## **NILS Glossary of Use Case Terms**

## (Updated August 2002)

The NILS glossary was compiled as a snapshot of the definitions for the use cases in the requirements document and development documentation. Since this document evolves during all phases of the NILS extensions (Survey Management, Measurement Management, Parcel Management and GeoCommunicator), a single, unified glossary will be maintained. Its purpose is not to redefine surveying and use case terms, but to clarify the usage of concepts in the use case documents, and to aid software developers as well as general readers.

The NILS Unified Glossary is available on the NILS web page, http://www.blm.gov/nils/.

Term	Definition
Accuracy See Precision	1.The degree of conformity or closeness of a measurement to the true value. [Mikhail and Gracie]
	2.Nearness to truth. [Brown]
	3.Degree of conformity with a standard. Accuracy relates to the quality of a result, and is distinguished from precision, which relates to the quality of the operation by which the result is obtained. [ACSM]
Actor	"Actors represent anything external that interacts with the system in some way."
	An actor may be a person, another computer system or program event.
	[Hands On Technology Transfer, Inc]
ADA requirements	See Americans with Disabilities Act.
Adjusted point	A point whose coordinates are the result of an <i>adjusted measurement network</i> .
Adjustment (survey or survey network)	Mathematical procedures for distributing the errors and imprecisions contained in a survey network among all the measurements contained in that network. The corrected measurements are then consistent throughout the network, that is, any unknowns may be determined no matter which corrected observations are used to calculate them.
Adjustment fusers	Calculation of the relation between expected qualitative descriptors and calculated quality descriptors that exceeds a certain threshold value.
Adjustment limits	Values that indicate when sufficient numbers of <i>least square analysis</i> iterations have been reached. This prevents endless looping of iterations. There are two types of limits: <i>Residual tolerance</i> and <i>iteration limit</i> .

Term	Definition
Administrative area	<ol> <li>An area of land managed for a specific purpose. Examples:         USFS National Forest, BLM District, Land Planning Zone,         county, etc.</li> <li>An organizational unit. The unit has distinct jurisdictional</li> </ol>
	responsibility for all activities in a geographic area.
Administrative survey	This is a series of <i>measurements</i> and <i>observations</i> that are done for the purpose of describing the limits or conditions of a public decision. Administrative surveys are gathered for informational purposes, and are not intended to provide information on the extent of legal <i>rights</i> and interests.
Alias	One of several possible ways to define a parcel as the sum of its constituent parts.
Aliasing	The ability to define a parcel by a number of different alias combinations.
Aliquot part	Division of land formed by the halving and quartering of PLSS lands.
ALTA	American Land Title Association
American with Disabilities Act (ADA)	ADA requirements - Americans with Disabilities Act requirements. The Americans with Disabilities Act gives civil rights protections to individuals with disabilities similar to those provided to individuals on the basis of race, color, sex, national origin, age, and religion. It guarantees equal opportunity for individuals with disabilities in public accommodations, employment, transportation, State and local government services, and telecommunications. ADA does not apply to the Federal Government. However, Section 508 of the Rehabilitation Act does apply to federal employees and the public; it specifically addresses employment opportunities in the field of information technology for those with disabilities.
Analyze/adjust parameter form	A data entry form accessible prior to the adjustment where the user can control meaningful aspects of the adjustment, such as use of point elevations, use of <i>weighting</i> , <i>adjustment limits</i> , <i>robusting option</i> .
Anomaly	Anything irregular or abnormal.
Anomaly detection	Process to identify anything irregular or abnormal (blunder, error) in measurement data.
Area of Applicability	The geographic extent of an <i>event</i> . This is the extent for which the <i>event</i> is applicable. An <i>event</i> is available for subscription if a <i>subscriber's area of interest</i> overlaps any part of the area of applicability. The area of applicability is defined by pre-defined frameworks or registration cells such as states, counties, or PLSS Townships. In future releases this restriction may be omitted.

Term	Definition
Area of interest	Represents the geographic extent of data to be processed. An area of interest can be specified by the <i>browser</i> or <i>subscriber</i> from "free form" or user defined footprints, or by registering to pre-defined cells, frameworks, or reference grids.
	A named geographic extent used to define the boundaries of an investigation area for the streamlined map navigation and query.
Blunder See <i>Error</i>	1. A mistake. A blunder is not an error, although infrequently a blunder is called a gross error.
	2. A mistake. A blunder is not an error, though a small blunder may remain undetected in a series of observations and have the effect of an error in determining the result. Examples of blunders are:  (1) Reading a horizontal circle incorrectly by an even degree; (2) Neglecting to record a tape length in a measured traverse; and (3) Reversing the numerals in recording an observation. [ACSM]
	3. MISTAKE-A mistake is not an error, but is a blunder on the part of the observer. [Moffitt and Bouchard]
	4. GROSS ERRORS are the results of blunders or mistakes that are due to carelessness of the observer [Mikhail and Gracie]
	5. A mistake. Not an error. [Brown]

Term	Definition
Boundary	A polygon edge feature or a polyline feature. Boundaries from several feature classes may be used to define the boundaries of polygon feature in another feature class.
	1. A boundary (also land boundary) is a line of demarcation between adjoining land <i>parcels</i> as determined by legal descriptions. Boundaries can be marked by monuments, fences, hedges and so on, or not at all.
	2. LAND BOUNDARY-A line of demarcation between adjoining parcels of land. The parcels of land may be of the same or of different ownership, but distinguished at some time in the history of their descent by separate legal descriptions. A land boundary may be marked on the ground by material monuments placed primarily for the purpose-by fences, hedges, ditches, roads, and other service structures along the line-or defined by astronomically described points and lines; by coordinates on a survey system whose position on the ground is witnessed by material monuments which are established without reference to the boundary line; and, by various other methods. [ACSM]
	3. LAND BOUNDARY-Usually the line of demarcation between adjoining land parcels as determined by legal descriptions. Land boundaries can be marked by monuments, fences, hedges, etc. or not at all. [Brown]
Boundary survey	A survey made to establish or to re-establish a boundary line on the ground or to obtain data for constructing a map or plat showing a boundary line. The term boundary survey is usually restricted to surveys of boundary lines between political territories. [ACSM]
Bounding line	A line used to determine the limits of a calculation; A line that terminates an offset line.
Browser	A Browser has the limited functionality of viewing research results and navigating to Provider URLs. A Browser can opt to become a <i>Subscriber</i> by requesting a Subscriber Account. A Browser may retrieve data that is downloadable from provider storage locations to local disk.
Bureau motion	A land action initiated by the Bureau of Land Management or another federal entity.

Term	Definition
Catalog  Data catalog  Event catalog	A listing of <i>data</i> by <i>category type</i> (data, activity <i>event</i> , communication <i>event</i> , etc.) that may contain any or all of the following: Metadata (description), current-to date, location/path to local storage, access restrictions, spatial reference, spatial extent, duration dates, data events (notification flags), activity events or communication medium events. Also called Catalog Information. Information from the provider catalogs will be used by the administrator to construct the master index.
Category	Indicates the lumping together of similar individual datasets, activity <i>events</i> , reference information, or communication <i>events</i> to facilitate the <i>GC-01 Conduct Search</i> process. Broad categories such as <i>data</i> , activity <i>events</i> , and so on, will be subdivided into smaller categories such as transportation data and field survey activities. The <i>GC-02 Browse Search Results</i> use case would display all items under the selected categories.
CEFB	Cadastral Electronic Field Book software. This custom software was developed through cooperation between the University of Maine and the Bureau of Land Management to collect and analyze survey field data and documentation of evidence. The latest version of CEFB is released to the public domain.
Closure	The extent to which and adjustment between known coordinates anticipates these coordinates described as residuals in dX, dY, dXY and relative error rE
СММ	Cadastral Measurement Management software. This custom software was developed through cooperation between the University of Maine and the Bureau of Land Management to collect and analyze survey field data. The latest version of CMM is released to the public domain.
COGO	Abbreviation of the term COordinate GeOmetry. A GIS-oriented set of functions for surveyors to enter survey data, to calculate precise locations and boundaries, to define curves, etc. May be used for managing land records, mapping parcels, assessing property, reviewing development, and creating cadastral and engineering basemaps.
COGO procedure parameter form	A list of configuration options to assist the user in the setup of <i>COGO procedures</i> .
COGO procedures	A unique set of Coordinate Geometry (COGO) <i>computations</i> used to calculate coordinate positions.
	Example position calculation methods: <i>In-field coordinate geometry</i> (e.g., <i>bearing/bearing intersection</i> ) and <i>layout by angle and distance</i> .
COMPARW.EXE	See GMM

Term	Definition
Compass adjustment	This is a standard surveying adjustment method.
Computation	A set of processing methods or algorithms applied to achieve a desired solution. <i>COGO Procedures</i> use computations.
Computation device	The computing hardware system and processing software for deriving <i>observations</i> and <i>measurements</i> from <i>readings</i> . May be used with a <i>data collection device</i> on the same computing hardware system.
Computation Method	Type of mathematical process required to create a specified feature or result.
Computation Mode	An option on parameter forms; selects either Geodetic or Planar computations during computation of a points position. The computation mode determines which mathematical surface is used for coordinate geometry computations. In the planar mode the surface is a plane; in the geodetic mode the surface is an ellipsoid.
Constant correction	A systematic error correction made to a distance.
Control data spreadsheet	A user interface for viewing and editing control data.
Control, Control Data, Control Point	In general, coordinated and correlated position data forming a framework to which detail surveys are adjusted. Basic control may be either horizontal or vertical; it is usually executed with greater precision and accuracy than is required for dependent surveys. Also, the point or points permanent in character within a network of basic control, for which the coordinates and/or elevation to a specific accuracy are known and which are used as origin and closure for making a control survey or for making an engineering, cadastral, or other survey. [ACSM]
Conveyance	A transfer of legal title to land or <i>rights</i> . An instrument, such as a deed, patent, tentative approval or interim conveyance, by which interest in mineral and/or real property is transferred from grantor to grantee.
Coordinate Geometry (COGO)	A GIS-oriented set of functions for surveyors to enter survey data, to calculate precise locations and boundaries, to define curves, etc. May be used for managing land records, mapping parcels, assessing property, reviewing development, and creating cadastral and engineering basemaps.
Coordinate Geometry (COGO)	A GIS-oriented set of functions for surveyors to enter survey data, to calculate precise locations and boundaries, to define curves, etc. May be used for managing land records, mapping parcels, assessing property, reviewing development, and creating cadastral and engineering basemaps.

Term	Definition
coredata_fgdc.def.do	A document which contains the core data for the FGDC definitions.
COURS document	Concept of Operations and User Requirements. The initial National Integrated Land System (NILS) document which specifies the scope, methodology and project management principles for the NILS Project. Contains supplemental and background information as well as the results of the Requirements gathering project phase. Details the initial, high-level use cases which serve as the basis for the analysis and design phase.
Curve (types used in surveying)	Circular Curve – A curve of constant radius.
	<b>Horizontal curve</b> - A curve defined on an XY plane. Examples are Circular, Spiral, Offset to Spiral, and Median Line curve.
	<b>Median Line Curve</b> – Infrequently called medial line curve. A curve that is formed by a line that is equidistant from opposite banks of a river channel.
	Offset to a Spiral Curve – A curve that is parallel to a spiral curve. These curves are used to define right-of-way boundaries. They do not have the mathematical properties of a spiral curve.
	<b>Spiral Curve</b> – A curve with a constantly changing radius. Used for a smooth transition from straight line to a circular curve.
	<b>Vertical curve</b> – a curve in a vertical plane. Example: parabolic curve.

Term	Definition
Data (GeoCommunicator)	Any and all non-event information, regardless, of format or medium, that is searchable by GeoCommunicator users.
	Geo-Referenced-Raster or vector data that contain world coordinates.
	Geo-Related-Data that is associated or linked to a point or area entity (spatial objects). Examples: Survey Plat of a township; Patents and deeds linked to a <i>parcel</i> by <i>legal descriptions</i> .
	Reference Document-Helpful technical information related to <i>events</i> or data. May have no direct relationship with a spatial data set (e.g. manuals, Request For Information (RFI), reports, etc.).
	Data may be packaged as a set of associated data elements from various categories. Data categories that have a <i>spatial extent</i> (footprint) can be displayed and searched for spatially. <i>Categories</i> of data include spatial layers, tabular, images, <i>reference documents</i> , <i>data discrepancies</i> and proposed layers, etc. Some <i>reference documents</i> may have no direct relationship with a specific spatial data set (e.g., manuals, Request For Information (RFI), reports, etc.).
Data collection device	An instrument for digital storage of <i>readings</i> and information about those <i>readings</i> . Information may be manual or digital input. Typically, a personal computer which can be connected to a <i>measurement device</i> .
Data collection form	A user interface for collection of survey data.
Data discrepancy	Datasets of the same <i>category</i> in the same spatial extent whose positions (coordinates) and/or attributes do not match.
Data provider form	Captures input from a data provider resulting in the creation or modification of data provider account information.
Data set	A collection of data, such as an array or table of data items, a file, a program, or any other organized unit of data.
	<u>Field survey data set</u> -The set of reference data transferred to a data collection device for use in the field (i.e. coverages, images and documents), that pertains to a <i>Survey Project</i> .
Deed description	A measurement as defined in a deed legal description.
Default spatial extent	Default spatial search area defined by the site administrator.
Defining measurement	A <i>measurement</i> in a conveyance instrument that defines an area of land.
Derived status	The land status of a Parcel as determined by a thorough analysis of feature lineage, action events, and past status and their respective cumulative impacts as defined by standardized land status precedence and relevance rules.

Term	Definition
Ellipsoidal height	The distance from the ellipsoid to a point measured along a line normal to the ellipsoid. [BLM Training]
	H = Orthometric Height h = Ellipsoidal Height N = Geoid Height H Geoid
Encumbrance	A limit on the rights and use of the land.
Engineering/ Construction survey	Construction - The survey measurements made while construction is in progress to control elevation, horizontal position, and dimensions and configuration; to determine adequacy of completion; and, to obtain essential dimensions for computing construction pay quantities. [ASCM]
	Engineering-A survey executed for the purpose of obtaining information that is essential for planning an engineering project or development, and estimating its cost. The information obtained may, in part, be recorded in the form of an engineering map or plat.  [ACSM]
Error See <i>Blunder</i>	1. An error is the difference between the true value of a quantity and the measured value of the same quantity.
	2. The difference between an observed or computed value of a quantity and the ideal or true value of that quantity. Because the ideal or true value of a quantity, with few exceptions, cannot be known with exactness, the term error is applied to a difference between an observed or computed value of a quantity and some standard or accepted value used in lieu of the ideal or true value. [ACSM]
	3. An error is the difference between the true value of a quantity and the measured value of the same quantity. Errors result from instrumental imperfections, personal limitations, and natural conditions affecting the measurement. [Moffitt and Bouchard]
	4. Errors have been traditionally classified into three types: (1) gross errors, (2) systematic errors, and (3) random errors. [Mikhail and Gracie]
	5. The difference between a measured value and the true value. A smaller magnitude; not a mistake or blunder. [Brown]
	6. Since the true value of a measured quantity can never be determined, errors are likewise indeterminate and, hence, they are strictly theoretical quantities. [Wolf]

Term	Definition
Error comparison value	A worst-case closure for each polygon is computed by accumulating an error based on the error estimates for the bearings and distances, then dividing the misclosing polar distance by the accumulated polar distance.
Error ellipse	An ellipse surrounding an adjusted coordinate describing the likelihood of the true value to be close to the adjusted value. In SM and MM extensions, the 95% level is chosen as most helpful. An error ellipse based on 95% is saying that the true value, if known, is expected to occur within the error ellipse 95% of the time.
Error estimate	A numeric value expressing the reliability of each piece of data in the pre-adjusted survey <i>network</i> . This value expresses the amount of adjustment that would be expected to occur during the least square adjustment, and is used as a weighting to control the adjustment of better data. This value is usually applied consistently to distances, bearings and control coordinate values within each survey. The pre-adjustment estimates are based on date, equipment and surveyor. The refinements to these estimates are based the reports from the <i>least square adjustment/analysis</i> .
Estate	The degree, quantity, nature and extent of interest which anyone has in lands or in any other property.  Surface – All rights in the surface of the land except the oil, gas and other mineral or subsurface rights which a party owns, including the right to transfer and dispose of the surface of that land. The surface estate is severed from the mineral estate in a conveyance when the
	grantor excepts or reserves all or part of the minerals from the land being conveyed.  Sub-Surface – As opposed to surface estate. Includes more <i>rights</i> than mineral estate. Term originated by Congress in ANCSA, and is continually being defined by the courts, ruling that sand and gravel are included in the subsurface rights.

Term	Definition
Event	Any activity, data submission, or communication that might trigger a <i>notification</i> and searchable through GC-01 Conduct Search.
	Activity Event. Any activity on the land submitted through the GC-03 Submit Event (manual) process by the Event Provider. Example: Survey fieldwork planned by BLM cadastral surveyors.
	<u>Data Event</u> . Any data submitted through the GC-06 Submit Data process that automatically sets a flag to trigger a <i>notification</i> . Example: Data has been updated.
	<u>Communication Event</u> . Any creation of a discussion forum, email group, information notice, sending an email, or information call submitted through the GC-10 Post Comment process.
	An activity event (e.g. data collection) may result in a data submission event.
Event Notification	The GeoCommunicator system process to match activity parameters against subscription parameters, and to initiate notifications to the appropriate subscribers.
External application	A software application used in to complete BLM/FS business activities, but which is not an integrated part of the NILS system. Users might interact with external applications during a placeholder task in a Job process flow.
External trigger	A transaction in an associated system or database that causes the need for processing in NILS.
Fabric	A collection of topologically related <i>features</i> .  A <b>fabric</b> refers to a collection of map features that share geometry at nodes (corners) and edges (boundaries) in a topological structure.  When features in a fabric are edited, a change to a geometric element (i.e. a point, line or area feature) affects the shape of all features that are topologically tied to the edited feature.
	Abstract term referring to the collection of feature classes and features that make up the of the spatial data notions in the GIS. The three fabrics are the Survey fabric, LD fabric, and Parcel fabric. The collection of datasets that comprise a fabric generally comprise a more or less seamless set of tessellated features with common edge topology rules, although in some cases features may overlap.
Feature	A shape in a spatial layer, such as a point, line, or polygon that represents a geographic object
	A cadastral land records object that has a field of type geometry. Features are stored in feature classes

Term	Definition
Feature Class	The conceptual representation of a geographic feature. When referring to geographic features, feature classes include point, line, area, and surface.
Feature geometry	The definition of a feature's shape.
Feature link	Functionality supported by the Spatial Analyst extension that allows vertex coordinates in one layer to be automatically updated when its referenced survey point is updated. This functionality will be used to update the LD fabric when the Survey fabric is updated.
Feature linked annotation	Text that is related to a feature and whose lifespan, placement, and content relies on the features own lifespan, placement, and attributes.
Field survey	<i>Measurement</i> of <i>features</i> for locating the position or layout of physical objects or theoretical position. For example, a property corner is theoretical, but a property corner monument is a physical object.
Field survey data set	See data set
Field survey setup file	A list of parameters and configurations for the setup of a <i>data collection device</i> . A file which contains the type of data to collect; geodetic <i>vs.</i> planar geometry; the hardware/communications parameters; the area of interest; setup instructions for custom in-field menus and data collection forms; paths to reference data (i.e., coverages), images, and documents; and, the link from the <i>field survey</i> to its <i>survey project</i> .
Field survey setup file template	A form to assist a user in creating or editing a list of parameters and configurations for the setup of a <i>field survey setup file</i> for a <i>data collection device</i> .

Term	Definition
Form	General term indicating interactive window with prompts to collect information.
	Account management form. Captures input from an administrator in the <i>GC-09 Manage Accounts</i> use case.
	<u>Catalog form</u> . Captures input from a data provider resulting in the creation or modification of the data provider's <i>catalog</i> entries in the <i>GC-06 Submit Data</i> use case.
	Provider account form. Captures input from a user applying for a data provider or event provider account through the <i>GC-05 Manage Provider Account</i> use case.
	Email event form. Captures input resulting in an Email, which is sent to the administrator in the <i>GC-10 Post Comment</i> use case.
	Event submission form. Captures input resulting in an <i>event category</i> from an event provider in the <i>GC-03 Submit Event</i> process.
	Information notice form. Captures input resulting in a published request which is sent tot the administrator in the <i>GC-10 Post Comment</i> use case.
	Information request form. Captures input resulting in a data call request, which is sent to the administrator in the <i>GC-10 Post Comment</i> use case.
	Search parameter form. Captures input resulting in the research scope in the <i>GC-01 Conduct Search</i> process.
	Subscriber account form. Captures input form a subscriber resulting in the creation or modification of subscriber account information in the <i>GC-07 Manage Subscriber Account</i> use case.
GCDB	Geographic Coordinate Data Base. The Bureau of Land Management's (BLM) Geographic Coordinate Data Base (GCDB) is a collection of geographic information representing the Public Land Survey System (PLSS) of the United States. The GCDB grid is computed from BLM survey records (official plats and field notes), local survey records, and geodetic control information.
Geoidal undulation correction	Correction term computed at a benchmark station and applied to the model computed orthometric height at the vicinity of the benchmark.
Georeference	The act of registering image or vector data to base mapping data with a known coordinate system in order to align the data so that it reflects their real-world spatial relationships.

Term	Definition
GMM	Geographic Measurement Management software. This custom software was developed through cooperation between the University of Maine and the Bureau of Land Management to collect and maintain the Geographic Coordinate Data Base (GCDB). The latest version of GMM was released to the public domain.
	COMPARW.EXE GMM – program for comparing the coordinate values resulting from two different adjustment strategies of the same dataset.
	.ADJ file - GMM report on the results of the least squares adjustment.
	.GEN file - GMM program for organizing data and generating coordinates for the least squares adjustment.
	.INRAW file - GMM file which contains raw survey data.
Intersection	The point where two lines cross.
Irregular boundary adjustment	Adjustment method that applies single proportion calculation by on a meridional line the latitude of the closing distance is distributed among the courses in the proportion of the latitude of each course. The departure of the closing distance is distributed among the courses in proportion to the length of each course.
Islands of raw data	Raw survey data that is not connected to any other raw survey data by raw survey data.
Iteration limit	The maximum number of iterations an adjustment can have before it is assumed that the solution is diverging.
Job	The discrete deliverable defined by a process. The system will allow for the definition of the user's regular activities as jobs. To complete a project one or more jobs will need to be completed. Users will complete jobs by completing each task in the job's process. Several jobs can be worked on in parallel.
Job status	On an abstract level, the extent to which a job is complete. This will usually be defined by the number of constituent tasks in its process have been completed.
Known (correction)	A known correction is always a constant correction by nature and is always assumed to be constant.
	I.e., magnetic bearing, index corrections, convergence angle (theta), systematic errors, etc.

Term	Definition
Land Status	A method of classifying land to determine what rights have or have not been allocated. Each category of Land Status is derived by searching for events on the land that were conducted under authorities affecting the category of Land Status being derived and then accumulating the effect of the actions.
LD fabric	This is an abstract term that refers to all of the LD Feature Classes. An adjusted measurement network to which constructions (terrain feature boundaries, non-survey data) have been added. All polygons representing legally described areas have been formed from the measurement network and other boundaries to support the parcel fabric.
LD text	This is a written description of the legal boundaries of a piece of land.
Least square analysis/ adjustment	A mathematical process that simultaneously combines all <i>measurements</i> in a <i>dataset</i> and adjusts their residuals to derive the optimal value as well as statistics that include the reliability of each derived value.
	Parametric least square analysis/adjustment - A least square analysis/adjustment that considers the quality of <i>data</i> that varies throughout the data set. A weighted least square adjustment.
	Iterative parametric least squares analysis/adjustment – A least squares adjustment, based on weight parameters, that will adjust until it meets conditions that causes it to stop.

Term	Definition
Legal Description (LD)	The narrative and geometric description for a discrete area of land. Descriptions may be related to <i>parcels</i> (many-to-many) and to geometries.
	The textual or geometric representation of a piece of land which defines its boundaries for use in the judicial definition or transfer of rights.
	Area legal description (AKA Areal Reference) - e.g. geopolitical, PLS, Block-Lot, Mineral Survey, irrigation lots. Nominal; delimited in reference survey system having area taxonomy, nesting, and division rules
	<u>Perimeter legal description -</u> record boundary, metes and bounds, sequenced set of bearings and distances, strip description, adjoiner description, riparian or aquatic area description, reference calls to natural features {contour, ridgeline, watercourse}.
	<u>Portion/remainder legal description</u> - area as a quantity {e.g. 'north sixty acres of 'the north four-hundred feet of'}, exclusions; other reference calls; ambiguous areas that cannot be mapped relative to any reference.
Legal description geometry	The 'footprint' of a legal description. A spatial representation of an area that has been legally described within a nested survey-system hierarchy. The 'atomic unit' for building <i>parcels</i> .
Logical operators	Conditions, parameters of a query.
LR2000	Legacy Rehost 2000. Re-implementation of BLM's Legacy systems, Case Recordation/ORCA, Mining Claims, Status, and Legal Land Description on Y2K-compliant systems within an Internet-based environment.
LSI	The Land Survey Information (LSI) Web site contains a collection of geographic information from the Bureau of Land Management's (BLM) Geographic Coordinate Data Base (GCDB) representing the Public Land Survey System (PLSS) of the United States.
Map view	General term for the map interface that persists during a GeoCommunicator session.
Master catalog	The catalog of all <i>data</i> , <i>events</i> , and <i>reference documents</i> from all providers.
Master index	The index of all <i>data</i> , <i>events</i> , <i>reference document</i> , and communication opportunities submitted to the administrator from all providers. The master index is generated from the provider catalog(s).
Master Title Plat	Plat map showing parcel boundaries and status of BLM lands

Term	Definition
Measured feature	A <i>feature</i> constructed from component elements in a <i>measurement network</i> by applying construction and computation methods.  Measured features have topological association to component <i>features</i> and/or <i>measurements</i> .
	Before a measured feature can be constructed, some underlying survey-based features must exist within a measurement network. The minimal unit required is a survey point. A survey point can become a measured corner. A set of two survey points defined as measured corners can be used to construct a measured line. A survey point, combined with the necessary parameters, can be used to construct a measured curve. Measured lines and curves can be joined at measured corners to define a measured area. Measured areas can be associated through rules of aggregation and division to define a feature fabric (legal description, parcel).
	Example measured feature types: legal description (section, government lot, city lot, aliquot part, etc.), true line, boundary, representative corner (multiple; porcupine; theoretical), Corner, Parcel, Administrative area, etc. May include physical objects such as buildings and other structures.
	Example computations: section subdivision, offset line, defining measurement, proportion, intersection (distance-distance). Note: Methods may be geodetic/non-geodetic.
Measurement	1. The reduced and/or mean values of an observation set. The angular difference between readings, the distance, or the azimuth/bearing.
	2. An object that is constructed as a result of computations performed using <i>observations</i> .
	3. Measurements are of two kinds direct and indirect. A direct measurement is made when the observed quantity is compared with the scale directly. An indirect measurement is made when the observed quantity is determined by several related and dependent observations. [Davis, Foote and Kelly]
	4. Measurement must involve observation. No measurement is made until something is observed. Accordingly, the terms <i>measurement</i> and <i>observation</i> are often used synonymously. [Mikhail and Gracie]
Measurement data	The raw measurement files (e.g., GMM's INRAW), control points, coordinate files, survey source IDs, error estimates, and/or survey business rules that are associated with a <i>measurement dataset</i> .

Term	Definition
Measurement data	The raw measurement files with control points, coordinate files, survey source IDs, error estimates, and/or survey business rules that are associated with a measurement data set.
Measurement dataset	A set of <i>measured features</i> constructed from survey points and other <i>measurement features</i> .
Measurement Management (MM)	Mathematical models, functionalities and GIS tools designed specifically for cadastral surveyors. MM will provide the processes to perform calculations on field survey data, create, edit and manipulate basic survey features, balance and adjust surveys, subdivide parcels, and associate land description data with the surface expressions of land. Measurement Management capabilities will be applicable to all types of land surveying. The goal of Measurement Management is a process which enables its users to create a high-quality, control network database for the Public Land Survey System (PLSS), and the non-Rectangular Survey System.
Measurement network	A set of topologically related <i>measurements</i> (coordinate points and lines) and constructions (area-based <i>features</i> , non-surveyed <i>features</i> ). May be in various states of connectivity and adjustment.
	<u>Pre-adjusted measurement network</u> : Multiple coordinate values exist for some points, so lines which should be connected may not be (due to measurement <i>errors</i> ).
	Adjusted measurement network: All over-determined points have unique coordinates.
	Legal description fabric: An adjusted measurement network to which constructions (terrain feature boundaries, non-survey data) have been added. All polygons representing legally described areas have been formed from the measurement network and other boundaries to support the parcel fabric.
	Parcel fabric: A feature class that represents a parcel configuration for a specific business purpose (e.g. ownership parcels, tax parcels, historic parcels). Parcel features may be associated with component features in the <i>legal description fabric</i> .
Measurement network	A set of topologically related <i>measurements</i> (coordinate points and lines) and constructions (area-based <i>features</i> , non-surveyed <i>features</i> ). May be in various states of connectivity and adjustment.
Measuring device	An instrument for determining the dimensions of a <i>feature</i> (as <i>readings</i> ), i.e. total station, theodolite, transit, compass, steel tape, etc.

Term	Definition
Median line	A line equidistant from opposite banks of a river channel.
See also: Median line curve	
Metadata	1. Information about objects – their source, derivation, construction, changes, and characteristics.
	2. Metadata represents data about data that describe the lineage, source, quality or other fitness-for-use information. (FGDC)
	Feature Class  Lineage (transformations, etc.) Coordinate Systems and Datums  Feature-level Spatial (geospatial) Lineage (parent-child) Source Quality-Accuracy
Non-MM control data	Audit (transactions, versioning)  Survey or Record data to be used as control in the least squares adjustment of a network, but is not formatted like Measurement Management data; may be from any source.
Notification	An email message automatically sent to interested parties when one of a set of predefined events occurs within the system.
Object Oriented Analysis and Design(OOAD)	1.A set of techniques used in defining and managing software projects. OOAD stresses end-user involvement, concise definition of the system requirements, and continual revisiting of project phases to ensure design completeness.

Term	Definition
Observation	1. Single set of <i>measurement</i> values for a <i>feature</i> . The values may include vertical or zenith angle, horizontal angle, slope distance, backsight and foresight heights, etc.
	2. The act of obtaining a distinct piece of information that helps describe the dimensions or spatial relationships between <i>points</i> on physical <i>features</i> .
	3. Act of recognizing and noting some fact or occurrence, especially in nature. Often involves the <i>measurement</i> of some magnitude with suitable instruments.
	<u>Direct observation</u> . A measure of the quantity whose value is desired. Example: A single measure of a horizontal angle.
	Observed value. A value of the quantity that is obtained by instrumental measurement of the quantity. The term observed value is often applied to the value of a quantity derived from instrumental measurement after corrections have been applied for systematic errors, but before accidental errors have been taken out by some method of adjustment. [ACSM]
Observation collection form	A list of configuration options to assist the user in the setup for the collection of a particular type of <i>observation</i> .
Observation set	A set of one or more <i>readings</i> from a <i>measuring device</i> (may be multiple observations for the same <i>feature</i> ). Also called "a set of observations".
Offset line	A supplementary line, close to and roughly parallel with a main line, to which it is referred by measured offsets. Where the line for which data are desired is in such position that it is difficult to measure over it, the required data is obtained by running an offset line in a convenient location and measuring offsets from it to salient points on the other line. [ACSM]
Orthometric height	The distance from the geoid to a point measured along a line normal to the geoid. [BLM Training]
	H = Orthometric Height h = Ellipsoidal Height N = Geoid Height H Geoid
Over-determined point	A point whose coordinate values may be derived in more than one way.

Term	Definition
Parametric least square analysis/adjustment	A least square analysis/adjustment that considers the quality of <i>data</i> that varies throughout the dataset. A weighted least square adjustment.
Parcel	A single cadastral unit, which is the spatial extent of the past, present, and future <i>rights</i> and interest in real property. [FGDC]
Parcel editor	Parcel Editor (person) – staff person with authority to make changes to parcel geometry and associated attributes (i.e. LLD), and commit the changes to the database.
	Parcel Editor (software tool) – functionality in a GIS and textual environment which facilitates additions, updates, etc to the attributes and geometry of a parcel
Parcel fabric	This is an abstract term that refers to all of the Parcel Feature Classes.
Parcel legal description	A composite description that contains all the legal descriptions that define a <i>parcel</i> , and can be used to derive the full spatial extent of the <i>parcel</i> .
Parcel Management (PM)	A process for managing land information and cadastral feature data stored in the database model. It will include custom tools, and procedures for maintaining land parcels in a transactional, history tracking environment. Parcels can be constructed from existing or new legal descriptions of surveyed or unsurveyed lands to form integrated parcel networks based on a particular business practice (e.g., ownership, tax lots, and planning areas) in a user-defined geographic area. Users will be able to customize the Parcel Maintenance process to accommodate their established workflow and business processes
Placeholder task	Refers to a workflow Task that a user will complete off-line or outside of the system. The purpose of Placeholder Tasks is to capture a Task that is an integral part of completing a Job, but which the system does not support directly. An example might be to a signature and review step that must be done before further work on a Job can proceed and is perform offline on a hardcopy document.
Point See Survey Point	The position or location in a reference system determined by survey.  [BLM]
Point ID	A unique alpha-numeric identifier associated with each survey point in a network which distinguishes it (the point) from all others; may have associated attributes.
Point-ID duplication protection	Prevents entry of an existing point identifier for any point already in the present data set into the <i>COGO procedure parameter form</i> .

Term	Definition
Post-Condition	1. The state of the system upon successful completion of the current use case.
Precision See <i>Accuracy</i>	1. The degree of closeness or conformity of repeated measurements of the same quantity to each other. [Mikhail and Gracie]
·	2. The degree of refinement in the performance of an operation, or the degree of perfection in the instruments and methods used when making the measurements. A measure of the uniformity or reproducibility of the result. Precision relates to the quality of the operation by which the result is obtained, and is distinguished from accuracy which relates to the quality of the result. [ACSM]
	3. The nearness of readings to one another which may not be accurate, i.e., measuring with a long tape. [Brown]
	4. A quality associated with the refinement of instruments and measuring, indicated by the degree of uniformity and repeatability of measurements.
Pre-Condition	The state of the system before the current use case is initiated.
Procedure duplication protection	Prevents entry of an existing point procedure for any point already in the present <i>data set</i> into the <i>COGO procedure parameter form</i> .
Process	The tangible implementation of a workflow within the system. Central administrators will create a process for each job. Processes are defined from a rigid series of tasks and nested tasks. All of the tasks in a process must be completed to finish a job.
Proportion (as a verb)	To equitably distribute systematic <i>errors</i> , between known <i>points</i> .
Provider	All providers are event providers. There may be some providers that only have supply data or update data. These providers may be thought of as data providers. <i>Browsers</i> can submit a request to become an Event Provider by applying for an account with the event provider designation. Subscribers and Data Providers can become an Event Provider by requesting the event provider designation be added to their current account.
Public Land Survey System	Public Land Survey System. A set of baselines and principal meridians that define more or less rectangular divisions of land into Townships, Sections, and aliquot parts.

Term	Definition
Reading See Observation.	<ol> <li>A value taken from an arbitrary scale (chronometer, theodolite circle, compass, chain, etc.), returned by a <i>measuring device</i>.</li> <li>A <i>measurement device's</i> direct output of <i>observations</i> (i.e. circle <i>readings</i>, distance, etc.). This can vary depending on the type of <i>measuring device</i>.</li> </ol>
	3. Readings can be averaged and have factors applied to them to achieve a more usable value that we are calling <i>Observations</i> . Example: Four angle readings are averaged to obtain the observed angle. Example: A slope distance reading and vertical angle reading are automatically combined within the total station to derive an observed horizontal distance.
Real-Time Kinematic (RTK)	1.A method for implementing a survey using GPS.
Record Survey Data Spreadsheet	A user interface for updating, editing, viewing raw record survey data, presented in a spreadsheet format.
Reduction	The process of reducing the amount of data into an evaluable term.
Reference document	Helpful technical information related to <i>events</i> or <i>data</i> . May have no direct relationship with a spatial dataset (i.e. manuals, Request For Information (RFI), reports, etc.). Searchable in <i>GC-01 Conduct Search</i> .
Reference features	Features used entirely, or in part, to define other features.
Reliability parameter form	A <i>data</i> entry tool accessible prior to successive least square adjustment sessions that allows the user to set or adjust the <i>reliability values</i> , such as (1) to toggle on/off function to calculate <i>reliability values</i> , and (2) to set a buffer distance around the selected set of <i>measurement features</i> to limit the actual set of <i>measurement features</i> to be used when generating <i>reliability values</i> .
Reliability values	Data describing the ellipse surrounding an adjusted point's coordinates that represent a statistical chance that the true coordinate values will be within the ellipse. Ninety-five percent chance is a usable measure.
Representative corner	A <i>measured feature</i> , which has been chosen to be the corner position over other <i>measured features</i> in the immediate vicinity.(e.g. multiple, theoretical, porcupine)
	Representative Corner

Term	Definition
Research results	Map and tabular view of items that match the search parameters of the Research Scope and access permission level in the <i>GC-01 Conduct Search</i> process.
Research scope	Data to be investigated for a given project defined by area of interest and source criteria. May include digital records and hardcopy records during a defined epoch. The sum total of the selected search parameters or the query including spatial extent.
Residual tolerance	1. A small distance (such as 0.01 feet) under which further refinement through network adjustment would not result in any meaningful positional refinement.
	2. Tolerance - A mathematical term indicating the allowable variation from a standard or from specified conditions. [ACSM]
Residual values	1. The difference between any value of a quantity in a series of observations, corrected for known systematic errors, and the value of the quantity obtained from the mean or other adjustment of that series. [ACSM]
	2. They [residuals] are similar to errors, but errors are obtained by subtracting the true value, rather than the best possible value, from the measurements. [Moffitt and Bouchard].
Doctoriotica	3. The difference between any measured quantity and the most probable value for that quantity. It is the value which is dealt with in adjustment computations, since errors are indeterminate. The term 'error' is frequently used when 'residual' is in fact meant, and although they are very similar, there is a theoretical distinction. [Wolf]
Restriction Restrictions	Defines what land cannot be used for. A limitation on land use.  Removal, for a specified period, subject to valid existing <i>rights</i> , of
(segregations)	public lands from the operation of one or more of the public land laws, including the mining laws. Restrictions are administrative, judicial, or other limitations or permissions for the use and enjoyment of land by the land right holder. These are not transferred rights, although succeeding owners may agree to the same restriction on a Parcel. Not all restrictions are the result of a segregation. For example local governments often manage restrictions through zoning ordinances.
Restrictive covenant	An agreement creating an obligation contained in a deed, forbidding the commission of some act.

Term	Definition
Right	1. A Right is a benefit or enjoyment in real property that can be conveyed, passed, or otherwise allocated to another for economic remuneration. [Black; FGDC]
	2. An interest recognized and protected by the law, respect for which is a duty, and disregard of which is a wrong. [Burke; Salmond]
	3. A capacity residing in one man of controlling, with the assent and assistance of the State, the actions of others. [Burke; Holland]
Right of way	Right-of-way is the legal right to cross the lands of another. Also, used to indicate the strip of land for a road, railroad, power line, or easement.
Right-of-way survey	The plat and field note record of the observations, measurements and monuments descriptive of a right-of-way. Right-of-way is the legal right to cross the lands of another. Also, used to indicate the strip of land for a road, railroad, power line, or easement.
Rights	Claims to land. A right may be an access right, an extraction right, or an easement, for example.
Robusting	A technique in <i>least square analysis/adjustment</i> where data discrepancies are localized to where they occur rather than the normal smoothing out over a large area. This is a technique to locate blunders.
	Robustness. This is a method of using least squares as a filtering mechanism for detection of blunders. Robustness averages the absolute value of a measurement's residual with its error estimate, and that average becomes the new error estimate in a readjustment. The measurements with large residuals get reassigned larger error estimates, and vice-versa. This enables the adjustment to be filtered to the suspect measurement. The success of robustness in blunder detection is a function of the size of the blunder, number of blunders, and the geometry and redundancy of the traverse network. [GMM]
Role	The capacity under which a user is interacting with the system.  Directly relates to the user's respective user group membership(s).
Search parameter form	GeoCommunicator form for actors to enter search parameters.
SEUW	Standard Error of Unit Weight - A number that evaluates all residuals and corresponding error estimates. It is the square root of the sum of the squares of all the residuals divided by the sum of the error estimates which, in turn, is divided by the degrees of freedom.

Term	Definition
SFF	A set of six standard file formats (SFF) generated by the GCDB data preparation application. RAW including the measurement data SID including error estimates for measurements and comments DEF including projection information AN including annotation information LX including adjusted coordinates and equivalent reliability values MET including standard meta information descriptors
SID	Source Identifier. As used in GMM, it is a unique reference to a particular survey (dates, surveyor, volume/page, etc).
Site survey	This is a series of observations and measurements conducted at a construction site to determine the requirements for buildings, roads, and cut and fill.
Sketch	A draft or interim version of a <i>parcel</i> that is used as the basis for creating a new <i>parcel</i> and/or to verify the geometry, attributes and validity of a given <i>parcel legal description</i> .
Snoop	A snoop value is determined by dividing the residual of a measurement computed during a least squares adjustment by the error estimate.
	The snoop option in Least Squares Analysis report the statistical analysis of the error estimates and snoop values of a least squares adjustment based on the individual source IDs (SIDs) in the source-level data used by the least squares adjustment.
Source-level data	Data from source documents, i.e., survey documents.
Spatial extent	Location on the ground (footprint). Includes any method for describing a point or area. Examples include latitude/longitude, PLSS, minimum bounding rectangle, and boundaries (admin, other).
Spatial reference	Projection(s), coordinate system(s), datum used. Listed in Data <i>Catalog</i> .
Station	A definite point on the earth whose location has been determined by surveying methods. It may or may not be marked on the ground. A station usually is defined by the addition of a term which describes its origin or purpose. [condensed from ACSM]
	2. A definite point on the earth whose location has been determined by surveying methods. It may or may not be marked on the ground. A station usually is defined by the addition of a term which describes its origin or purpose. Usually marked on the ground by a monument of special construction, or by a natural or artificial structure. INSTRUMENT STATION - A station at which a surveying instrument is set up for making measurements. [ACSM]

Term	Definition
Subdivision rule	See <i>legal description</i> . The available methods to divide or aggregate <i>parcels</i> according to a specific survey system.
Subdivision, Subdivision of sections	The division of sections into smaller areas using standard rules as prescribed in the BLM Manual of Surveying Instructions, 1973 edition.
Subscriber	Subscribers create an account on GeoCommunicator and set parameters for the types of activity and data <i>events</i> about which they would like to receive an automatic notification.
Subscriber account form	Form is displayed and populated with currently held values for that subscriber along with current dates. If not yet a subscriber (or provider), a blank form is displayed.
Survey fabric	This is an abstract term that refers to all of the Survey Feature Classes.
Survey file type	The type of data file used by a particular data collection device.
Survey Management (SM)	Comprises a set of automated survey field data collection software which will function with existing commercial surveying equipment and software packages. It will capture field measurements and metadata directly into a GIS database format.
	The goal is to minimize the need for data conversion due to software incompatibilities as survey measurements and data are incorporated into the land records management system.
Survey point	A <i>point feature</i> that has XYZ coordinate values. Any point in a <i>measurement network</i> . Each survey point has a list of coordinate values or a coordinate set.
Survey project	This is an organizational/system concept to represent a set of field activities. It's where and how all the relevant data and files are stored for future use. A Survey Project may be comprised of one or more <i>Field Surveys</i> .
Survey project parameter form	A user interface to input the survey project parameters to the system.

Term	Definition	
Survey project parameters	Initial, base information about a surveying project. Example:	
	Name of Project Audit data  • User Name • Created By • Creation Date • Date modified Description Unit of Measurement in Display • International feet • Survey feet • Meters • Chains • Native Units – Units that the data was stored in Default Error estimates for • Bearing • Angles • Distances • Control Datum UTM Zone State Plane Zone	
	Project Elevation	
Survey setup file	See field survey setup file.	
System	The total sum of all hardware, software and human elements of the computer application under consideration.	
Task	A task is a discrete step in a workflow. Job processes are made up of a series of tasks.	
Task status	Defines whether a task is complete or incomplete.	
Temporal constraints	Date and time range parameters.	
Topological survey	A survey which has for its major purposes the determination of the configuration (relief) of the surface of the earth (ground), and the location of natural and artificial objects thereon. Also, the designation of an organization making such a survey. [ACSM]	

Term	Definition	
Topology	The spatial relationships between connecting or adjacent coverage features (e.g., arcs, nodes, polygons, and points). For example, the topology of an arc includes its from-and to-nodes, and its left and right polygons. Topological relationships are built from simple elements into complex elements: points (simplest elements), arcs (sets of connected points), areas (sets of connected arcs), and routes (sets of sections, which are arcs or portions of arcs). Redundant data (coordinates) are eliminated because an arc may represent a linear feature, part of the boundary of an area feature, or both. Topology is useful in GIS because many spatial modeling operations don't require coordinates, only topological information. For example, to find an optimal path between two points requires a list of the arcs that connect to each other and the cost to traverse each arc in each direction. Coordinates are only needed for drawing the path after it is calculated.	
Transaction agent	Any participant or party identified in land transaction.	
Transect survey	This is a series of observations and measurements gathered to determine a profile or cross section of the land. These are most common in road, power line or other utility construction projects. Transect surveys may be used in agricultural practices.	
Transit rule adjustment	This is a standard surveying adjustment method.	
Traverse	A series of connected lines of known length related to one another by known angles. [Moffitt and Bouchard]	
	2. A method of surveying in which lengths and directions of lines between points on the earth are obtained from field measurements, and used in determining positions of the points. A survey traverse may determine the relative positions of the points which it connects in series. And, if tied to control stations on an adopted datum, the positions may be referred to that datum. CLOSED TRAVERSE-A survey traverse which starts and ends at the same station, or upon stations whose relative positions have been determined by other surveys of equal or higher order of accuracy. [ACSM]	
	3. A succession of straight lines connecting a succession of established points along a route of a survey [Davis, Foote and Kelly].	
	4. A sequence of field measurements (length and directions) if lines between points on the earth and used to determine positions of points. [Brown]	

Term	Definition	
True line	The term 'true line' is used to indicate the direct forward bearing from one monument to the next, as distinguished from a random line. [ACSM]  A line of constant bearing (shumb line) between two corners of a	
	2. A line of constant bearing (rhumb line) between two corners of a survey. [BLM]	
Unconstrained adjustment	A least squares adjustment using only one point of control.	
Use Case	"A use case is a narrative that describes the sequence of events of an actor using a system to complete a task and possibly the surrounding context and business rules. Use cases imply the requirements"	
	[Hands On Technology Transfer, Inc]	
User group	One of a number of collections of individuals who share responsibilities and privileges and are subsequently granted similar access rights to carry out system tasks and access and edit system data.	
Variable Correction	A correction that is multiplied with a distance measurement value. The longer the distance, the more correction is applied i.e., parts per million (PPM) correction made to a distance.	
Vertical control survey	The measurements taken by surveying methods for the determination of elevation only with respect to an imaginary level surface, usually meaning sea level. [ACSM]	
Visible, visibility	A state in which a feature appears to the user and is used to form topology of the land area description fabric. A user can toggle this state on and off during the editing of the data. This state has no bearing on whether the feature can be used in data analysis/adjustment or in COGO computations.	
Weight, weighting See Error Estimate.	Numeric values that are used to restrict the amount of adjustment of a measured value, based on the confidence in the measurement's reliability. A highly reliable <i>measurement</i> will have a small 'error estimate' and is referred to as being 'more weighted' than unreliable data.	
	Surveying Weight. The relative reliability (or worth) of a quantity as compared with other values of the same quantity. If one value of a quantity has a weight of 2, and another value of the same quantity has a value of 1, the first value is worth twice the second value, and a mean value would be obtained by taking the weighted mean - twice the first value plus once the second value, the sum being divided by 3. [ACSM]	

Term	Definition
Withdrawal	Withholding an area of Federal land from settlement, sale, location, or entry under some or all of the general land laws, for the purpose of limiting activities under those laws in order to maintain other public values in the area, or reserving the area for a particular public purpose or program, or transferring jurisdiction over an area of Federal land, other than property from one management agency to another.
Wizard	A software user interface that leads the user through a series of steps toward a goal A software user interface that leads the user through a series of steps toward a goal
Workflow	Withholding an area of Federal land from settlement, sale, location, or entry under some or all of the general land laws, for the purpose of limiting activities under those laws in order to maintain other public values in the area, or reserving the area for a particular public purpose or program, or transferring jurisdiction over an area of Federal land, other than property from one management agency to another.
	A software user interface that leads the user through a series of steps toward a goal

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## **Change History:**

Date	Description
March 2000	Appendix to Concept of Operations and User
	Requirements document. Reflects high-level
	requirements.
August 2001	Added terms and concepts from Survey Management and
	Measurement Management Analysis.
August 2001	Check/correct grammar, punctuation, etc.
August 2002	Update and incorporate terms from SM/MM SRS