# Volume 3

## *OGC CDB Terms and Definitions (Normative)*

**Open Geospatial Consortium**

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# Volume 3: OGC CDB Terms and Definitions (Normative)

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## i. Abstract

This CDB Volume provides terms and definitions. Many of the terms and definitions are specific to the simulation industry. Other terms and definitions have been updated to be consistent with the ISO 19xxx (Geomatics) series of standards, specifically ISO 19111 Spatial referencing by Coordinates and ISO 19017 Spatial Schema. Some work still remains to make the terms and definitions completely consistent with current OGC and ISO best practice.

## ii. Keywords

The following are keywords to be used by search engines and document catalogues.

ogcdoc, OGC document, cdb, spatial reference model, srm, coordinate systems, crs, srs

## iii. Preface

https://github.com/opengeospatial/cdb-volume-1/blob/master/list_of_volumes.adoc

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## iv. Submitting organizations

The following organizations submitted this Document to the Open Geospatial Consortium (OGC):

Organization name(s)

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- Carl Reed, OGC Individual Member
- Envitia, Ltd
- Glen Johnson, OGC Individual Member
- KaDSci, LLC
- Laval University
- Open Site Plan
- University of Calgary
- UK Met Office

The OGC CDB standard is based on and derived from an industry developed and maintained specification, which was approved and published as OGC Best Practice Document 15-003: OGC Common Data Base Volume 1 Main Body. An extensive listing of contributors to the legacy industry-led CDB specification is at Chapter 11, pp. 475-476 in that OGC Best Practices Document

(https://portal.opengeospatial.org/files/?artifact_id=61935).

## v. Submitters

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| David Graham | CAE Inc. |

# Chapter 1. Terms and Definitions

The following are key terms and definitions used in the CDB standard.

| | Description |
|---|---|
| **A** | |
| **Aliasing** | Spatial and/or temporal image defects or artifacts in a raster image. They are due to interaction between the discrete sampling of the raster format and the spatial and temporal frequencies inherent in the computed image of edges, surfaces and point features. Manifestation of spatial aliasing includes edge stair-stepping and crawling, scintillation of narrow surfaces, break-up of long, narrow surfaces and positional or angular motion of scene edges in discrete steps. Temporal aliasing includes double image and loss of dynamic image integrity due to the human eye's ability to dynamically track individual fields at certain angular rates of motion. |
| **Ambient Illumination** | See Illumination, Ambient. |
| **Anti-aliasing** | Active image processing techniques that reduce the perception of the aliasing phenomena. |
| **AO1** | Angle of Orientation with greater than 1 degree resolution. The angular distance measured from true north (0 deg) clockwise to the major (Y) axis of the feature. |
| **Areal Feature** | See Feature, Areal and Polygon |
| **Articulated Part** | A child part of a model (usually a moving model) that is allowed some degree of motion with respect to the parent body of the model. Examples of articulated parts include tank turrets, refueling drogues, and helicopter rotor blades. |
| **Arithmetic Logic Unit** | An arithmetic logic unit (ALU) is a digital circuit used to perform arithmetic and logic operations. It represents the fundamental building block of the central processing unit (CPU) of a computer. Modern CPUs contain very powerful and complex |
| **B** | |
| **Background Area** | See Area, Background. |

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| **Base Material** | See Material, Base. |
| **Base Material Table**<br><br>**(BMT)** | A data structure that contains a description of the Base Materials available to the CDB. There is only one BMT per CDB. Each entry in the BMT corresponds to a Base Material; the entry associates a name to the Base Material. |
| **C** | |
| **CDB device** | A device that can directly input synthetic environment data that conforms to the format, structure and conventions of this standard. A device need not input and process all of the CDB datasets and attributes to be CDB-compliant. |
| **CDB simulator** | A simulator whose client-devices can input synthetic environment data that conforms to the format, structure and conventions of the CDB standard. Any subsystem or client-device that does not natively conform to this standard requires that CDB data be formatted and structured to the device's native format and structure through the use of a runtime publisher. A simulator need not input and process all of the CDB datasets and attributes to be CDB-compliant. |
| **CDB Translator** | An off-line software process that translates an environmental database from its toolset-native format(s) into one of the CDB specified formats.<br><br>**NOTE:** The CDB data formats are based on industry standard tool formats; as a result a translation to the formats prescribed by this standard may not be required. |
| **CDB Server** | Gateway platform to CDB mass storage and applicable infrastructure. CDB compliant servers access, filter and distribute CDB data in response to requests from the Database Generation Facility (DBGF) and the client-devices (or their runtime publishers). |
| **CDB Geocell (tile)** | Region of the earth, aligned to lines of latitude and longitude in accordance with Section 2.1 CDB Core (Volume 1). The size of a CDB Geocell per Zone is also specified in the Core CDB Standard section 2.1. Also known as DGGS Cell. |

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| **Channel** | A field of view segment within a visual system's total viewing field for which a corresponding unique scene segment is calculated and presented. |
| **Client application** | A software application that requires a complete or partial synthetic representation of the world. CDB applications may require a CDB runtime publisher to convert the CDB compliant database into a form it can directly input. Used interchangeably with "Client-device" in this standard. |
| **Client-device** | Simulation subsystems (Image Generators (IGs), Radar, Weather Server, Computer Generated Forces (CGF) Terrain Server, etc.) that require a complete or partial synthetic representation of the world. A CDB client-device may require a CDB runtime publisher to convert the CDB data into a form it can ingest. |
| **Coordinate** | One of a sequence of n-numbers designating the position of a point (see point) in n-dimensional space.<br><br>NOTE In a coordinate reference system, the numbers shall be qualified by units. [adapted from ISO 19111] |
| **Coordinate Conversion** | coordinate operation in which both **coordinate reference systems** are based on the same datum |
| **Coordinate Reference System** | Coordinate system that is related to an object by a datum<br><br>NOTE For geodetic and vertical datums, the object will be the Earth. [ISO 19111:2007] |
| **Coordinate System** | Set of mathematical rules for specifying how coordinates are to be assigned to points (ISO 19111). |
| **Composite Material** | See Material, Composite. |
| **Composite Material Table** | A data structure that contains a description of the Composite Materials available in a CDB tile or on a model. Each entry in the CMT corresponds to a Composite Material. |

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| **Coordinate System, Geographic** | A geographic coordinate system (GCS) uses a three-dimensional spherical surface to define locations on the earth. A GCS is often incorrectly called a datum, but a datum is only one part of a GCS. A GCS includes an angular unit of measure, a prime meridian, and a datum (based on a spheroid).A common choice of coordinates is latitude, longitude and elevation (or altitude). For the CDB, the reference data is based on the WGS-84 ellipsoid, i.e., geographical latitude j and longitude l are the angles of the normal on the WGS-84 reference ellipsoid along the point to the equator and zero meridian. The angles are given as degrees, minutes and seconds. Altitude is the distance above and normal to the ellipsoid in meters. The WGS-84 ellipsoidal earth models provides for accurate calculations over long distances on the earth's surface. |
| **Correlation, Algorithmic** | The degree of informational consistency between the outputs of two or more devices with equivalent Arithmetic Logic Units, each submitted to the same input data. (e.g., consider two devices meshing terrain from a regular grid of elevation points, one using a regular mesh of right-handed triangles using the elevation points as vertices, and the other with a DeLauney triangulated mesh derived from the grid of elevation points). |
| **Correlation, Numerical** | The degree of informational consistency between the outputs of two or more devices, each submitted to the same input data, (e.g., two devices computing the sine of an angle, one with a series of 10 terms, and another with an interpolation of a look-up table with 100 entries, or one device using 32-bit signed integers for its internal computations and the other using single-precision floats). The CDB Standard addresses Runtime Source Database numerical accuracy correlation errors because a single representation is used for each data set. |

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| **Correlation, Parametric** | The degree of informational consistency between the outputs of two or more devices, each submitted to the same input data but to different control parameters (e.g., consider two devices generating regular meshes of right-handed triangles based on a regular grids of elevation points organized by Level-of-Detail (LOD), one using an LOD meshing tolerance parameter of 1m and the other 2m). |
| **Correlation, Raw Source DB** | The degree of informational consistency between two or more sets of raw data[1] (i.e., inputs to a modeling station) representing aspects of the same environment (for instance, the correlation errors arising from Digital Terrain Elevation Data (DTED) elevation data that does not perfectly match the satellite raster imagery due to oblique view distortions induced by the satellite). Correlation errors are intrinsic to the process of gathering data because there is no means to gather all of the required data from a single device, at a single instant in time. Instead, datasets (e.g., elevation, raster imagery, geometry) are each gathered from various devices of various types, at different times, etc. As a result, this process inherently introduces (raw source) correlation errors. |
| **Correlation, Runtime DB** | The degree of informational consistency between two or more runtime databases representing the same synthetic environment. The CDB standard eliminates database correlation errors since only one database is used to represent the same synthetic environment. A runtime database is a device-loadable database format that can be processed by a target device. The CDB Standard defines a format that can be entered in runtime by client-devices that conform to the CDB standard. By definition, the CDB Standard addresses all runtime database-level correlation errors. |

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| **Correlation, Source DB** | The degree of informational consistency between the internal datasets of a source database produced by a DB generation toolset. To a large extent, the effort expended by a modeler at their DB workstation consists in eliminating (or at least reducing) correlation errors arising from miss-correlated raw source data. |
| **Culture** | See Feature, Cultural. |
| **Culture, 2D** | Short for 2D Cultural Feature. The 2D representation of a man-made or natural object (such as a road, a runway, a forest canopy), conformed to the terrain. |
| **Culture, 3D** | Short for 3D Cultural Feature. The 3D representation of erect man-made or natural object (such as buildings, trees, towers) positioned on top of and usually conformed to the terrain. |
| **D** | |
| **Data Dictionary** | A data dictionary is a collection of descriptions of the data objects or items in a data model for the benefit of programmers and others who need to refer to them. See http://searchsoa.techtarget.com/definition/data-dictionary |
| **Data Duplication** | Data logically representing the same information, copied one or more times within a complex data structure. The CDB Standard eliminates all duplication of data, i.e., the data appears once and only once within the CDB structure. |
| **Data Normalization** | **Data normalization** is the process of reducing **data** to its canonical form. For instance, **Database normalization** is the process of organizing the fields and tables of a relational **database** to minimize redundancy and dependency. |
| **Data Redundancy** | Information in the form of data that can readily be derived (within the limits of technological/cost reasonability) and re-formatted, or re-derived from other data. |

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| **Dataset** | In general, an identifiable collection of data. In modelling and simulation, an organized group of related environmental data that cannot be broken down into a smaller set used to describe a synthetic environment element of the world. |
| **Database Fidelity** | Reflects the amount and type of synthetic environmental data needed by client-devices to simulate real-world environmental data with greater fidelity. Consider for instance a simulator client-device capable of supporting a single-surface earth skin representation versus one capable of representing a multi-surface earth skin that represent tunnels, bathymetric data, location-dependent tide heights, etc. |
| **Database Assembly** | In many database tools, the generation of the terrain plays a pivotal role in the database assembly process because all of the cultural features are conformed and constrained to the terrain representation and structure. Most client-devices in existence today have interdependent terrain geometry, raster imagery and culture; as a result of this, most tools in use today resolve these inter-dependencies during this critical and computationally expensive database assembly step. |
| **Database Generation Facility (DBGF)** | A geographically co-located group of workstation(s), computer platforms, input devices (digitizing tablets, etc.), output devices (stereo viewers, etc.), modeling software, visualization software, CDB Server, CDB off-line publishing software and any other associated software and hardware used for the development/modification of the CDB. The DBGF is used for the purpose of CDB creation and CDB updates. Each workstation is equipped with one or more specialized tools. The tool suite provides the means to generate and manipulate the synthetic environment. |
| **Database Generation Timeline** | Elapsed time from availability of Environmental DB requirements (geographic extent, fidelity, resolution, etc.) to availability of a compliant runtime Environmental DB, ready for use on all client-devices of a simulator. |

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| **Database Publishing** | A process (either off-line[3] or on-line) where all of differences between the tool-native representation and the client-device internal representation of the synthetic environment database are resolved. During this step, the publisher transforms the assembled database so that it satisfies the client-device's:<br>• internal formats<br>• internal data structure and organization<br>• internal naming conventions<br>• internal precision and number representation<br>• data fidelity requirements (typically parameters that match the client-device algorithms)<br>• performance limitations<br>• level-of-detail representation and conventions |
| **Database Publishing, Offline** | The process of performing the steps listed above in Database Publishing, and then storing the result in a distinct SE database for each client-device. (Note that the stored databases are different for each client-device type and each vendor type). In many cases, the published databases are proprietary. |
| **Database Publishing, Online** | The process of performing the steps listed above in Database Publishing, on-the-fly, based on paging requests of a client-device. Since the publishing is performed on-demand, it exists only momentarily in memory; it is not stored on disk. |
| **Database Resolution** | Informational density (for instance, the number of elevation values per $km^2$, pixels per $km^2$, polygons per $km^2$) of a modeled dataset. |
| **Data Precision** | Corresponds to the numerical precision (i.e., number of bits allocated) used to represent a unit. |
| **Datum** | Parameter or set of parameters that define the position of the origin, the scale, and the orientation of a coordinate system. |

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| **Depth** | Height below the reference surface will have a negative value, which would embrace both gravity-related heights and ellipsoidal heights. |
| **DGIWG** | Defense Geographic Information Working Group |
| **DGGS** | Discrete Global Grid System: *spatial reference system* that uses a hierarchical tessellation of cells to partition and address the globe. “cell” aka “tile” or ”geocell” |
| **Directional Illumination** | See Illumination, Directional. |
| **DIS** | Distributed Interactive Simulations [IEEE Std 1278TM] |
| **E** | |
| **Elevation** | Synonym for “height” |
| **Environmental Data Coding Specification** | An Environmental Data Coding Specification provides a mechanism to specify the environmental "things" that a particular data model is intended to represent. That is, a feature such as building could be represented alternatively as a Man-made Point Feature, a Radar RCS polar diagram or as an OpenFlight model, or some combination of these. The representation of these is chosen by the data modeler and is orthogonal to the semantic of the "thing" that is represented (and its location). The provision of such a "thing" results in a shared understanding of "what the thing is and what it potentially means" to all participating applications. |
| **Environmental Data Representation Model** | A data representation model (EDRM) is a description used to provide identification of all environmental data elements within a system, including their attributes and the logical relationships between data elements. |
| **Environmental DB, Runtime** | A device-loadable database format that can be processed by a target device. The CDB Standard defines a format that can be entered in runtime by simulator client-devices that conform to the CDB Standard. |
| **Eyepoint** | A single point (monocular) location of the observer’s eye relative to a scene representation. Usually a point within the cockpit of the simulated aircraft or vehicle. |

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| **Eyepoint, Pilot** | The normal eyepoint position when the pilot's seat is adjusted properly for flying the aircraft. Defined by the aircraft manufacturer for each pilot seating position. The eyepoint(s) for which the display design is normally optimized and typically used for display testing purposes. |
| **F** | |
| **FDD** | Feature Data Dictionary |
| **Feature** | Abstraction of real world phenomena<br><br>NOTE A feature may occur as a type or an instance. Feature type or feature instance is used when only one is meant. [adapted from ISO 19101] |
| **Feature, Areal (aka polygon)** | A representation of closed area-oriented features conformed relative to the terrain such as forested areas, fields. The information includes areal feature type identification, location, orientation, 2D geometry, connectivity, attribution and other surface characteristics relevant to simulation. |
| **Feature, Cultural** | Human made (constructed) point, lineal and areal features. |
| **Feature, Lineal (previously Feature, Linear)** | A geographic feature that can be represented by a line or set of lines. For example, rivers, roads within a pizza delivery area, and electric and telecommunication networks are all lineal features. The information includes lineal feature type identification, location, orientation, geometry, connectivity, attribution and other surface characteristics relevant to simulation. See also LineString |
| **Feature, Point** | The representation of a single location in space or on the earth's surface. A Point Feature consists of a single <latitude, longitude> coordinate with or without an elevation and related properties such as feature type and orientation. See also point. |

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| **Flat Earth** | Jargon used in simulation community to signify the projection of the earth ellipsoid onto a flat surface. The flat Earth approximation retains terrain relief but eliminates the effects of Earth surface curvature. If you stay in the vicinity of a given fixed point, it may be a good enough approximation to consider the earth as "flat", and use a North, East, Down rectangular coordinate system with origin at the fixed point. |
| **FOM** | Federation Object Model |
| **FOV, Field of View** | The horizontal and vertical subtended angles from a designated eyepoint to the boundaries of a visual system channel (channel FOV) or all channels (system FOV). |
| **G** | |
| **Geocell** | Short form for geographic cell. Synonymous with a single tile in the CDB tiled structure. A $1^{o}$ of latitude by $1^{o}$ of longitude area on the surface of the earth. At the equator, this corresponds to an area of approximately of 111,319m × 111,319m. (See also CDB Geocell). |
| **Geodetic Datum** | datum describing the relationship of a two- or three-dimensional coordinate system to the Earth (ISO 19111) |
| **Geographic Extent** | An earth surface area that has been modeled. |
| **Geographic Projection** | **coordinate conversion** from an ellipsoidal coordinate system to a plane |
| **Geometric Primitive** | Geometric object representing a single, connected, homogeneous element of space |
| **Geospecific Model** | A model is said to be geospecific if it is instanced once and only once within a CDB. Geospecific models usually correspond to unique (in either shape, size, texture, materials or attribution), man-made, real-world 3D cultural features. |
| **Geotypical Model** | A model is said to be geotypical if it instanced multiple times within a CDB data store. Geotypical models correspond to representative (in shape, size, texture, materials and attribution) models of real-world manmade or natural 3D cultural features. |

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| **Grid** | This is a grid network composed of two or more sets of curves in which the members of each set intersect the members of the other sets in an algorithmic way NOTE The curves partition a space into grid cells.. [ISO 19123:2007] |
| **Grid point** | Point located at the intersection of two or more curves in a grid |
| **H** | |
| **Height** | Distance of a point from a chosen reference surface measured upward along a line perpendicular to that surface. [ISO 19111] Note 1 to entry: A height below the reference surface will have a negative value, which would embrace both gravity-related heights and ellipsoidal heights. |
| **HLS** | High Level Architecture [IEEE Std 1516TM] |
| **I** | |
| **Illumination** | One or more sources of illumination for the objects in the scene, such as daylight, twilight, landing lights. |
| **Illumination, ambient** | The non-directional component of illumination for the scene. Daylight, twilight and moonlight have ambient components over the entire scene. Landing lights typically provide ambient-type illumination over a limited area of the scene. |
| **Illumination,**<br><br>**Directional** | Scene illumination provided by an illumination source at a particular position or direction in the environmental database spatial frame. The effect on object luminance depends on the angle between the illumination source and object surface normal. |
| **Imagery** | A likeness or presentation of any natural or manmade feature or related object of activity and the positional data acquired at the same time the likeness or representation was acquired. (NSG Geospatial Core Metadata Profile) |
| **J** | |
| **K** | |
| **L** | |
| **Latency** | The time interval from a request to a prescribed response from the targeted device. |

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| **Level-of-Detail (LOD)** | Representations of the same thing that differ only in the amount of fidelity. An LOD is said to be coarse if it contains little detail or fine if it contains considerable detail. |
| **Light Point** | A database element used to model a point source of light (e.g., a taxiway lights, street lights, collision lights). |
| **Light String** | A group of lights, usually a series of light points sharing common spacing characteristics and are of a common type. |
| **Lineal (Linear) Feature** | See Feature, Lineal. |
| **LineString** | Curve composed of straight-line segments (ISO 19107) |
| **Local Vertical Spatial Frame** | See Spatial Frame, Local Vertical. |
| **M** | |
| **Material** | Shorthand for either Base Material or Composite Material. |
| **Material, Base** | Symbolic representation of a basic material in the CDB. Basic materials are inputs to production or manufacturing processes. They are often raw, that is unprocessed, but are sometimes processed before being used in more advanced production processes. Basic materials represent the substances out of which a thing is or can be made. Examples are materials such as steel, aluminum, copper, sand, soil, stone, glass, concrete, wood, water, rubber. Base materials are chosen for their relevance to simulation. |
| **Material, Composite** | A symbolic representation that corresponds to a composite material that is made up of a primary substrate and one or more secondary substrates. Each substrate is composed of one or more base materials entries. The substrates can each be assigned a thickness. |
| **Metadata** | Data about data. Metadata describes how and when and by whom a particular set of data was collected. This is often referred to as “provenance”. Metadata may also define how the data is formatted. |
| **Metadata element** | Discrete unit of metadata. (NSG Geospatial Core Metadata Profile) |

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| **Mission Functions** | A set of low-level simulator query functions performed on the synthetic environment, including such functions as Height Above Terrain (HAT), Height Above Culture (HAC), Collision Detection (CD), Line-Of-Sight (LOS), Laser Range Finder (LRF), etc. |
| *Model * | A term which stands for the 2D or 3D representation of features (exclusive of the terrain and/or bathymetry itself) within the synthetic environment database. Models can be statically positioned on the terrain (i.e., a cultural feature), or they are freely moving (i.e., a moving model). Models are often a 3D representation of a man-made or a natural object positioned and conformed relative to the terrain. The information includes its geometry, articulations, raster imagery (texture, normal map, light map, etc.), lighting systems, and other characteristics relevant to simulation. |
| **Model, 2D** | Refers to the modeled representations of 2D features; i.e., lineal or areal features that have no significant height with respect to the underlying terrain; 2D Models generally conform to the terrain profile. |
| **Model, 3D** | Refers to the modeled representation of 3D features that can be readily distinguished from the underlying terrain. In the case where they are unique, they are referred to as GSModels. In the case where they are instanced, they are referred to as GTModels. 3DModels capable of movement are called MModels. In the case where MModels are positioned by the modeler, they are called statically-positioned MModels. |
| *Model, Cultural * | A model that is statically positioned on the terrain or bathymetry skin. Cultural models are often a 3D representation of a man-made or a natural object positioned and conformed relative to the terrain. The information includes its geometry, articulations, raster imagery (texture, normal map, light map, etc.), lighting systems, and other characteristics relevant to simulation. |
| **Model, GS** | The geospecific representation of a cultural feature that is unique within the CDB. |

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| **Model, GT** | The geotypical representation of a cultural feature that can be reused several times throughout the CDB. |
| *Model, Moving * | A model that is not fixed at one location in the synthetic environment database. The simulation host can update the position and orientation of a moving model at every simulation iteration cycle. A moving model is a 3D representation of manmade and natural objects free to move. |
| **Model-LOD** | Refers to a specific level of detail of the modeled representation of a feature; a general term encompassing both 2D and 3D Model-LOD |
| **Model-LOD, 2D** | Refers to a specific level of detail of a 2D model. |
| **Model-LOD, 3D** | Refers to a specific level of detail of a 3D model. |
| **Modeler** | The person who creates and assembles a synthetic environment database. |
| **Multipatch** | A multipatch can be viewed as a container for a collection of geometries that represent 3D surfaces. |
| **N** | |
| **Navigational Data** | Is a representation of ARINC-424 and DAFIF data in the form of NAVAIDs (VHF, ILS/MLS, NDB, Markers), Communications Stations, Airport/Heliport (including SIDs, STARs, Terminal Procedure/Approaches, Gates), Runway/Helipad, Waypoints, Routes, Holding Patterns, Airways and Airspace. |
| **Normal Vector** | A vector of unit length perpendicular to a surface. |
| **Numerical Correlation** | See Correlation, Numerical. |
| **O** | |
| **Ownship** | The vehicle (aircraft, ship, tank, etc.) being simulated. |
| **OTW** | Out the Window |
| **P** | |
| **Parametric Correlation** | See Correlation, Parametric. |
| **Pilot Eyepoint** | See Eyepoint, Pilot. |
| **Point** | 0-dimensional geometric primitive, representing a position (ISO 19107) |

| | |
|---|---|
| **PointM** | A 2d Point consisting of a pair of double-precision coordinates in the order X, Y, plus a measure M. |
| **PointZ** | 0-dimensional geometric primitive, representing a position (ISO 19107) with a Z value. |
| **Point Feature** | See Feature, Point. |
| **Polygon** | Planar surface defined by 1 exterior boundary and 0 or more interior boundaries. (ISO 19107) |
| **PolygonM** | A 2d Polygon consisting of a number of rings. A ring is a closed, non-self-intersecting loop. Note that intersections are calculated in XY space, *not* in XYM space. A PolygonM may contain multiple outer rings. The rings of a PolygonM are referred to as its parts. |
| **PolygonZ** | A Polygon in which each vertex (coordinate) has an associated Z value. |
| **Polyline** | A polyline is a connected sequence of line segments created as a single object. You can create straight line segments, arc segments, or a combination of the two. |
| **PolylineM** | A 2d polyline consisting of one or more parts. |
| **PolylineZ** | A Polyline in which each vertex (coordinate) has an associated Z value. |
| **Q** | |
| **R** | |
| **Raster** | In general, usually rectangular pattern of parallel scanning lines forming or corresponding to the display on a cathode ray tube. In the GIS community and in its simplest form, a **raster** consists of a matrix of cells (or pixels) organized into rows and columns (or a grid) where each cell contains a value representing information |

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| **Raw Source** | A term generally used to describe the data imported into the database generation workstation for the purpose of off-line assembling and building the synthetic environment. The level of pre-processing applied to the source may vary considerably (from raw data directly from sensors such as unprocessed satellite raster imagery or photos to data directly usable by simulator client-devices). Source data need not be in digital form (e.g., photos). |
| **Raw Source DB Correlation** | See Correlation, Raw Source DB. |
| **Regular grid** | Grid whose grid lines have a constant distance along each grid axis |
| **Runtime Publisher** | A real-time software process (either shared or dedicated to a computer platform) that a simulation application client-device uses to transform or translate CDB data into a format that can be directly input by the client-device it serves. |
| **Runtime DB Correlation** | See Correlation, Runtime DB. |
| **S** | |
| **Sensor Environmental Model (SEM)** | A simulation of the synthetic environment over a portion of the electromagnetic spectrum that is relevant to a client-device. A SEM is usually based on mathematical model of the environment for the portion of the electromagnetic spectrum of interest. |
| **Sensor Simulation Model (SSM)** | A simulation of a real-world sensor over a portion of the electromagnetic spectrum that is relevant to the sensor being simulated. A SSM is usually based on mathematical model of the real-world sensor for the portion of the electromagnetic spectrum of interest. |
| **Simulator CDB Repository** | The simulator CDB repository consists of a mass storage system (typically a storage array) and its associated network infrastructure. It is connected to the UMC (primarily for update purposes) and the CDB Servers (for simulator client-device runtime access). |
| **Source DB Correlation** | See Correlation, Source DB. |

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|---|---|
| **Synthetic Environment Generation** | Synthesis of multiple source inputs to generate the required integrated environmental representation |
| **T** | |
| **Target Area of Interest** | The geographical area where high value targets can be acquired and engaged by friendly forces |
| **Terrain** | A representation of earth surface shape/elevation, raster imagery, surface attribution and other earth surface characteristics relevant to simulation. Also includes bodies of water such as oceans, lakes. |
| **Terrain Profile** | See Terrain. |
| **Terrain Skin** | See Terrain. |
| **U** | |
| **UHRB** | Ultra-High Resolution Building |
| **V** | |
| **Vector data** | Data that represents geographic data through the use of constructive geometric primitives such as points, lines, and polygons. |
| **Viewpoint** | The viewpoint is the position from which the synthetic environment database is being observed. |
| **W** | |
| **X** | |
| **Y** | |
| **Z** | |
| **0-9** | |
| **2D Feature** | See Culture, 2D. |
| **2D Model** | See Model, 2D |
| **2D Model-LOD** | See Model-LOD, 2D |
| **3D Feature** | See Culture, 3D. |
| **3D Model** | See Model, 3D |
| **3D Model-LOD** | See Model-LOD, 3D |

[1] In this context, raw source denotes any input to the modeling workstation that is used to assemble the synthetic environment; consequently, the data may have undergone some level of post-processing (such as image color-balancing, image ortho-rectification, etc.) or may be in a specific source interchange format (such as SIF, SEDRIS, etc.)

# Annex A: Revision History

| Date | Release | Editor | Primary clauses modified | Description |
|---|---|---|---|---|
| 2017-02-23 | 1.0 | C.Reed | all | |
| 2018-03-20 | 1.1 | C.Reed | all | |
| 2019-12-16 | 1.2 | C. Reed | Various | Changes for version 1.2 |