer of the symbol is drawn.

Symbol library: [symbology] A collection of symbols.

Symbol modifier field: [ESRI software] In MOLE, a defined area in which optional text or graphics may be entered to provide additional information about a force element or tactical graphic.

Symbolization: [symbology] The process of devising a set of marks of appropriate size, color, shape, and pattern, and assigning them to map

features to convey their characteristics at a given map scale.

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.

Synchronization: [ESRI software] In geodatabase editing, the process of applying changes made from a replica to the relative replica in a replica pair.

[database structures] The process of automatically updating certain elements of a metadata file.

Synchronization version: [ESRI software] In geodatabase editing, the geodatabase version that receives changes during synchronization. The synchronization version is always a child of the replica version. With one-way and two-way replication, the synchronization version is automatically reconciled and posted with the replica version. If there are conflicts between the synchronization version and the replica version, the conflicts must be resolved before more data changes can be sent.

[database structures] In ArcGIS 9.1 and previous versions, a data version created in a checkout geodatabase when data is checked out to that geodatabase during disconnected editing. This version exists as a copy of the original data and represents the state of the data at the time of the checkout.

Synchronous: [physics] Occurring together, or at the same time.

[data transfer] In data transmission, precisely timed and steady transmission of information that allows for higher rates of data exchange.

[programming] In programming, a series of actions or events that must occur in a specified sequence. For example, a program that launches another program and waits for it to finish before continuing is said to be synchronous.

Syntax: [programming] The structural rules for using statements in a command or programming language.

System tool: [ESRI software] In ArcGIS, a geoprocessing tool. System tools are stored in system toolsets and can be copied to custom toolsets and/or toolboxes.

System toolbox: [ESRI software] In ArcGIS, a default geoprocessing toolbox that is installed with ArcGIS. System toolboxes contain system tools, organized into toolsets for ease of access.

System toolset: [ESRI software] In ArcGIS, a subset of a geoprocessing toolbox that holds system tools.

Systematic error: [ESRI software] In Survey Analyst, one type of measurement error. Systematic error follows a mathematical or physical law, and it can be corrected to comply with a known standard.

T

[Ta]

Table: [data models] A set of data elements arranged in rows and columns. Each row represents a single record. Each column represents a field of the record. Rows and columns intersect to form cells, which contain a specific value for one field in a record. [ESRI software] In ArcView 3, one of the five types of documents that can be contained within a project file. A table stores attribute data.

Table of contents: [ESRI software] In ArcGIS, a tabbed list of data frames and layers (or tables) on a map that shows how the data is symbolized, the source of the data, and whether or not each layer is selectable.

Table view: A representation of tabular data for viewing and editing purposes. The table view created when a table is added to ArcMap is a copy of the actual table data stored in memory.

Tabular data: [data storage] Descriptive information, usually alphanumeric, that is stored in rows and columns in a database and can be linked to spatial data.

Tactical graphic: [defense] In MOLE, a type of graphic that aids in regulating the movement of force units, such as lane boundaries and obstacles.

Tag: [programming] In markup languages such as XML and HTML, a set of bracketed characters that define the structural purpose of a block of content.

[computing] A keyword used to describe and index an online resource such as a map service, blog, or website.

Tagged value: [programming] A pair of keywords used to set additional properties for elements that are not part of the UML specification, such as the point, line, and polygon geometry of a feature class, or the length of a field in a table.

Tangent projection: A projection whose surface touches the globe's without piercing it. A tangent planar projection touches the globe at one point, while tangent conic and cylindrical projections touch the globe along a line. At the point or line of tangency, the projection is free from distortion.

Target: [ESRI software] In ArcScene and ArcGlobe, the center point in a scene's view at which the camera is aimed.

Target computer: [computing] A computer to which an application is deployed.

Target layer: [ESRI software] In an editing session prior to ArcGIS 10, the layer to which edits will be applied. In ArcGIS versions 9 and earlier, the target layer must be specified when creating new features and modifying existing features.

Target offset: [ESRI software] In ArcScene and ArcGlobe, the height of a target point above a surface used when calculating lines of sight and viewsheds.

Target theme: [ESRI software] In ArcView 3.x, the theme from which features are selected during a theme-on-theme selection operation. Multiple target themes may be specified for a theme-on-theme selection.

Task: [ESRI software] In ArcGIS Explorer and ArcGIS Server, a user interface combined with a particular piece of GIS functionality in a format that can be easily added to applications. Tasks make it easy for the end user of an application to perform common functions, such as querying, editing, or geoprocessing. In many cases, tasks also facilitate a developer's job because they can be added to an application without requiring any code to be written.

[Tc]

TCP/IP: Acronym for Transmission Control Protocol/Internet Protocol. The most common protocol for Internet traffic. The Transmission Control Protocol (TCP) is a communication protocol layered above the Internet Protocol (IP), which is a suite of nonproprietary communication protocols, or sets of rules, that

allow computers to send and receive data over networks.

[Te]

Temporal data: [data structures] Data that specifically refers to times or dates. Temporal data may refer to discrete events, such as lightning strikes; moving objects, such as trains; or repeated observations, such as counts from traffic sensors.

Temporal event: [ESRI software] In ArcGIS Tracking Analyst, a type of event used to describe observations through time of particular objects or groups of objects.

Temporal extent: [ESRI software] All the temporal information, including the earliest and last observations, of a data layer in ArcGIS Tracking Analyst.

Temporal GIS: [data models] An emerging capability in GIS for integrating temporal data with location and attribute data.

Temporal object: [ESRI software] In ArcGIS Tracking Analyst, an object being observed through time.

Temporal object table: [ESRI software] The component of a complex temporal event in ArcGIS Tracking Analyst that contains feature shape and attribute information.

Temporal observation: [ESRI software] In ArcGIS Tracking Analyst, data gathered for a given object through time.

Temporal observation table: [ESRI software] The component of a complex temporal event in ArcGIS Tracking Analyst that contains feature attribute information, and possibly time and date information.

Temporal offset: [ESRI software] A function in ArcGIS Tracking Analyst that allows users to play back the temporal display of data as if it had occurred at a user-defined date and time. The temporal offset does not change the underlying data; it simply allows the data to be displayed as if it were happening at a different time.

Temporal window: [ESRI software] In ArcGIS Tracking Analyst, the time range within which data will be displayed. Temporal windows can be set at the layer level on the Symbology tab.

Temporary dataset: [data storage] A dataset temporarily stored on disk or in memory.

Terrain: [geography] An area of land having a particular characteristic, such as sandy terrain or mountainous terrain.

Terrain dataset: [3D GIS] A multiresolution, TIN-based surface built from measurements stored as features in a geodatabase. Associated and supporting rules help organize the data and control how features are used to define the surface. Terrain datasets are typically derived from sources such as lidar, sonar, and photogrammetric data.

Terrain dataset pyramid: [3D GIS] A data structure associated with a terrain dataset used to define a multi-resolution surface, which organizes data into different levels of detail, or pyramid levels, and serves to improve performance by enabling the terrain to access only the data required for a particular display or analysis function. Data that is over-sampled or redundant can be avoided.

Terrain pyramid group: [3D GIS] In a terrain dataset, a collection of line or polygon feature classes used to represent those geographic features at different levels of detail.

Terrain pyramid level: [3D GIS] An individual level of detail in a terrain dataset pyramid. Each level has a pair of properties: resolution and scale. The resolution defines the amount of detail represented by the level, and the scale is a threshold that indicates at which display scale the level becomes active.

Terrain pyramid resolution bounds: [3D GIS] The range of pyramid levels for which polygon or polyline features will be enforced in the surface of a terrain dataset.

Terrain tiles: [3D GIS] A spatially coherent organization of terrain data facilitating efficient retrieval and editing. Tile definition is based on the average point spacing of the source data.

Tessellation: [data structures] The division of a two-dimensional area into polygonal tiles, or a three-dimensional area into polyhedral blocks, in such a way that no figures overlap and there are no gaps.

Text attribute table: [ESRI software] A table containing text attributes, such as color, font, size, location, and placement angle, for an annotation subclass in a coverage. In addition to user-defined attributes, the text attribute table contains a sequence number and text feature identifier.

Text box: [software] An entity that displays text entered by a user or derived from another source for editing purposes.

Text envelope: [ESRI software] A rectangle that bounds a text string.

Text formatting tag: [ESRI software] Tags used with text in ArcGIS that allow formatting to be modified for a portion of a text string. This allows the creation of mixed-format text where, for example, one word in a sentence is underlined. Text formatting tags adhere to XML syntax rules and can be used most places where both a text string and a text symbol can be specified. The tags are most commonly used with labels, annotation, and graphic text.

Text label: [cartography] Text placed next to a feature on a map to describe or identify it.

Text symbol: [symbology] A text style defined by font, size, character spacing, color, and so on, used to label maps and geographic features.

Texture: [3D GIS] A digital representation of the surface of a feature.

Texture coordinate: [ESRI software] In ArcScene and ArcGlobe, a location embedded in a geometry that helps define how a texture is mapped.

Texture mapping: [ESRI software] The application of a texture to a 3D object in ArcScene and ArcGlobe.

[Th]

Thematic data: [data structures] Features of one type that are generally placed together in a single layer.

Thematic map: [map design] A map designed to convey information about a single topic or theme, such as population density or geology.

Theme: [ESRI software] 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.

Theme table: [ESRI software] In ArcView 3.x, a document object linked to the set of features in a theme. It serves as an interface to the underlying database, allowing manipulation of the data.

Theme-on-theme selection: [ESRI software] In ArcView 3.x, an operation in which features in one theme are selected based on their spatial relationships with features in another theme. Theme-on-theme selection is used to find features that intersect other features, completely contain other features, or are within a specified distance of other features.

Theodolite: [surveying] A surveying instrument for measuring vertical and horizontal angles, consisting of an alidade, a telescope, and graduated circles mounted vertically and horizontally.

Thiessen polygons: [Euclidean geometry] Polygons generated from a set of sample points. Each Thiessen polygon defines an area of influence around its sample point, so that any location inside the polygon is closer to that point than any of the other sample points. Thiessen polygons are named for the American meteorologist Alfred H. Thiessen (1872-1931).

Third normal form: [database structures] The third level of guidelines for designing table and data structures in a relational database. The third-normal-form guideline incorporates the guidelines of first and second normal form; in addition, it recommends removing from a table those columns that do not depend on the table's primary key. A database that follows these guidelines is said to be in third normal form.

Thread: [software] A process flow through an application. An application can have many threads.

Three-tier configuration: [software] A software configuration in which three software applications (commonly a client program, application server, and database server) work together to accomplish a task.

Threshold ring analysis: In business analysis, an operation that creates rings that contain a given population around a store or stores on a map.

Thumbnail: [graphics computing] A miniaturized version of a graphics file. A thumbnail can be used as a visual index for larger data or images.

[ESRI software] In ArcGIS, 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.

[Ti]

Tic: [ESRI software] 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. 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 particular coordinate system.

Tick marks: [symbology] Graphics that mark divisions of measurement on a scale bar.

[graphics map display] Short, regularly spaced lines along the edge of an image or neatline that indicate intervals of distance, such as the intersection of longitude and latitude lines to denote the graticule.

Tidal datum: [geodesy] A vertical datum in which zero height is defined by a particular tidal surface, often mean sea level. Examples of tidal surfaces include mean sea level, mean low water springs, and mean lower low water. Most traditional vertical geodetic datums are tidal datums.

Tie point: [surveying] A point whose location is determined by a tie survey.

[photogrammetry] A point in a digital image or aerial photograph that represents the same location in an adjacent image or aerial photograph. Usually expressed as a pair, tie points can be used to link images and create mosaics.

Tie survey: [surveying] A survey that uses a point of known location on the ground to determine the location of a second point.

Tied candidates: [geocoding] In geocoding, two or more records that yield the same score when matching an address.

TIGER: [database structures] Acronym for Topologically Integrated Geographic Encoding and Referencing. The nationwide digital database developed for the 1990 census, succeeding the DIME format. TIGER files contain street address ranges, census tracts, and block boundaries.

TIGER/Line files: A digital database of geographic features, covering the entire United States and its territories, that provides a topological description of the geographic structure of these areas. The files are a public product created from the U.S. Census Bureau Topologically Integrated Geographic Encoding and Referencing (TIGER) database. TIGER/Line files define the locations and spatial relationships of streets, rivers, railroads, and other features to each other and to the numerous geographic entities for which the Census Bureau tabulates data from its censuses and sample surveys.

Tight coupling: A high or complex degree of interconnections between the components within a program or between programs, that requires substantial overlap between methods, ontologies, class definitions, and so on.

Tiling: [data structures] An internal subsetting of a spatial dataset (commonly raster) into a manageable rectangular set, or rows and columns of pixels, typically used to process or analyze a large raster dataset without consuming vast quantities of computer memory.

Time mode: [ESRI software] One of two methods for displaying temporal data in ArcGIS Tracking Analyst: real-time mode or playback mode. Time modes are determined by the use of the Tracking Analyst Playback Manager.

Time window: [network analysis] In networks, the time during which a stop can be visited. For example, on a bus route, each stop may have a time window of 15 minutes. If the bus arrives before its 15-minute time slot, it will wait until the appropriate time before proceeding. If a bus arrives after its 15-minute time slot, the stop will display a symbol to denote a time violation.

Time window violation: [ESRI software] In ArcGIS Network Analyst, a time window violation occurs when a route arrives at a network location after its associated time window has closed.

TIN: Acronym for triangulated irregular network. A vector data structure that partitions geographic space into contiguous, nonoverlapping triangles. The vertices of each triangle are sample data points with x-, y-, and z-values. These sample points are connected by

lines to form Delaunay triangles. TINs are used to store and display surface models.

TIN dataset: [data structures] A dataset containing a triangulated irregular network (TIN). The TIN dataset includes topological relationships between points and neighboring triangles.

TIN layer: [ESRI software] A layer that references a set of TIN data. TIN data contains a triangulated irregular network (TIN) and includes topological relationships between points and neighboring triangles.

TIN line type: One of four types of edges that may be found in a TIN: regular lines, hard breaklines, soft breaklines, and outside lines. Regular lines define the TIN's basic structure, connecting triangle nodes. Hard breaklines represent features that mark pronounced changes in slope, like roads or rivers. Soft breaklines mark milder changes in slope and sometimes artificial boundaries, such as the border of a study area. Outside lines designate parts of a TIN structure that lie beyond the TIN's zone of interpolation. Every TIN contains regular lines; other line types may or may not be present.

Tissot's indicatrix: [map projections] A graphical representation of the spatial distortion at a particular map location. The indicatrix is the figure that results when a circle on the earth's surface is plotted to the corresponding point on a map. The shape, size, and orientation of an indicatrix at any given point depend on the map projection used. In conformal (shape-preserving) projections, the indicatrix is a circle; in nonconformal projections, it is an ellipse at most locations. As a visual aid, indicatrices convey a general impression of distortion; as mathematical tools, they can be used to quantify distortion of scale and angle precisely. The indicatrix is named for Nicolas Auguste Tissot, the French mathematician who developed it.

[Tl]

TLM: [cartography] Acronym for topographic line map. A map that uses line contours to show elevations and depressions of the earth's surface. Topographic line maps may be used to portray topography, elevations, infrastructure, hydrography and vegetation.

[Tn]

TNA: [programming] Acronym for thread neutral apartment. An apartment that has no threads permanently associated with it; threads enter and leave the apartment as required.

[To]

To-node: Of an arc's two endpoints, the last one digitized. From- and to-nodes give an arc left and right sides and, therefore, direction.

Tobler's First Law of Geography: [geography] A formulation of the concept of spatial autocorrelation by the geographer Waldo Tobler (1930-), which states "Everything is related to everything else, but near things are more related than distant things."

Token: [ESRI software] A line of encrypted code generated by an authenticating service that allows a client to access a Web service. In ArcWeb Services, a token must be regenerated by passing in a valid user name and password each time it expires.

Tolerance: [data editing] The minimum or maximum variation allowed when processing or editing a geographic feature's coordinates. For example, during editing, if a second point is placed within the snapping tolerance distance of

an existing point, the second point will be snapped to the existing point.

Tool: [software] A command that requires interaction with the GUI before an action is performed. For example, a zoom tool requires a user to use the mouse to click on or draw a box over a digital map before the tool will cause the map to be redrawn at a larger scale.

[ESRI software] A geoprocessing command in ArcGIS that performs such specific tasks as clip, split, erase, or buffer.

Toolbar: [software] A graphical user interface (GUI) with buttons that allow users to execute software commands.

Toolbox: [ESRI software] In ArcGIS, an object that contains toolsets and geoprocessing tools. It takes the form of a .tbx file on disk, or a table in a geodatabase.

Toolbox tree: [ESRI software] In ArcToolbox (part of ArcGIS 8.3 and earlier versions), a hierarchical view of toolsets and tools grouped by functionality.

Toolkit: [programming] An application that software developers can use with their integrated development environment (IDE) to make programming easier. For example, SOAP toolkits allow users to interact with SOAP Web services through various languages such as Java and .NET.

Toolset: [ESRI software] In ArcGIS, a group of geoprocessing tools that perform similar tasks.

ToolTip: [software] The description of a tool or control that is displayed on screen when the mouse is paused over it.

Topographic map: A map that represents the vertical and horizontal positions of features, showing relief in some measurable form, such as contour lines, hypsometric tints, and relief shading.

Topography: [cartography] The study and mapping of land surfaces, including relief (relative positions and elevations) and the position of natural and constructed features.

Topological association: [ESRI software] The spatial relationship between features that share geometry such as boundaries and vertices. When a boundary or vertex shared by two or more features is edited using the topology tools in ArcMap, the shape of each of those features is updated.

Topological feature: [ESRI software] A feature that supports network connectivity that is established and maintained based on geometric coincidence.

Topology: [ESRI software] In geodatabases, the arrangement that constrains how point, line, and polygon features share geometry. For example, street centerlines and census blocks share geometry, and adjacent soil polygons share geometry. Topology defines and enforces data integrity rules (for example, there should be no gaps between polygons). It supports topological relationship queries and navigation (for example, navigating feature adjacency or connectivity), supports sophisticated editing tools, and allows feature construction from unstructured geometry (for example, constructing polygons from lines).

[Euclidean geometry] The branch of geometry that deals with the properties of a figure that remain unchanged even when the figure is bent, stretched, or otherwise distorted.

[ESRI software] In an ArcInfo coverage, the spatial relationships between connecting or adjacent features in a geographic data layer (for

example, arcs, nodes, polygons, and points). Topological relationships are used for spatial modeling operations that do not require coordinate information.

Topology cache: [ESRI software] A temporary collection of edges and nodes used in ArcMap to query and edit the topological coincidence between features. The cache is built for the current display extent and is stored in the computer's memory.

Topology fix: [ESRI software] In ArcMap, a predefined method for correcting topology errors. For example, predefined topology fixes for a dangling line include snapping, trimming, or extending to another line.

Topology rule: [ESRI software] An instruction to the geodatabase defining the permissible relationships of features within a given feature class or between features in two different feature classes.

Toponym: [geography] A place-name.

Tour: [ESRI software] In ArcInfo Workstation, a network solver that determines the minimum-cost path to reach a series of stops, and also determines the order in which the stops are visited.

Township: [cadastral and land records] In the United States, a quadrangle approximately 6 miles on a side, bounded by meridians and parallels and containing 36 sections.

[local government] A governmental subdivision, which may vary from the standard size and shape.

[Tp]

TPS measurement: [ESRI software] In Survey Analyst for field measurements, an entry in an electronic or paper field book that represents observations from a theodolite. A slope distance, vertical angle, horizontal angle, and a height of target define a single TPS measurement.

TPS setup: [ESRI software] In Survey Analyst for field measurements, a group of field book entries that belong together define a single setup of the instrument. Each observation (slope distance, vertical angle, horizontal angle, and a height of target) is recorded as a TPS measurement and is added to the TPS setup. TPS is an acronym for Total Positioning System.

[Tr]

Track: [ESRI software] In ArcMap, ArcScene, and ArcGlobe, an ordered collection of similar keyframes that, when played as an animation, shows a dynamic transition between them.

[ESRI software] In ArcGIS Tracking Analyst, a connecting line between two or more temporal events that share a common track identifier field (or ID field).

Track identifier field: [ESRI software] In ArcGIS Tracking Analyst, a field containing a unique identifier for a given object or objects being observed. This field is used to join the components of a complex temporal event.

Tracking connection: [ESRI software] A message or Internet connection whereby real-time data can stream into ArcGIS Tracking Analyst.

Tract: [federal government] A small, statistical subdivision of a county that usually includes approximately 4,000 inhabitants but may include from 2,500 to 8,000 inhabitants. A census tract is designed to encompass a population with relatively uniform economic status, living conditions, and some demographic characteristics. Tract boundaries normally follow

physical features but may also follow administrative boundaries or other nonphysical features. A census tract is a combination of census block groups.

Transaction: [computing] A group of data operations that comprise a complete operational task, such as inserting a row into a table.

[ESRI software] A logical unit of work as defined by a user. Transactions can be data definition (create an object), data manipulation (update an object), or data read (select from an object).

Transform events: [linear referencing] In linear referencing, an operation that produces a new table by copying and transforming events from one route reference to another. This allows the events to be used with a route reference having different route identifiers and/or measures.

Transformation: [data conversion] The process of converting the coordinates of a map or an image from one system to another, typically by shifting, rotating, scaling, skewing, or projecting them.

Transit rule: A rule for adjusting the closure error in a traverse. The transit rule distributes the closure error by changing the northings and eastings of each traverse point in proportion to the northing and easting differences in each course. More specifically, a correction is computed for each northing coordinate as the difference in the course's northings divided by the sum of all the courses' northing differences. Similarly, a correction is computed for each easting coordinate using the easting coordinate differences. The corrections are applied additively to each successive coordinate pair, until the final coordinate pair is adjusted by the whole closure error amount. The transit rule assumes that course directions are measured with a higher degree of precision than the distances. Usually, observed angles are balanced for angular misclosure prior to applying a transit rule adjustment, and corrections are proportional to the x and y components of the measured line. The transit rule is used infrequently since it is only valid in cases in which the measured lines are approximately parallel to the grid of the coordinate system in which the traverse is computed.

[ESRI software] In Survey Analyst for field measurements, one of three adjustment methods available for adjusting closure error for a traverse computation. The other two methods are the Crandall rule and the compass rule.

Translation: [data editing] Adding a constant value to a coordinate.

[data conversion] Converting data from one format to another, usually in order to move it from one system to another.

Transverse aspect: [map projections] A map projection whose line of tangency is oriented along a meridian rather than along the equator.

Traveling salesperson problem: [network analysis] A Hamiltonian circuit problem in which a salesperson must find the most efficient way to visit a series of stops, then return to the starting location. In the original version of the problem, each stop may be visited only once.

Traverse: [surveying] A predefined path or route across or over a set of geometric coordinates.

[surveying] A method of surveying in which lengths and directions of lines between points on the earth are obtained by or from field measurements across terrain or a digital elevation model.

Traverse course: [ESRI software] In ArcMap and Survey Analyst for field measurements, a group of observed values that define a new coordinate. A traverse course starts from a preexisting coordinate, or a coordinate computed from the previous course.

Tree data structure: A common data structure consisting of a set of nodesbasic units of datalinked hierarchically. Each node can contain one or more subordinate nodes within it, in which case it is called a parent node. The subordinate nodes are called child nodes. A node without a parent node is the root node; a node without one or more child nodes is called a leaf node. A tree data structure is used to manipulate hierarchical data and make it easily searchable.

Trend: [spatial statistics use for geostatistics] In a spatial model, nonrandom variation in the value of a variable that can be described by a mathematical function such as a polynomial.

Trend surface analysis: A surface interpolation method that fits a polynomial surface by least-squares regression through the sample data points. This method results in a surface that minimizes the variance of the surface in relation to the input values. The resulting surface rarely goes through the sample data points. This is the simplest method for describing large variations, but the trend surface is susceptible to outliers in the data. Trend surface analysis is used to find general tendencies of the sample data, rather than to model a surface precisely.

Triangle: [Euclidean geometry] Any closed, three-sided, two-dimensional polygon.

[Euclidean geometry] A face on a TIN surface. Each triangle on a TIN surface is defined by three edges and three nodes and is adjacent to one to three other triangles on the surface. TIN triangles can be used to derive aspect and slope information and may be attributed with tag values.

Triangulation: [surveying] Locating positions on the earth's surface using the principle that if the measures of one side and the two adjacent angles of a triangle are known, the other dimensions of the triangle can be determined. Surveyors begin with a known length, or baseline, and from each end use a theodolite to measure the angle to a distant point, forming a triangle. Once the lengths of the two sides and the other angle are known, a network of triangles can be extended from the first.

Trigger: [ESRI software] A piece of code in a database management system (DBMS) that executes in response to data being modified with an INSERT, UPDATE, or DELETE statement.

Trigonometric function: [ESRI software] An operator within the Raster Calculator of ArcGIS Spatial Analyst that performs various trigonometric calculations on the values in an input raster. Available trigonometric functions include Sin, Cos, Tan, Asin, Acos, and Atan.

Trilateration: [surveying] Determining the position of a point on the earth's surface with respect to two other points by measuring the distances between all three points.

True bearing: [navigation] A bearing measured relative to true north.

True north: [geography] The direction from any point on the earth's surface to the geographic north pole.

[Tu]

Tuple: An individual row or record in a database table. Each tuple records the values for the columns defined in the table.

Turn: [network analysis] In network analysis, a movement that explicitly models transitions between edge elements during navigation.

Turn feature class: [network analysis] A specialized feature class that defines turn movements in an ArcGIS network dataset. Turn features explicitly model subsets of possible transitions between edge elements during navigation, and may also store the turn impedance.

Turn impedance: [network analysis] In network analysis, the cost of making a turn at a network node. The impedance for making a left turn, for example, can be different from the impedance for making a right turn or a U-turn at the same place.

Turn table: In ArcInfo Workstation and ArcView GIS 3, a table that stores information about the cost of making each turn movement in a network. A turn table identifies the edge that the turn movement comes from, the junction where the turn occurs, and the edge that it turns onto.

Turn-by-turn maps: [map design] A series of small maps detailing where route segments meet.

[Tw]

Tween: [graphics computing] In animated applications, the process of creating intermediate frames between two images so it seems like the first image merges smoothly into the second image.

Two-tier configuration: [programming] A software configuration in which two software applications (commonly a client and a server) work together to accomplish a task.

Two-way replication: [ESRI software] A type of geodatabase replication that allows data changes to be sent multiple times from the parent replica to the child replica or from the child replica to the parent replica. The data on both replicas must be editable, versioned and have GlobalID columns. ArcSDE geodatabases are used to create two-way replicas.

[Ty]

Type inheritance: [programming] In programming, a kind of inheritance in which an interface may inherit from a parent interface. A client may call the child interface as if it were the parent, as all the same members are supported.

Type library: [programming] A collection of reusable classes, interfaces, enumerations, and so on that can be included in programs. Type libraries usually have the extension .olb.

T

[U]

U.S. Geological Survey: [environmental GIS] Acronym for United States Geological Survey. A scientific agency of the U.S. government, part of the Department of the Interior. The U.S. Geological Survey 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 U.S. Geological Survey 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.

U.S. National Geodetic Survey: [federal government] The U.S. government agency responsible for maintaining the National Spatial Reference System (NSRS), the national coordinate system of the United States.

[Ud]

UDDI: [standards] Acronym for Universal Description, Discovery, and Integration. An XML-based standard for creating online directories of Web services.

[Ui]

UI: [programming] Acronym for user interface. The portion of a computer's hardware and software that facilitates human interaction. The UI includes items that can be displayed on screen, and interacted with by using the keyboard, mouse, video, printer, and data capture.

UIControl: [programming] A custom button, tool, text box, or combo box created with VBA.

[Um]

UML: [programming] Acronym for Unified Modeling Language. A modeling language that uses a series of diagrams to model the objects in a system.

[Un]

Unbuild parcel: [ESRI software] In Survey Analyst – Cadastral Editor, a cadastral fabric editing command that undoes the parcel generated from the build parcel command.

UNC: [computing] Acronym for Universal (or Uniform) Naming Convention. A PC format for specifying the location of resources on a local-area network (LAN). UNC follows the format \\servername\shared_resource_path

Uncertainty: [uncertainty] The degree to which the measured value of some quantity is estimated to vary from the true value. Uncertainty can arise from a variety of sources, including limitations on the precision or accuracy of a measuring instrument or system; measurement error; the integration of data that uses different scales or that describe phenomena differently; conflicting representations of the same phenomena; the variable, unquantifiable, or indefinite nature of the phenomena being measured; or the limits of human knowledge. Uncertainty is often used to describe the degree of accuracy of a measurement.

Unclosed parcel: [cadastral and land records] A parcel that is only partially defined or that is missing a sequence of one or more lines that would otherwise close the parcel back onto its point of beginning.

[ESRI software] Unclosed parcels can be used to model street centerlines and other line features in the Survey Analyst – Cadastral Editor cadastral fabric.

Uncommitted read: [ESRI software] The isolation level in an RDBMS specifying the minimum isolation from concurrent transactions. The transaction can read data that has been changed by concurrent transactions even before the changes are committed to the database.

Undershoot: [data capture] A line that falls short of another line that it should intersect.

Undevelopable surface: [map projections] A surface, such as the earth's, that cannot be flattened into a map without stretching, tearing, or squeezing it. To produce a flat map of the round earth, its three-dimensional surface must be projected onto a developable shape such as a plane, cone, or cylinder.

Undirected network flow: [network analysis] A network state in which each edge may or may not have an associated direction of flow. In an undirected network flow, the resource that traverses a network's components can decide which direction to take, such as traffic in transportation systems.

Uniform list: [ESRI software] In Survey Analyst for field measurements, one of two types of lists in the List page. The uniform list has rows that represent survey objects of the same type.

Uninitialized flow direction: [ESRI software] A condition that occurs in a network when an edge feature is not connected through the network to sources and sinks or if the edge feature is only connected to sources and sinks through disabled features.

Union: [analysis geoprocessing] A topological overlay of two or more polygon spatial datasets that preserves the features that fall within the spatial extent of either input dataset; that is, all features from both datasets are retained and extracted into a new polygon dataset.

Unique constraint: [ESRI software] A DBMS-defined restriction specifying that each value stored in a column must be unique and that no other row can contain the same value.

Unit of measure: [standards] A standard quantity used for measurements such as length, area, and height.

Univariate analysis: [statistics] Any statistical method for evaluating a single variable, rather than the relationship between two or more variables.

Univariate distribution: [statistics] A function for a single variable that gives the probabilities that the variable will take a given value.

Universal kriging: A kriging method often used on data with a significant spatial trend, such as a sloping surface. In universal kriging, the expected values of the sampled points are modeled as a polynomial trend. Kriging is carried out on the difference between this trend and the values of the sampled points.

Universal polar stereographic: [coordinate systems] A projected coordinate system that covers all regions not included in the UTM coordinate system; that is, regions above 84 degrees north and below 80 degrees south. Its central point is either the north or south pole.

Universal Soil Loss Equation: An erosion model developed by the Agricultural Research Service of the United States Department of Agriculture that computes average annual soil loss caused by rainfall and associated overland flow. Factors used in the equation include rainfall, soil characteristics, topography, and land use and land cover. Each major factor is divided into numerous subfactors.

Universal time: [astronomy] A timekeeping system that defines local time throughout the world by relating it to time at the prime meridian. Universal time is based on the average speed at which the earth rotates on its axis. For official purposes, universal time has been replaced by coordinated universal time; universal time is, however, still used in navigation and astronomy. Different versions of universal time correct for irregularities in the earth's rotation and orbit.

Universe polygon: [data models] In coverages, the first record in a polygon attribute table, representing the area beyond the outer boundary of the coverage.

UNIX time: [astronomy] The number of seconds, in coordinated universal time format, since January 1, 1970 (the start of the UNIX system).

Unjoined parcel: [ESRI software] In Survey Analyst – Cadastral Editor, a parcel that has not been connected to the cadastral fabric, and that has its own local coordinate system.

Unknown points: [ESRI software] In Survey Analyst for field measurements, previously uncoordinated points.

Unmanaged raster catalog: [data structures] A raster catalog in which the raster datasets are not copied or altered by the geodatabase and there will only be a pointer connecting the raster catalog row to the raster datasets. Deleting a row in an unmanaged raster catalog will not delete the raster dataset from its storage location.

[Up]

update-gram: [ESRI software] In ArcGIS, the programming object that holds updates in a delta file.

Upstream: [network analysis] In network tracing, the direction along a line or edge that opposes the direction of flow.

[Ur]

Urban geography: [geography] The field of geography concerning the spatial and cultural patterns and processes of cities and neighborhoods.

URL: [Internet] Acronym for uniform resource locator. A standard format for the addresses of Web sites. A URL may look like this: http://www.esri.com. The first part of the address indicates what protocol to use (such as http: or ftp:), while the second part specifies the IP address or the host name (including the domain name) where the Web site is located. An optional third part may specify the path to a specific file or resource (http://www.esri.com/products.html).

[Us]

Usage: The way in which statements in a command or programming language are actually used. In geoprocessing, usage for a tool or environment setting can be viewed at the command line.

Usage time: [Internet] The amount of time between when a client gets a reference to a service and when they release it.

User interface: [software] The aspects of a computer system or program with which a software user can interact, and the commands and mechanisms used to control its operation and input data.

User name: [programming] The identification used for authentication when a user logs in to a program.

[Ut]

Utility COM object: [programming] In ArcObjects, a COM object that encapsulates a large number of fine-grained ArcObjects method calls and exposes a single coarse-grained method call. Utility COM objects are installed on a GIS server and called by server applications to minimize the round-trips between the client application and the GIS server.

UTM: Acronym for universal transverse Mercator. A projected coordinate system that divides the world into 60 north and south zones, 6 degrees wide.

[Uv]

UVMap: [cartography] Acronym for Urban Vector Map. A vector-based data product in

vector product format (VPF), typically at larger scales ranging from 1:2,000 to 1:25,000. UVMap data is typically collected over densely populated urban areas.

V

[Va]

Vagueness: [uncertainty] In GIS, a state of uncertainty in data classification that exists when an attribute applies to an indeterminate quality of an object or describes an indefinite quantity. For example, the classification of an area of land as the range of golden-winged warblers (a rare species of bird) is vague for two reasons. The area populated by the birds is indefinite: it is changing constantly and can never be precisely defined. The term “range” is also somewhat vague since the birds migrate and occupy the territory for only part of the year.

Valency: [ESRI software] In coverages, the number of arcs that begin or end at a node.

Valency table: [ESRI software] A table that lists the nodes in a data layer along with their valencies.

Valid value table: [ESRI software] A component of the PLTS knowledge base that contains the valid attribute combinations and rendering information for the features in a feature class. VVTs are used to symbolize layers in batch mode, and provide a means to symbolize features based on more than three attributes.

Validation: [software] The process, using formal methods, of evaluating a system or software component to determine whether it functions as expected and achieves the intended results.

[data quality] The process, using formal methods, of evaluating the integrity and correctness of data or a measurement.

[modeling] In modeling, the evaluation of a method to show whether it is assessing the parameter of interest rather than something else.

[data quality] The process of comparing the topology rules against the features in a dataset. Features that violate the rules are marked as error features. Topology validation is typically performed after the initial topology rules have been defined, after the feature classes have been modified, or if additional feature classes or rules have been added to the map topology.

Validation rule: [data quality] A rule applied to objects in the geodatabase to ensure that their state is consistent with the system that the database is modeling. The geodatabase supports attribute, connectivity, relationship, and custom validation rules.

Value: [mathematics] A measurable quantity that may be passed to a function. Values are either assigned or determined by calculation.

[graphics computing] The lightness or darkness of a color.

[physics] The brightness of a color or how much light it reflects; for instance, blue, light blue, dark blue.

Variable: [mathematics] A symbol or placeholder that represents a changeable value or a value that has not yet been assigned.

[computing] 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.

Variable depth masking: [spatial analysis] A drawing technique for hiding part of one layer using another set of features. Variable depth masking allows a layer to be drawn with gaps at specific locations without affecting other layers at these locations.

Variance: [statistics] A numeric description of how values in a distribution vary or deviate from the mean. The larger the variance, the greater the dispersion of values around the mean. The standard deviation for a distribution is the square root of the variance.

Variance-covariance matrix: [surveying] In surveying, the symmetric 3×3 matrix that mathematically expresses the correlation between errors in coordinates x, y, and z.

Variant: [data structures] A data type that can contain any kind of data.

Variogram: [spatial statistics use for geostatistics] A function of the distance and direction separating two locations that is used to quantify dependence. The variogram is defined as the variance of the difference between two variables at two locations. The variogram generally increases with distance and is described by nugget, sill, and range parameters. If the data is stationary, then the variogram and the covariance are theoretically related to each other.

Variography: [spatial statistics use for geostatistics] The process of examining spatial dependence using a variogram; a set of procedures (as much art as science) for interpreting variograms.

VAT: [ESRI software] Acronym for value attribute table. A table containing attributes for a grid, including user-defined attributes, the values assigned to cells in the grid, and a count of the cells with those values.

[Vb]

VBVM: [non-ESRI software] Acronym for Visual Basic Virtual Machine. The runtime environment used by Visual Basic code when it runs.

[Ve]

Vector: [data models] 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 vector feature, as opposed to a raster data model, which associates attributes with grid cells.

[graphics computing] Any quantity that has both magnitude and direction.

Vector data model: [data models] A representation of the world using points, lines, and polygons. Vector models are useful for storing data that has discrete boundaries, such as country borders, land parcels, and streets.

Vectorization: [data conversion] The conversion of raster data (an array of cell values) to vector data (a series of points, lines, and polygons).

Vectorization settings: [software] GIS software settings that allow users to control the conversion of raster data to vector data. For example, vectorization settings may allow users to select which raster cells are eligible for vectorization or specify how the geometry of the output vector data will be constructed during vectorization.

Vectorization Trace tool: [ESRI software] An ArcScan tool that allows users to manually trace raster cells and generate features to be converted from raster to vector data.

Vehicle routing problem: [ESRI software] In ArcGIS Network Analyst, a type of network analysis for routing a fleet of vehicles to service a set of orders with the goal of minimizing some objective (e.g., operating cost), while satisfying certain constraints. These constraints may include time windows, multiple route capacities, travel duration constraints, route zone and route seed point constraints, specialties constraints, and paired order constraints.

Verbal scale: [map design] A map scale that expresses the relationship between distance on the map and distance on the ground in words; for example, "One inch represents 20 miles."

Verification: [software] The process, using formal methods, of evaluating a system or software component to determine whether it satisfies the requirements imposed at the start of development.

Version: [database structures] In databases, an alternative state of the database that has an owner, a description, a permission (private, protected, or public), and a parent version. Versions are not affected by changes occurring in other versions of the database.

[software] An edition of a software product that incorporates major changes to the software from the previous version. A version is often called a release.

Version merging: [database structures] The process of reconciling two versions of a dataset into a common version. If conflicting edits have been made in either of the merged versions, these conflicts are resolved, either automatically or by an interactive process.

Version reconciliation: [database structures] The process of updating a version of a dataset with changes made in another version. Using this technique, a version can remain up to date with changes even if it is within a long transaction lasting many months.

Vertex: [Euclidean geometry] One of a set of ordered x,y coordinate pairs that defines the shape of a line or polygon feature.

Vertical coordinate system: [coordinate systems] A reference system that defines the location of z-values relative to a surface. The surface may be gravity related, such as a geoid, or a more regular surface like a spheroid or sphere.

Vertical exaggeration: [cartography] A multiplier applied uniformly to the z-values of a three-dimensional model to enhance the natural variations of its surface. Scenes may appear too flat when the range of x- and y-values is much larger than the z-values. Setting vertical exaggeration can compensate for this apparent flattening by increasing relief.

Vertical geodetic datum: [geodesy] A geodetic datum for any extensive measurement system of heights on, above, or below the earth's surface. Traditionally, a vertical geodetic datum defines zero height as the mean sea level at a particular location or set of locations; other heights are measured relative to a level surface passing through this point. Examples include the North American Vertical Datum of 1988; the Ordnance Datum Newlyn (used in Great Britain); and the Australian Height Datum.

Vertical photograph: [aerial photography] An aerial photograph taken with the camera lens pointed straight down.

Vertical shift: [ESRI software] In ArcGIS, a parameter that offsets the z-origin from the surface of a vertical coordinate system. The vertical shift is similar in effect to the false easting or false northing parameters of a projected coordinate system.

[Vi]

View: [ESRI software] In ArcGIS, a way to see the contents of a selected item in the Catalog tree in ArcCatalog.

[ESRI software] In ArcView 3, one of the five types of documents that can be contained within a project file. A view is used for displaying, querying, and analyzing geographic themes. A view consists of a table of contents, which lists all the geographic themes contained in the view, and a map area on which geographic themes are displayed.

Viewer: [software] In ArcGlobe and 3D Analyst, an additional window that allows a user to view 3D data in a scene from another angle. Users can have multiple viewers in a scene.

Viewshed: [3D analysis] The locations visible from one or more specified points or lines. Viewshed maps are useful for such applications as finding well-exposed places for communication towers, or hidden places for parking lots.

Virtual directory: [Internet] A directory name, used in a URL, that corresponds to a real or actual directory on a Web server.

Virtual page: [ESRI software] The map page as seen in layout view in ArcMap.

Virtual study area: [ESRI software] The current extent of a map document in ArcGIS. The virtual study area never has a boundary.

Virtual table: [computing] A logical table in a database that stores a pointer to the data rather than the data itself.

Visible scale range: [ESRI software] A minimum and maximum value that a map scale must fall between in order for the map layers to be displayed.

Visual Basic: [non-ESRI software] 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.

Visual Basic for Applications: [non-ESRI software] 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.

Visual C++: [programming] A Microsoft implementation of the C++ programming language which is part of Microsoft's Visual Studio Development environment, used to compile and develop Windows software.

Visual center: [map design] The point on a rectangular map or image to which the eye is drawn. The visual center lies slightly (about 5 percent of the total height) above the geometric center of the page.

Visual hierarchy: [map design] The presentation of features on a map in a way that implies relative importance, usually achieved with visual contrast.

Visualization: [visualization] The representation of data in a viewable medium or format. In GIS, visualization is used to organize spatial data and related information into layers that can be analyzed or displayed as maps, three-

dimensional scenes, summary charts, tables, time-based views, and schematics.

[Vm]

VMap: [standards] Acronym for Vector Map. A vector-based data product in vector product format (VPF) at several scales divided into groups, referred to as levels. For example, VMap Level 1 includes vector maps at a scale of 1:250,000, and VMap Level 2 includes vector maps at a scale of 1:50,000.

[Vo]

Volume: [data analysis] In a TIN, the space (measured in cubic units) between a TIN surface and a plane at a specified elevation. Volume may be calculated above or below the plane.

[Euclidean geometry] The space contained within any geometric solid, usually expressed in cubic units.

Voronoi diagram: [Euclidean geometry] A partition of space into areas, or cells, that surround a set of geometric objects (usually points). These cells, or polygons, must satisfy the criteria for Delaunay triangles. All locations within an area are closer to the object it surrounds than to any other object in the set. Voronoi diagrams are often used to delineate areas of influence around geographic features. Voronoi diagrams are named for the Ukrainian mathematician Georgy Fedoseevich Voronoi (1868-1908).

Voxel: [graphics computing] A three-dimensional pixel used to display and rotate three-dimensional images.

[Vp]

VPF: [data structures] Acronym for Vector Product Format. A vendor-neutral data format used to structure, store, and access geographic data according to a defined standard.

VPF dataset: Acronym for Vector Product Format. A vendor-neutral data format used to structure, store, and access geographic data according to a defined standard.

VPF layer: [ESRI software] A layer that references a set of VPF data. VPF data is a standard format, structure, and organization for large geographic databases that are based on a georelational data model.

[Vt]

VTable binding: [programming] The fastest form of early binding, during which client code that uses a COM object (such as Visual Basic) binds to a method by indexing to a virtual function table, or vtable.

W

[W-]

W-test: [surveying] A type of statistical test used in surveying to detect blunders in a measurement network. The W-test is based on the assumption that the null hypothesis is rejected due to a gross error in one of the measurements and uses an alternative hypothesis to identify the erroneous measurement.

[W3]

W3C: [Internet] Acronym for World Wide Web Consortium. An organization that develops web standards and promotes interoperability between web technologies, such as browsers, programming languages, and devices. Members from around the world contribute to standards

for XML, SOAP, HTML, and many other web-based protocols.

[Wa]

Wait time: [computing] The amount of time between the time that a client requests an object from a server and the time the client receives that object.

Walk mode: [ESRI software] In ArcGlobe, a navigation mode that allows navigation on a globe close to the ground, simulating walking.

WAN: [computing] Acronym for wide area network. A computer network that connects computers in a large area, such as in different cities or countries. The Internet is the most well-known example of a WAN.

War fighting element: [defense] In MOLE, a real-world battle element, such as a ground force unit or a lane boundary, represented by MOLE symbols on a map.

War fighting symbol: [defense] In MOLE, graphics on a map that represent battle elements such as ground troops and direction of troops. These graphics are used to plan and execute military operations in support of C4I functions. MOLE symbols fall within four main categories: force elements, tactical graphics, stacks, and leaders.

Watch file: [ESRI software] A text file that records all dialog during an ArcInfo session. Watch files can be edited and converted to macro programs.

Waterfall model: [programming] A software design methodology in which development proceeds through a top-down process of overlapping stages. First proposed in 1970, the waterfall model is a highly structured approach to a project life cycle that cascades linearly through the developmental phases of requirements analysis, design, implementation, testing, integration, and maintenance.

Watershed: [hydrology] A basin-like terrestrial region consisting of all the land that drains water into a common terminus.

Wavelength: [physics] The distance between two successive crests on a wave, calculated as the velocity of the wave divided by its frequency.

Wavelet compression: [data storage] A lossy method of data compression that uses mathematical functions and is best used in image or sound compression.

Wayfinding: [geography] The mental activities engaged in by a person trying to reach a destination, usually an unfamiliar one, in real or virtual space. Wayfinding consists of acquiring information that is relevant to choosing a route, or a segment of a route, and of evaluating that information in the course of travel so the route can be changed as needed. Wayfinding is the cognitive component of navigation.

[geography] The academic study of wayfinding behavior; also, the scientific art of designing real or virtual environments to make wayfinding easier.

[navigation] Long-distance, open-sea navigation without instruments, as traditionally practiced by Pacific Islanders.

Waypoint: [GPS] A location of interest, or a reference point on a route, stored as latitude-longitude coordinates and often captured by a GPS receiver.

[Wc]

WCS: [Internet] Acronym for Web Coverage Service. A standard specification for exchanging coverages over the Internet using a server. The Web Coverage Service (WCS) is the result of a collaborative effort assembled by the Open Geospatial Consortium, Inc. (OGC).

[We]

Web: [Internet] A worldwide, decentralized, public information space for sharing documents and conducting business on the Internet. Components of the World Wide Web include information in the form of HTML documents; identification tags (URLs) for the millions of computers that host this information; a set of technical specifications, called HTTP, for sending information from one computer to another; and web browser software for accessing and displaying information.

Web application: [Internet] A software program that communicates via the World Wide Web and delivers Web-based information to the user in HTML format. Web applications are typically used to add customization and interactivity to Web pages. Web applications may also be called Web-based applications.

[Internet] A Web-based program that uses a Web site as the front end of a software application. Web applications allow end users to modify and pass data between a server and a client. Web applications are typically used to provide Web site search capabilities, retrieve and display user information from a database, and provide the ability to purchase items from a Web site.

Web application template: [Internet] A file that contains a user interface as well as all the code and necessary files to use as a starting point for creating a new customized Web application. ArcGIS Server contains a number of Web application templates.

Web browser: [Internet] An application that allows users to access and view web pages on their computer screens. Web browsers enable users to view HTML documents on the World Wide Web.

Web control: [Internet] The visual component of a Web form that executes its own action on the server. Web controls are designed specifically to work on Web forms and are similar in appearance to HTML elements.

Web Feature Server specification: [Internet] A set of interface specifications that standardizes data manipulation and map display on the Internet. The Web Feature Server (WFS) specification is the result of a collaborative effort assembled by the Open Geospatial Consortium, Inc. (OGC).

Web form: [Internet] Based on ASP.NET technology, Web forms allow the creation of dynamic Web pages in a Web application. Web forms present their user interface to a client in a Web browser or other device, but generally execute their actions on the server.

Web map: [Internet] In ArcGIS Online, a Web based, interactive map that allows you to display and query the layers on the map. A Web map contains one or more ArcGIS Server map services that are referenced to ArcGIS Online.

Web Map Server specification: [Internet] A set of interface specifications that provides uniform access by Web clients to maps rendered by map servers on the Internet. The Web Map Server (WMS) is the result of a collaborative effort assembled by the Open Geospatial Consortium, Inc. (OGC).

Web page: [Internet] A page of information stored on a Web site and viewed in a Web browser. Web pages may contain text, graphics, animations, forms for data entry, and links to other Web pages.

Web server: [hardware] A computer that manages Web documents, Web applications, and Web services and makes them available to the rest of the world.

Web service: [Internet] A software component accessible over the World Wide Web for use in other applications. Web services are built using industry standards such as XML and SOAP, and thus are not dependent on any particular operating system or programming language, allowing access to them through a wide range of applications.

Web service catalog: [Internet] A collection of ArcGIS Server Web services. A Web service catalog is itself a Web service with a distinct location (URL) and can be queried to obtain the list of Web services in the catalog and their URLs.

Web site: [Internet] A collection of Web pages (HTML files) that are interconnected with hyperlinks and published on the World Wide Web.

Weed tolerance: [data capture] The minimum distance allowed between any two vertices along a line, set before digitizing. When new lines are added, vertices that fall within that distance of the last vertex are ignored. Weed tolerance applies only to vertices, not to nodes.

Weeding: [data capture] Reducing the number of points that define a line while preserving its essential shape.

Weight: [mathematics] A number that indicates the importance of a variable for a particular calculation. The larger the weight assigned to the variable, the more that variable will influence the outcome of the operation.

[ESRI software] A property of a network element typically used to describe the element or to assign a cost for traversing the element. For example, this value may represent the phase or the length of a primary conductor in an electrical distribution system. Weights are calculated based on an attribute of each network feature.

Weight filter: [ESRI software] In geometric networks, a specification for which network features can be traced based on their weight values.

Weighted constrained adjustment: [ESRI software] In Survey Analyst for field measurements, one of two possibilities for performing a constrained adjustment. In the weighted constrained adjustment, the reference point coordinates are treated as observed measurements and their standard deviations are applied in the adjustment.

Weighted mean center: [spatial statistics use for geostatistics] The geographic center of a set of points as adjusted for the influence of a value associated with each point. For example, while the mean center of a group of grocery stores would be the location obtained by averaging the stores' x,y coordinates, the weighted mean center would be shifted closer to stores with higher sales, more square footage, or a greater quantity of some other specified attribute.

Weighted moving average: [spatial statistics use for geostatistics] The value of a point's attribute computed by averaging the values of its surrounding points, taking into account their importance or their distance from the point.

Weighted overlay: [data analysis] A technique for combining multiple rasters by applying a common measurement scale of values to each raster, weighting each according to its importance, and adding them together to create an integrated analysis.

[Wg]

WGS72: [geodesy] Acronym for World Geodetic System 1972. A geocentric datum and coordinate system designed by the U.S. Department of Defense, no longer in use.

WGS84: [geodesy] Acronym for World Geodetic System 1984. The most widely used geocentric datum and geographic coordinate system today, designed by the U.S. Department of Defense to replace WGS72. GPS measurements are based on WGS84.

[Wh]

WHERE clause: [programming] A SQL clause that specifies a selection criterion that allows filtering of a query result set.

[Wi]

Widget: [ESRI software] An interactive graphic component of a user interface (such as a button, scroll bar, or menu bar), its controlling program, or the combination of both the component and program.

Wind rose: [meteorology] A diagram showing, for a given place and time period, how much of the time the wind blows from each direction. Wind roses have many variations, but in the typical pattern, a number of wedges (usually eight, twelve, or sixteen) radiate from the center of a circle. The width and orientation of a wedge represent the direction from which the wind blows; the length of a wedge represents the percentage of time the wind blows from that direction. More complex wind roses use color schemes and other graphic devices to represent wind speed and related information.

Windowing: [graphics map display] The process of limiting the viewable extent of a map or data by panning and zooming.

Wireframe: [graphics computing] A three-dimensional picture of an object, composed entirely of lines (wires). The lines represent the edges or surface contours, including those that would otherwise be hidden by a solid view. Wireframes make editing easier, since the screen redraws much more quickly.

Wireless application: [Internet] A ready-to-use Web application for a wireless client such as a handheld device, PDA, or cellular phone, designed for a specific purpose such as maps and routing for travel assistance.

Wizard: [software] An interactive user interface that helps a software user complete a task one step at a time. Wizards are often implemented as a sequence of dialog boxes that the user can move through, filling in required details. Wizards are usually used to simplify long, difficult, or complex tasks.

[Wo]

Work order: [organizational issues] One specific task that proceeds through each stage of an organization's workflow process, including design, acceptance, and construction in the field.

Workflow: [organizational issues] An organization's established processes for design, construction, and maintenance of programs, products, and business objectives.

[organizational issues] A set of tasks carried out in a certain order to achieve a goal.

Workgroup geodatabase: [ESRI software] A Microsoft SQL Server Express database that uses ArcSDE technology to store, query, and modify spatial data. Workgroup geodatabases accept up to 10 non-Web client connections and unlimited Web client connections to the SQL Server Express instance and are licensed through ArcGIS Server Workgroup edition.

Working directory: [computing] A directory that indicates the appropriate location on disk to place results from analysis.

Workspace: [ESRI software] A container for geographic data. A workspace can be a folder that contains shapefiles, a geodatabase, a feature dataset, or an ArcInfo workspace. Other multidimensional data formats such as netCDF or HDF can also be considered workspaces, and are often treated in this manner within GIS software packages.

[data storage] In ArcObjects, a container for spatial and nonspatial datasets such as feature classes, raster datasets, and tables that provides methods to instantiate existing datasets and create new datasets. Different types of workspaces are specified by the esriWorkspaceType enumerator: esriFileSystemWorkspace (such as an ArcInfo workspace), esriLocalDatabaseWorkspace (such as a personal geodatabase), and esriRemoteDatabaseWorkspace (such as an ArcSDE geodatabase).

Workstation: [hardware] A computer that has better graphics capabilities and more processing power than most personal computers, and is able to carry out several tasks at once. Workstations usually share data and software with other computers in a network.

World file: [data storage] A text file containing information about where an image should be displayed in real-world coordinates. When an image has a properly configured world file, GIS software can use the information (a total of six values, including the starting coordinates, the cell size in both x- and y-dimensions, and any rotation and scaling information) to accurately overlay the image with any other data already in a projected or geographic coordinate system.

World Wide Web: [Internet] A worldwide, decentralized, public information space for sharing documents and conducting business on the Internet. Components of the World Wide Web include information in the form of HTML documents; identification tags (URLs) for the millions of computers that host this information; a set of technical specifications, called HTTP, for sending information from one computer to another; and web browser software for accessing and displaying information.

[Ws]

WSDL: [Internet] Acronym for Web Service Description Language. An XML format for describing the methods, types, and connection point of a SOAP Web service.

WYSIWYG: [computing] In ArcGIS desktop, this term refers to the editing tools providing visual feedback of the desired end result of an editing operation while the process is still underway. For Cartographic Representations, this is the ability to see a symbolized version of the feature being operated on instead of a wireframe version of the underlying geometry of the feature.

X

[X,]

X,y coordinates: [coordinate systems] A pair of values that represents the distance from an origin (0,0) along two axes, a horizontal axis (x), and a vertical axis (y). On a map, x,y coordinates are used to represent features at the location they are found on the earth's spherical surface.

X,y event: [mathematics] A simple coordinate pair that describes the location of a feature, such as a set of latitude and longitude degrees.

X,y,z coordinates: [coordinate systems] In a planar coordinate system, three coordinates that locate a point by its distance from an origin (0,0,0) where three orthogonal axes cross. Usually, the x-coordinate is measured along the east-west axis, the y-coordinate is measured along the north-south axis, and the z-coordinate measures height or elevation.

[X-]

X-axis: [coordinate systems] In a planar coordinate system, the horizontal line that runs right and left (east and west of) the origin (0,0).

[Xl]

XLS: [programming] XML for location-based services.

[Xm]

XMI: [programming] Acronym for XML Metadata Interchange. A standard that specifies how to store a UML model in an XML file.

XML: [programming] Acronym for Extensible Markup Language. Developed by the W3C, a standardized general purpose markup language 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.

XML recordset document: [programming] In ArcGIS, an export file containing the features or records from an individual geodatabase feature class or table. Data in the file is encoded in XML and can be imported into an existing feature class or table.

XML workspace document: [programming] In ArcGIS, an export file containing one or more geodatabase feature datasets, feature classes, and tables. It can include schema and data or just the schema. Schema and data in the file are encoded in XML and can be imported into a geodatabase.

[Xp]

XPath: [programming] A language used to find specific parts of an XML document and compute values from the document's content.

[Xs]

XSL: [programming] Acronym for Extensible Style Language. A set of standards for defining XML document presentation and transformation. An XSL style sheet may contain information about how to display tagged content in an XML document, such as font size, background color, and text alignment. An XSL style sheet may also contain XSLT code that describes how to transform the tagged content in an XML document into an output document with another format. The W3C maintains the XSL standards.

XSLT: [programming] Acronym for Extensible Style Language Transformations. A language for

transforming the tagged content in an XML document into an output document with another format. An XSL style sheet contains the XSLT code that defines each transformation to be applied. Transforming a document requires the original XML document, an XSL document containing XSLT code, and an XSLT processor (parser) to execute the transformations. The W3C maintains the XSLT standard.

Y

[Y-]

Y-axis: [coordinate systems] In a planar coordinate system, the vertical line that runs above and below (north and south of) the origin (0,0). Numbers north of the origin are positive, and numbers south of it are negative.

[coordinate systems] In a spherical coordinate system, a line in the equatorial plane that passes through 90 degrees east longitude.

[mathematics] On a chart, the vertical axis.

Z

[Z-]

Z-axis: [coordinate systems] In a spherical coordinate system, the vertical line that runs parallel to the earth's rotation, passing through 90 degrees north latitude, and perpendicular to the equatorial plane, where it crosses the x- and y-axes at the origin (0,0,0).

Z-coordinate: The value for a given surface location that represents an attribute other than position. In an elevation or terrain model, the z-value represents elevation; in other kinds of surface models, it represents the density or quantity of a particular attribute.

Z-factor: [coordinate systems] A conversion factor used to adjust vertical and horizontal measurements into the same unit of measure. Specifically, the number of vertical units (z-units) in each horizontal unit. For example, if a surface's horizontal units are meters and its elevation (z) is measured in feet, the z-factor is 0.3048 (the number of meters in a foot).

Z-score: [statistics] A statistical measure of the spread of values from their mean, expressed in standard deviation units, where the z-score of the mean value is zero and the standard deviation is one. In a normal distribution, 68 percent of the values have a z-score of plus or minus 1, meaning they lie within one standard deviation of the mean. Ninety-five percent of the values have a z-score of plus or minus 1.96, meaning they lie within two standard deviations of the mean; 99 percent of the values have a z-score of plus or minus 2.58. Z-scores are a common scale on which different distributions, with different means and standard deviations, can be compared.

Z-tolerance: [coordinate systems] In raster-to-TIN conversion, the maximum allowed difference between the z-value of the input raster cell and the z-value of the output TIN at the location corresponding to the raster cell center.

[Ze]

Zenith: [astronomy] In astronomy, the point on the celestial sphere directly above an observer. Both the zenith and nadir lie on the observer's meridian; the zenith lies 180 degrees from the nadir, and is observable.

Zenith angle: [ESRI software] In Survey Analyst for field measurements, a vertical angle that is

formed by the intersection of two lines in a vertical plane. Zenith angles are observed on the vertical circle of a TPS instrument.

Zero length line event: [linear referencing] In linear referencing, a line event whose from-measure is equal to its to-measure. A zero length line even may occur, for example, along routes, when a polygon touches a route but does not overlap it.

[Zi]

ZIP Code: [federal government] Acronym for zone improvement plan code. A five-digit code, developed by the U.S. Postal Service, that identifies the geographic delivery area served by an individual post office or metropolitan area delivery station.

ZIP+4 Code: [federal government] An enhanced ZIP Code that consists of the five-digit ZIP Code plus four additional digits that identify a specific geographic segment within the five-digit delivery area, such as a city block, office building, or other unit.

[Zo]

Zonal analysis: [spatial analysis] The creation of an output raster in which the desired function is computed on the cell values from the input value raster that intersect or fall within each zone of a specified input zone dataset. The input zone dataset is only used to define the size, shape, and location of each zone, while the value raster identifies the values to be used in the evaluations within the zones.

Zonal statistics: [ESRI software] In ArcGIS Spatial Analyst, the calculation of a statistic for each zone of a zone dataset based on values from another dataset, a value raster. A single output value is computed for each cell in each zone defined by the input zone dataset.

Zone: [analysis geoprocessing] All cells in a raster with the same value, regardless of whether or not they are contiguous.

[geocoding] Additional information about a location or address, used to narrow a 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.

Zone of interpolation: The area in a TIN layer for which values (elevation, slope, and aspect) are calculated. When a TIN layer is clipped to a smaller size to create a more focused study area, the parts that lie outside the study area remain triangulated and are represented as outside lines, but they have no values. These parts are said to be outside the zone of interpolation.

Zoning: [local government] The application of local government regulations that permit certain land uses within geographic areas under the governments jurisdiction. Zoning regulations typically set a broad category of land use permissible in an area, such as residential, commercial, agricultural, or industrial. Zoning regulations can also set constraints on building construction within areas, which may affect factors such as the maximum height of structures, minimum setbacks from property lines, the amount of parking that must be provided, or the density of housing.

Zoom: [software] To display a larger or smaller region of an on-screen map or image.