

3D Data

The majority of map data is two-dimensional, existing on a single plane (the XY plane). However, three-dimensional data is also available. An example is Ordnance Survey Land-Form Panorama[®]. Such data includes the heights of the terrain.

Cadcorp SIS can display external 3D data, and also allows you to create your own 3D items, such as TINs, surfaces and DTMs. 2D items can be extruded (given a height) to produce solids.

3D window

The map window displays items in two dimensions (like a piece of paper). If you want to view 3D data in three dimensions, you must open a 3D window. A 3D window is for viewing only - editing must be carried out in the map window.

3D windows do not use the normal panning and zooming commands, but have their own special commands (and these work differently in the different display modes).

Cadcorp SIS uses OpenGL, an industry standard 3D software library, to draw 3D graphics.

A

ADDRESS-POINT[®]

ADDRESS-POINT data is supplied by Ordnance Survey of Great Britain (Ordnance Survey), and provides the Royal Mail postal address and National Grid Reference for every address in the tile. Its information can be used to provide a link to databases, and searches can be carried out on different details of the address, such as the postcode.

Address Layer

The OS MasterMap[®] Address Layer from the Ordnance Survey contains points to represent the location of each postal delivery point.

Address Layer 2 builds on the initial address layer by adding address alternatives, objects without postal addresses e.g. ponds, multiple occupancies without a postal address; and cross reference information to other products such as the OS MasterMap[®] Topography layer and OS MasterMap[®] Integrated Transport Network[™] (ITN) Layer

ADO

ActiveX Data Object is a standard which allows Cadcorp SIS to connect directly to relational or non-relational database files which use it.

Examples include Microsoft products Access, Excel, or an HTML file.

Area

See Polygon

Assembly

An assembly is a point item which remembers an association with a number of other items. By selecting the assembly's hook point, all items which are included in the assembly can be selected too. However, these other items are unaware of this association and remain independent of the assembly. This means they can be selected separately.

Attributes

Attribute data is non-graphical information assigned to editable items, SWDs, overlays and datasets. An attribute is a type of property which gives extra information about its owner (as opposed to a system property which is a necessary part of its owner).

Some external datasets have attributes, for example, Ordnance Survey ADDRESS-POINT. You can also add your own attributes to editable data.

Axes

The axes indicate the current orientation of the X and Y planes as represented on your screen.

You may choose whether or not the axes are displayed (they are not printed). You may change the location of the axes origin, and also their orientation (and hence the X, Y and Z planes).

The axes can be used only in Cartesian co-ordinate systems, so you cannot display or move the axes in (latitude, longitude) systems.

Axes are referenced when using the co-ordinate display format, when cutting and pasting, when constructing rectangles, ortho-lines and dimensions; and when displaying snap grids. All these are created parallel to the current X and Y axes.

B

Backdrop

A backdrop is an image over which other data is displayed. It can give an immediate indication of what part of the world or the country you are considering.

Backdrops can be included as an overlay in the map window, against which your map data is displayed. In this case the backdrop is usually drawn first, and can have a maximum status of visible. Backdrops can also be used as the background to a key map on a print template.

Backdrops are named items.

Bar Charts

The Bar Chart theme is an annotation theme, which uses bar charts to compare the values of several properties. The height of each bar chart is proportional to the value of a chosen property or formula.

BDS

Base DataSet. This is a Cadcorp SIS proprietary format for a user file where you store your own graphical information. A BDS is loaded as an overlay, just like any other dataset.

A BDS file can be shared over a network, with one user (the owner) having editable access, while the others have read-only access.

Bitmap

A bitmap is an image consisting of an array of coloured pixels stored in a file.

Blobs

Binary Large Objects are used by many databases to store strings over a certain length.

Cadcorp SIS provides a number of methods which allow you to access and use items as Blobs strings, thus providing a database-independent means of storing items in an ODBC-compliant database.

Block

A block object is a collection of graphics and text which can be manipulated as though they were a single entity. They are stored in libraries and can be called up by name and placed where required in the map window.

A placement of a block is called an insert.

Boolean

In mathematical logic, a Boolean value is either True or False. In a GIS, a geometrical shape can be thought of as a Boolean function of space - the function is True for points that are inside the shape and False for points that are outside the shape. For example, the "Union" of two geometrical shapes can be formed by combining their two Boolean functions with the Boolean operator "Or". For this reason, certain geometrical operations like Union and Intersect are called Boolean operations in many GIS and CAD systems.

Box text

Box text is created in real world units. When printed it is scaled with the rest of the graphics and so maintains the same proportions to the surrounding graphics.

Brush

Brushes are named objects. They determine the appearance of filled item interiors (polygons, box text, etc). A brush can be a system brush stored in the (standard) library, it can be a user-defined brush or it can be an implicit brush. An implicit brush does not appear in a named library, but has names made up of different components describing the brush's appearance (colour, pattern, etc).

Buffer

A buffer is a zone of a user-specified distance around a point, line or area, giving an immediate visual indication of the proximity of features to the selected items. This is a commonly-performed analysis operation in a GIS.

C**CAD**

Computer Aided Design. CAD systems are for the design, drafting and presentation of graphics. They are commonly used for applications such as architectural design, planning and site layouts, and so have many associations with mapping and GIS.

Cartesian Co-ordinate Systems

Cartesian co-ordinate systems have straight, perpendicular X, Y and Z-axes (i.e. orthogonal). This means that items can be easily and accurately measured for length, area and volume.

Cell

The basic element within a grid.

Centroid

The centre point of a polygon. The centroid may be mathematically derived (such as the centre of gravity), or it may be chosen by the user. It should always be placed inside the polygon.

Chain

See Topo-Line String

Cities Revealed

Cities Revealed is a series of geo-referenced ortho-corrected aerial photographs of a number of European cities, produced by GeoInformation Group.

These aerial photographs are available as compressed JPEG raster files, which use file names based on the Ordnance Survey file naming conventions. Cadcorp SIS is able to read these files, the file name allowing it to locate the map tiles automatically in their correct position.

Colour-set

A colour-set is a series of values with associated colours. It is used by grid items to indicate heights, densities or other values by graduated colour shades.

Compression

Bitmaps can use up a lot of storage space on a computer or network, and be very demanding on computer memory while they are being used. One way to overcome this is to compress them.

Cadcorp SIS can compress bitmaps but depending on the method used, compressed bitmaps can be slower to draw.

Contours

Contour lines can be created on a TIN using the Contour theme. You can choose the spacing and appearance of major and minor contour lines.

Co-ordinate Reference System

A co-ordinate reference system defines how the positions of items in datasets are stored and reported to you. The projection determines how co-ordinates are drawn on screen or paper.

Co-ordinates

Co-ordinates consist of numbers representing the location of a position relative to an origin. This can be the origin of the current co-ordinate system projection or some other point.

Cursor Dataset

A cursor dataset refers to a dataset that can be accessed in stages and does not need to be loaded in its entirety to view just a part. Data is loaded for just the area being viewed when on screen rather than the whole dataset being put into memory and called from there.

D**DAO**

Data Access Object. A standard which allows Cadcorp SIS to connect directly to database files which use it. Some examples are Lotus 1-2-3, Microsoft Access, Microsoft Excel, Microsoft FoxPro, Paradox, dBase and HTML documents.

Databases

Databases contain non-graphical and graphical information. Cadcorp SIS uses databases: to create named tables for viewing databases; to attach database data to existing graphical items; as storage for graphical items using OpenGIS SQL92 Database and Editable Blobs datasets; to view point data using the View Points dataset; and to view graphical items using the View Blobs dataset.

Dataset

Datasets are the files containing data which are loaded into Cadcorp SIS as overlays.

Cadcorp SIS can use many different types of datasets, for example Ordnance Survey tiles and database tables. Plug-in Data Sources also allow access to non-file based datasets.

Dataset scale

Items which do not have real world sizes on the map (such as text, symbols and line thicknesses) need to be scaled differently from real world items (roads, buildings etc). To deal with this, each dataset has a scale.

Different datasets in an SWD can have different scales. This allows you to overlay, for example, 1:1250 scale maps with 1:10 000 scale maps.

Many read-only datasets know the scale at which their items are designed to be drawn (e.g. Land-Line files are at 1:1250 and 1:2500, or 1:10 000 for remote areas).

When you create your own dataset you can choose its scale. By default, newly-created datasets take their scale from the current map scale.

DCW

Digital Chart of the World. This is a geographical database developed by the United States Defense Mapping Agency, in accordance with the Vector Product Format (VPF). It is based primarily on the 1:1 000 000 Operational Navigation Charts (ONCs) and 1:2 000 000 Jet Navigation Charts (JNCs) developed by the Defense Mapping Agency (DMA).

DCW has world-wide coverage, composed of four regions (North America, Europe/Northern Asia, South America/Africa/Antarctica and Southern Asia/Australia). It contains a world-wide index by place name, and is designed for the same military, scientific, and educational uses as a small-scale base map.

DCW is implemented in Cadcorp SIS by means of a Plug-in Data Source.

Derived properties

Derived properties are system properties which, although the item is editable, cannot be changed. An example is the system property `_Area#` which remains the same unless you alter the area of the item.

Digitising

The conversion or encoding of existing maps from paper format into digital information used on a computer. The process may use a digitising tablet with a hand-held cursor ("heads-down digitising"), or may be directly onto a computer screen using a mouse ("heads-up digitising").

Dimension

The dimension (or 'order') of an item.

A point has dimension = 0.

A line has dimension = 1

An area has dimension = 2

Display scale

The display scale is the reduction factor currently applied in order to display the maps on your screen. The current display scale is always shown on the status bar, and constantly changes as you zoom in and out.

Scale thresholds are applied to features or overlays to govern which display scales they are displayed at.

Drag and drop

Drag and drop is a technique which allows you to select objects and while holding the mouse button down, drag them into a program or part of a program.

Draping

Draping is the method of covering a 3D view of a grid or TIN with 2D data. A drape can be a raster item or it can be vector data. Raster items provide a high resolution image of the current 2D window which, when draped, will add detail to 3D views. Vector data is draped in a similar fashion over the surface of 3D data.

DTM

A Digital Terrain Model (DTM) is a grid item where the cell values are height above sea level. They are 3D items and can be viewed in the 3D window.

DWG

The file format for the AutoCAD Computer Aided Design software.

DXF

Digital eXchange Format. A format originally designed by Autodesk for exchanging data between AutoCAD and other software programs. It is now widely used by both CAD and GIS applications, although it does have a number of limitations.

Ordnance Survey supplies some of their data types in DXF format.

E

Editable Blobs Dataset

An editable Blobs dataset is an editable dataset which stores items as Blob strings in a database.

Cadcorp SIS can use various formats for the Blobs, including the OpenGIS standards. The structure of the database tables is defined by Cadcorp SIS, and all table management is handled by Cadcorp SIS.

External Point Dataset

This is a database of point data, containing a series of points defining such items as Road Traffic Accident locations, addresses of hospital patients, Land or Hydrographic survey positions or centroids of Post Code sectors.

F

Feature code

Feature codes are numbers which assign styling information to graphical items. This information will be used each time the item is drawn. All features with the same feature code use the same styles and scale thresholds. Details regarding feature codes are held in a feature table. The feature code's hierarchy allows features of a similar type, eg Motorways, A-Roads, B-Roads, to be grouped together to enable them to be switched on and off quickly.

Feature table

A feature table is a list of feature codes and their settings. Each different Ordnance Survey data type uses a different feature table.

Feature tables are named objects.

FDB – Feature Database

A Cadcorp format database for holding spatial data that supports multiple user editing.

Fence

A fence provides a method of selecting items. It consists of a temporary line or circle, within which (if it is closed) or within a certain distance of, all items are selected.

Filter

A filter is a named object. It contains rules, based on item properties, which allow it to pass some items and fail others.

Filters are used on overlays to control which items on that overlay are displayed and which are not. They can also be applied to the selection process, ensuring that only items which pass the filter are selected for editing.

Floating point properties

Floating point properties are properties which hold fractional values. They are suffixed with the hash sign (#), for example, `_area#`.

A double precision floating point number is any positive or negative value, stored with about 15 significant decimal places.

G

Gazetteer

A gazetteer commonly refers to a directory of addresses referenced to their spatial locations. A gazetteer can be made of any spatially attributed data but is usually addresses.

Generalisation

Generalisation is carried out to ensure a mapping database is legible over a range of viewing scales. Cadcorp SIS uses several generalisation techniques, but they operate automatically as you zoom and pan about so that what you see is fast, clear graphics.

Geodetic datum

A geodetic datum is a set of parameters defining co-ordinate systems for local parts of the Earth or for all of the Earth. Different datums have been produced and revised over time. They are used to produce a better local fit of a spheroid to the actual shape of the Earth (the geoid).

Examples are ED50 (the European datum for 1950) and WGS84 (the World Geodetic System for 1984).

Geoid

The geoid is the surface of constant gravitational energy, which also matches the average sea-level of the earth. This goes up and down, and so varies depending where you are on the Earth's surface.

The geoidal height is sometimes given - this is the height above the geoid.

Projections are usually based on a spheroid (a squashed sphere). A geodetic datum is used to produce a better local fit of a spheroid to the geoid.

GeognoSIS

GeognoSIS is a server based web GIS product. It provides to users access to full GIS functionality through a standard web browser.

Geo-referenced

If a dataset is geo-referenced it knows its spatial location in the world and Cadcorp SIS can automatically place it in its correct location on the map base.

Sometimes datasets are not geo-referenced, and do not know where they should be located. This can be the case with some CAD and raster files. There are methods for locating such datasets, if this is required.

GIS

A Geographical Information System is a broad term for a system enabling access to and analysis of data that is associated with map-based features.

It can be used for capturing, storing, checking, manipulating, analysing and displaying data which is spatially-referenced to the Earth.

GISLink

GISLink is a term that refers to a program that customises the Cadcorp SIS desktop. They are used to wrap up functionality already found on the SIS desktop like a macro does, making processes simpler.

Grab Handles

See Handles.

Graticule

A graticule is an optional element of a print template. It automatically draws latitude and longitude ticks and graticules using the world position of the contents of the photo.

Graticules can be quite complex, using up to eight different levels of settings. Because graticules can be time-consuming to set up, graticule styles can be saved as named objects.

Grid

Grids are raster items where each pixel or cell has a colour value that corresponds to a numerical value. The cell values are mapped to colour on screen using a colour-set.

The values stored in each cell could represent various different scenarios. For example, the value could be the amount of reflected sunlight produced from a certain type of vegetation represented by the cell (seen in certain types of satellite images). Another common use of grid items is for each cell to store the height above sea level of the ground at that point. In this case, the grid is a Digital Terrain Model (see DTM).

H

Handles

When an editable item is selected, and is the only item currently selected, it displays grab handles. If several items are selected, the dominant item displays handles (you can make a selected item dominant by clicking on it again).

Handles can be selected, dragged to a new position, or deleted. You can also add new ones, although the permitted operations depend on the class of the item selected.

Hook point

See Origin (item).

I

Implicit Brush

See Brush.

Implicit Pen

See Pen.

Imported file

Imported files are editable copies of non-editable external datasets. External datasets stored on disk or available over a network contain data which in most cases cannot be edited. Imported files provide a means of editing that data without changing the original datasets.

Index Overlay

Index overlays do not contain any data, but are a pointer to other datasets which tile together to make a continuous map base. You can use multiple paths and/or file types, so that files which are in several different locations can be accessed via the one Index. When you use an Index, the computer opens map tiles as you pan to them and closes them as you pan away. This gives you seamless mapping as you pan around on screen.

Indexes also provide the advantage that any number of datasets in an overlay or overlays can be loaded, and if you add extra ones at any time, they are automatically included as well.

Insert

An Insert is the name given to each placement of a block item.

Integer properties

Integer properties are those which hold whole number values. This is indicated by the ampersand (&) used as a suffix. An example is `_FC&` (feature code).

A long integer is a positive or negative whole number between -2 147 483 648 and 2 147 483 647.

Integrated Transport Network (ITN)

The OS MasterMap Integrated Transport Network (ITN) Layer from the Ordnance Survey, comprises the road and transport network along with its routing information. The dataset contains a topological network of lines representing roads and has attribute data such as one way streets, no right turns, speed limits, height, weight and width restrictions, access times and unique identifiers.

Internal dataset

An internal dataset is memory based alternative to a BDS, in that it is a place where users can save their own data. Unlike a BDS an internal dataset does not exist as a separate file, being saved as part of the SWD. Its data cannot be shared. It is often used for data of a personal or temporary nature.

Item

Cadcorp SIS is an object-oriented system, and all the graphical entities it uses are known as items. Items fall into classes which control their basic characteristics. Examples of item classes are point items (symbolic points), and line items (for straight and curved lines, outlines, and so on).

All items of one class have the same basic properties and the same set of appropriate operations. These are shown on the item menu, where you can see the different item classes, the items they include and the commands appropriate to them.

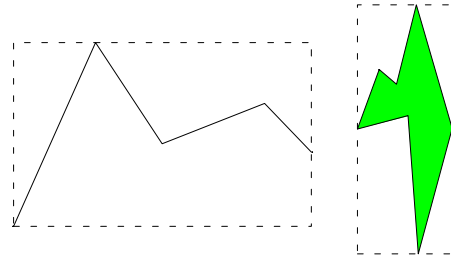
A named item is a type of named object, stored in a library.

Item extents

Every item can be thought of as having a notional rectangular extent which encompasses it:

When carrying out geometrical tests you can often choose to test for item extents (as opposed to their actual geometry).

Sometimes the origin of an item is considered to be the centre of its rectangular extents (see Origin (item)).



Item ID

All items have this system property. The value for each item is unique within a dataset.

When an item is edited, Cadcorp SIS tries to maintain the attribute data on that item. Commands which merge items together into a single item give the new item the ID and attribute data of the dominant item (the one which displays grab handles).

Item menus

The item menu shows all the operations available to each item class.

J

JPEG

JPEG is a raster file format (with the file extension *.jpg or *.jpeg).

K

Key map

A key map gives an overall view of an area and indicates on it the particular area of current interest. This allows you to see immediately where on the map base the area you are currently considering. You can generate a key map for an index overlay to show the area covered by its tiles, or you can use one on a print template to show the area being printed.

Keyhole tool

The keyhole tool allows you to 'peer' through one layer and see a nominated layer below wherever the cursor is moved.

L

Label text

Label text includes a line drawn to the item it is labelling. It is created in real world units, like box text, and when printed maintains its actual proportions to the surrounding graphics.

Layer

For some datasets (e.g. DXF and DWG) graphics are divided into layers. Layers control the order in which graphics are drawn. This becomes important when graphics overlap each other. For instance, to draw the intersection of two motorways each having a thick red line bounded by two black lines you would make sure that the red line was in a higher level than the black lines so that when they crossed there were no joins. Using Cadcorp SIS you can also switch layers on and off individually and use layer filters.

Legend

A legend is a key used in themes to show what the annotations or styles of the theme mean. Legends are displayed on the theme view tab of the workspace window. They can also be placed on print templates.

Level

All items are assigned a level property between 0 and 255. Levels determine the order in which items are drawn on the screen, level 0 being drawn first, then level 1, then level 2, and so on. In this way, items on level 1 may obscure items on level 0, and items on level 2 may obscure items on levels 0 and 1, and so on.

The level of items on editable overlays can be changed.

Library

A library, or named object library (NOL) is where named objects are stored. You can access the libraries on the library view tab of the workspace window. Cadcorp SIS provides default libraries: the read-only (standard) library which contains standard pens, brushes, projections, etc; and the (temporary) library which stores items created by the user. At the end of each session the named objects in the (temporary) library are lost. When a workspace is saved, a (workspace) library is created which can store all the named objects for that workspace. These can be edited and saved for future use. You can also create your own libraries which have the extension *.nol.

Line

See Line String

Line String

Line string items are one of the basic item classes in Cadcorp SIS. A line string is a connected path with two or more vertices. Any of the vertices can have a height, making the line item a 3D item.

Line text

Line text is constructed to follow the path of an existing line item.

Link

A link is a topological item, being a line item which has a node at each end. Links exist in link and node networks, which consist of a series of link lines with nodes wherever the lines cross. See also Topology and Network.

Linked bitmaps

Displaying raster data uses up a lot of computer memory. One way of overcoming this is the use of linked bitmaps.

Normal bitmaps are stored on an overlay. By contrast, the contents of a linked bitmap are only required when the bitmap is being drawn on screen. If more memory is required for another task, the contents of an existing linked bitmap can be removed from memory to make more space. This swapping of files is carried out automatically.

Linked bitmaps must not be deleted from disk, because this will cause the image to be deleted from your data (ordinary bitmaps can be deleted from disk, as they are stored on the overlay inside the SWD).

Local menus

A local menu is one which contains commands applicable to the item or other object on which you have clicked. It is displayed when you click on the item or object using the right mouse button.

This is a standard Microsoft Windows feature.

Locus

A Locus is a region used to include or exclude items based on their position relative to the locus. Loci use geometry tests to determine whether items are included or excluded (eg the locus may have to contain items for them to pass, it may have to intersect with them, and so on).

Loci can be used with overlays to determine which items are displayed and which are not; or when selecting items for editing.

M

Map projection

A map projection is a mathematical model used to convert the three-dimensional reality of the Earth's surface into two dimensions for representation on a paper map or computer screen.

Map projections have different properties which give them particular strengths (eg some preserve shape, others preserve distance, or area, or direction) - but they all have corresponding limitations.

Cadcorp SIS uses a co-ordinate system projection for positions that are stored in datasets and reported to the user, and a viewing projection to convert the curved surface of the Earth for display on the flat computer screen.

Map scale

Each map window has a map scale. The map scale is the factor by which real world items (such as buildings, roads etc) are scaled to fit on a sheet of paper.

You can change the map scale if required. This has no effect on the graphics on screen, but is relevant when you come to print.

Map Tips

Map Tips is a special Cadcorp SIS feature where chosen properties of an item (or the result of a formula) can be displayed on the cursor when it hovers over that item in a map window. The user can determine which properties (or formulae) are used.

Map window

A map window is the main area of the Cadcorp SIS window. It is where graphics are displayed and edited. You can have more than one map window displayed at the same time.

The map window displays its data in two dimensions. To view 3D data in three dimensions, you need to open a 3D window.

MasterMap

MasterMap is the name given to a series of datasets produced by the Ordnance Survey. The datasets that make up MasterMap include:

- Topography Layer
- Integrate Transport Network (ITN)
- Address Layer
- Address Layer 2
- Imagery Layer

Maximum scale

See Scale thresholds.

Members

System properties are sometimes called members.

Memory Dataset

A memory dataset refers to any dataset that has to be loaded entirely into memory in order to be displayed. Examples of this would include TIFF or MID/MIF files.

Minimum scale

See Scale thresholds.

Multi-geometry

Multi-geometry is a collection of line, area and point items. Multi-geometry items are manipulated as a single item, and all their component items use the same styles.

If the multi-geometry item consists of points, it is called a multi-point item. If it consists of lines, it is a multi-line. If it consists of polygons, it is called a multi-polygon. The OpenGL specification says that simple areas cannot have islands, therefore Cadcorp SIS uses multi-polygons for polygon items which include islands.

Multi-line item

See Multi-geometry.

Multi-point item

See Multi-geometry.

N**Named item**

A named item is one of the types of named object which are stored in libraries (along with pens, brushes, views, and so on).

Any graphical item can be stored as a named item, but it must be specifically saved as such. Named items can be recalled for later use, and are also used as backdrops for map windows and print template key maps.

Named objects

Named objects are stored definitions which include such things as pens, brushes, filters, views, and so on. The use of named objects makes Cadcorp SIS more efficient - for example, each item does not need to remember the definition of its pen, brush, etc, just the name of a pen, brush, etc.

Named Object Library (NOL)

See Library.

Named tables

A named table is a connection to a database table, or possibly a stored view. The table data can be viewed in a table window and linked to existing graphical data using the named table name.

Cadcorp SIS can connect to databases using the ODBC standard or DAO.

National Grid (OSGB)

The National Grid referencing system is based upon the division of Great Britain into 100km squares, each assigned a two-letter code: TQ; SS; NY and so on. References to positions within any square may be made by means of the eastings and northings in metres from the bottom left hand corner of the square. The number of digits in the easting and northing give the precision. For example, SS 78382 87596 refers to a point 78382 metres east and 87596 metres north of the bottom left of the SS square.

Network

A network is a model representing interconnected elements through which some form of resource can be transmitted or will flow. It is represented by a series of nodes connected by links. Links can have attributes representing flow characteristics. An example of this would be a road network with one way streets.

Node

A node is a point item which represents the beginning or end of a link, or the junction of a number of links.

NTF

NTF stands for National Transfer Format. NTF is one of the methods used by Ordnance Survey to distribute digital map data in vector format. It is also used by Ordnance Survey of Northern Ireland (OSNI).

○

ODB

A Cadcorp ODB database is a repository for the OS MasterMap topographic layer. Unlike the Microsoft Access format it can hold nationwide coverage.

ODBC

Open DataBase Connectivity (ODBC) is a standard which Cadcorp SIS can use to access databases. If a database has an ODBC driver (or uses DAO), Cadcorp SIS can access it.

OpenGL

OpenGL is an industry standard 3D software library. Cadcorp SIS uses it to draw 3D graphics.

OpenGL is also a software interface to hardware. This allows graphics card vendors to build OpenGL functionality into their graphics cards, thus increasing 3D performance. Cadcorp SIS does not require any special graphics card because OpenGL is available in most Microsoft Windows operating systems. However, adding an OpenGL graphics card can dramatically increase OpenGL performance.

OpenGIS SQL92 Dataset

These are editable datasets which store items in an OpenGIS SQL92 database.

The structure of the database tables is defined by the Open Geospatial Consortium. This allows Cadcorp SIS to operate with other software which supports the OpenGIS SQL92 standards.

Origin (item)

All items have an origin point, which is used in certain places in Cadcorp SIS (eg for the placement of Blocks, or as the placement position for annotation graphics added by themes).

The origin for a line item is its start position; for a point item it is the point itself; for an area item it is usually its centre.

The origin for other items is often the centre of its rectangular extents. This position often does not correspond to anything meaningful, but it is quick for the computer to calculate.

The item origin was sometimes referred to as its “hook” point in previous versions of Cadcorp SIS.

Orthogonal Co-ordinate Systems

See Cartesian Co-ordinate Systems.

Overlay

These may be thought of as transparent sheets, laid on top of each other, onto which any graphical data may be placed. This data can consist of external datasets or user datasets. An SWD is made up of a list of overlays.

Overlay pen/brush

When it is created, each overlay is automatically assigned a pen and a brush, called the overlay pen (By Overlay) and the overlay brush (By Overlay). When graphics are drawn, if the Styles toolbar pen or brush is (By Overlay), the graphics are drawn using the pen or brush assigned to the overlay on which they reside.

Owner

Editable datasets which can be shared (eg BDS files) have an owner. The owner is the only user who can edit the dataset - all other users have read-only access.

The owner is normally either the creator, or the first person to open it. However, an owner can relinquish ownership and allow another person to become the owner.

P

Polygon

These are one of the basic classes in Cadcorp SIS. They are closed geometry items filled with a user selected colour or pattern. Polygon refers to a single geometry feature but many of these can be joined to form a single multi polygon item.

Postcode Address File (PAF®)

Postcode Address Files are text files containing the full postal address of every delivery address in the UK, produced by the Royal Mail.

PAF files can be accessed by Cadcorp SIS to display each address as a point or symbol on the map base.

Path

A path is that part of a line which lies between two user-selected positions, which need not coincide with vertex points.

Pen

Pens are named objects. They determine the appearance of lines on a map (line items, the edges of polygons, chains, text etc). Every item has a pen. A pen can be a system brush stored in the (standard) library, it can be a user-defined pen or it can be an implicit pen. An implicit pen does not appear in a named library, but has names made up of different components describing the pen's appearance (colour, thickness, etc).

Phase

Within an SWD you can include a dataset as an overlay several times. Each inclusion of the dataset is called a phase.

You may want to do this in order to set different criteria for each phase, eg different filters. For instance, one phase could contain a filter so that only building outlines are shown, whereas another might display only roads. You can then make each phase visible or invisible in turn, which gives a fast method of looking at certain detail in a dataset.

Each phase can be given a descriptive name to distinguish it from another phase of the same dataset.

Photo

A photo is that part of a print template which contains the view of the map window.

A photo is an area item, and can be edited as such. It also has additional properties, eg it can have a graticule added.

A photo contains a link to the datasets it contains. So whenever the print template is printed, the photo contains an up-to-date view of the datasets it contains.

Photo Grid

A photo grid is an optional element of a photo which shows eastings and northings, by means of grid lines and/or annotation.

Pie Charts

The Pie Chart theme is an annotation theme which uses pie charts to compare the values of several properties. The sizes of the pie chart slices are proportional to the value of a chosen property or formula.

Pixel

A pixel is a picture element. Pixels have X, Y and Z values. The X and Y components reference that pixel in space. The Z component is a value which corresponds to a colour. The raster images on your screen are made up of many thousands of pixels, each pixel being stored sequentially in a file.

Pixel resolution

See Resampling.

Plug-in datasets

Plug-in datasets are the means by which Cadcorp SIS accesses and exports datasets. They are seamlessly integrated into the interface, so you need not be aware of their existence.

Cadcorp Value Added Resellers can create their own plug-in datasets for formats not supported by Cadcorp SIS.

Plug-in data sources

A plug-in data source is a special type of plug-in dataset which does not use a single file, but instead gets its information from a server or composes its information from many files. For instance, the Oracle Spatial Data Cartridge plug-in reads graphics from a relational database, and the Digital Chart of the World plug-in composes information from a CD-ROM.

Plug-in image servers

Plug-in datasets can be image servers by creating plug-in image items. Cadcorp SIS does not draw the contents of plug-in image items itself, but instead lets the plug-in datasets which created them do the drawing. The plug-in image item can therefore handle very large resolution raster formats, and use anti-aliasing.

Point

A point item represents the simplest geographical element. It is represented as a single X, Y, Z co-ordinate. Point items often have attributes associated with them.

In Cadcorp SIS, point items always have a shape property and are displayed using this shape, although this shape can be just a dot.

Point text

Point text is given a height in point sizes (as used in word-processing). This means it will always appear at a given point size when printed.

Polygon

A polygon is a topological item which represents an enclosed region. Its boundary consists of a number of links. Polygons often have attribute data describing the region they represent. They can be used to represent administrative districts, planning constraint zones, property boundaries, and so on.

Position bar

This is an area of the Cadcorp SIS window where co-ordinate display modes are selected and positions are displayed and input. You can choose whether to display or hide the position bar, and if displayed, you can place it anywhere on your screen.

Precision

When a computer needs to remember numbers there are various trade-offs which can be made between precision and memory requirements. The more precisely an item's geometry is stored, the more memory is taken up, and the bigger the data files become.

64-bit precision provides the most accurate data, but uses the most memory. A lot of map data only uses 16-bit precision in 2D, which reduces memory requirements by one-eighth. However, it is important not to lose accuracy by carelessly reducing precision.

Cadcorp SIS can store and manipulate co-ordinates in 16-, 32- or 64-bit precision, in both 2D and 3D. Therefore it can use the most compact format for all datasets with no loss of accuracy.

If you decide that you do not need high accuracy on an editable dataset, then you can reduce its precision. Then when you modify any of the items, their geometry will be recalculated using the new precision.

Print scale

Print scale is the scale applied to the data when printed. If you know this scale, items can be measured and accurately scaled from the print.

Print template

A print template is a pre-formatted "sheet" onto which you can place an area of the map base to print. It can contain standard features (such as titles, your company details, company logo, and so on), and also allows you to customise each individual print by the addition of a title, scale bars, grids, legend, north point, graticule and/or a key map as required.

Print templates are named objects.

Program Window

The Program Window contains a record of all commands invoked in the current session, and whether they succeeded or failed. This is useful if you are using GISLink to customise Cadcorp SIS, or Cadcorp SIS Control to write applications, when it can help you in debugging.

Properties

Properties are non-graphical data belonging to graphical items, and to certain other things such as overlays, Named objects and SWD files. They can be either String, Integer, or Floating Point properties.

Properties dialogs

There is a Properties dialog for every type of object in Cadcorp SIS which contains properties. There are categories of property including style, schema, attributes, "all" and various other, object-specific properties. Item properties are also displayed on the property view tab of the workspace window.

Property names

You need to know the names of properties when building formulae, writing GISLink customisations, or using Cadcorp SIS Control to write applications.

In Properties dialogs, property names are accessed by right-clicking on the Property Description on either the Schema, Attributes, Geometry or All tabs.

The property names follow the rules used for computer language variables. In particular the property name always ends in a special character indicating its type (for example \$, &, #, @).

PWD

A published window definition (PDW) is a project file for use with Cadcorp SIS Map Reader. It contains information about the overlays to be displayed in the map window.

Q

QZone

A QZone is a type of buffer made up of regularly-sized squares. This makes it an efficient way for the computer to model a 2D region (detecting whether a point falls inside a large QZone is much faster than detecting whether the point is inside the equivalent area item).

You can specify the resolution of a QZone (size of its smallest square).

R

Raster data

Raster data is picture data, produced by electronically scanning paper maps, or by generating a computer-readable picture file.

A raster image is made up of a grid of tiny, rectangular picture elements (called pixels). Each pixel is stored sequentially in a file, and is generally represented by a number denoting its colour.

In Microsoft Windows, the standard format for raster data is known as a bitmap (it has the file extension *.bmp).

Compared with vector data, which contains information on its contents (lengths of lines, item types, values of areas, feature codes, feature descriptions, and so on), raster data is 'unintelligent'. Its main function is to provide visual detail and it is often used as a backdrop for vector data.

Raster data requires a lot of computer memory to display it. There are several methods of overcoming this problem, such as using compressed or linked bitmaps.

Relief

Relief is the illusion of three dimensions on a map or 2D image. You can produce an effect of relief on Digital Terrain Models using either the Relief Theme (which applies a range of colours, as defined by a chosen colour-set, to the heights in the model), or by simulating shadow casting.

Resampling

Resampling is the process by which you change the pixels in a raster image, or when the colour halfway between two pixels needs to be interpolated.

If you decrease the spacing between pixels, you increase the number of pixels and increase the resolution (giving you a clearer image).

The opposite is true - if you increase the spacing, you decrease the number of pixels, and with it the resolution and clarity of the image.

Resolution

The resolution of a digital dataset expresses the size of the smallest object which can be depicted.

The term is most commonly used with raster data, where the resolution of a raster or grid is expressed as the size of the cell in the real world.

Increased resolution leads to larger storage and processing requirements but clearer and more detailed images.

Roamer

The Roamer is a tool that allows a user to use the mouse wheel to zoom in and out of the map in just a small area around the cursor. This enables the rapid viewing of different or more detailed information on different overlays without changing tools, the view scale or map location. An example would be to quickly look 'underneath' road to see the sewers or cables.

Rubber sheeting

Rubber sheeting is a process used to adjust the relative positions of features within a dataset in a non-linear or non-uniform way.

Raster maps may suffer from distortion if they have been scanned from paper maps or aerial photographs. Cadcorp SIS provides tools for correcting this distortion using known survey or control points. This operation is known as rubber sheeting, because the raster map looks as though it has been drawn onto a sheet of rubber which is then stretched from the positions identified to new positions.

S

Saved Window

See SWD (Saved Window Template) and SWD (Saved Window Definition).

Scale

Scale is the reduction applied to real world items when representing them on paper or a computer system while maintaining their correct proportions.

Cadcorp SIS applies scale in four main areas: the reduction factor currently applied to display the maps on your screen (in Cadcorp SIS known as the display Scale); the factor by which real world items (buildings, roads etc) are scaled to fit on a sheet of paper (known as the map scale); the scale applied to items which do not have real world sizes on the map eg text, symbols and line thicknesses (the dataset scale), and the scale applied to the maps when they are printed (the print scale).

Scale thresholds

Overlays and features have two scale thresholds, a Minimum scale and a Maximum scale. The Minimum scale is the scale below which the data will not be displayed. The Maximum scale is the scale above which the data does not appear. The data to which these scales apply is visible only when the display scale is between these two numbers.

Schema

A schema is a list of data columns for an overlay. The data columns consist of the properties of the items on that overlay, or a formula. They should include all the data which you wish to appear in the table window and in other parts of the user interface where data is used, such as themes. If you are using Map Tips, you can choose which of the data columns is used for the Map Tip on the Schema tab.

Schemas are named objects.

SDS (Shared Dataset)

The Shared Dataset format is a native geometry format within Cadcorp SIS which is used in a multi-user environment for concurrent data editing. It supports vector geometry but not topology.

Secondary annotation

Secondary annotation is a reference embedded in a text string which calls up and displays the current value of a property. You would use it where a value is subject to change and you want to include the current value in the text string. Formulae can be used. An example would be a date annotation on a print template so the current date is always displayed.

Seed

A seed is a special type of point item. All chains and polygons have a seed, which contains references to the links from which the chain or polygon is formed.

Selected items

Many operations in Cadcorp SIS are carried out on selected items. This means items must be selected before starting that command. There are many ways of selecting items, which allow you to build up a comprehensive selection list.

Selection box

The selection box is one method of selecting items. You click when the cursor is over an empty position on the screen to define one corner of a box. You then move the cursor to the opposite corner of the box and click again. All items which lie within the box are selected (provided they are on an editable or hittable overlay).

Shape

See Symbol

Snap grid

A snap grid consists of a regular array of points or lines, which are spaced at the intervals you choose. When constructing or moving items, you can then snap to grid intersections to increase your accuracy.

Snapcodes

When drawing, moving and editing items, snapcodes allow you to snap exactly to precise points on existing graphics, such as ends of lines, midpoints of lines, centres of circles, etc.

Snapcodes are shown as you move the cursor over the map base, indicating when the cursor is exactly over a line, a vertex, a point, and so on.

Solid

A solid is a three-dimensional solid item, which has volume. Solids are used when creating three-dimensional buildings.

Spatial analysis

This is the process of applying analytical techniques to geographical-referenced datasets, to extract or generate new geographical information. Spatial analysis may be used to model complex geographical interactions, and is useful for investigating site suitability and predicting future events.

Spherical Co-ordinate systems

The X and Y axes of a spherical co-ordinate system are degrees of latitude and longitude. The Z axis of a spherical projection measures height above sea-level.

Splinter

When you convert line and area items to topology, small splinters may occur between the line or area and the links. These are automatically removed, and you can choose whether preference is given to the link geometry or the line or area geometry.

Splinter factor

Polygons have the property Splinter factor. The splinter factor is the ratio of the maximal area to the actual area. The maximal area of a polygon is the largest area that could be enclosed by a line with the same length as the polygon. Circles have a splinter factor of 1, while a very long and thin area could have a splinter factor of 100. Areas with large splinter factors are often produced by overlapping lines which are almost, but not quite, the same.

SQL

Structured Query Language (SQL) is a language developed by IBM in the 1970s for defining and manipulating relational databases. It has since become the industry standard, and is often used to enable GIS toolkits to access the data held in existing corporate databases.

Status

Each overlay has one of the following statuses: editable, hittable, visible and invisible.

If an overlay is editable, you can perform any operation on the data. If it is hittable, you can select it, copy it, or query it, but not cut or delete it. If it is visible, it can be seen but not selected. If it is invisible, it cannot be seen and no operations can be performed on it.

A backdrop is for visual reference only, and can be visible or invisible.

Status bar

The status bar is displayed at the bottom of the Cadcorp SIS window. It provides information and prompts the user for their next action.

The information provided consists of what the highlighted command does, the number of items currently selected, the number of editable items currently selected, the class of the selected items (as long as only one item class is selected), the displayed width (in real world units) of the view in the current window and the current display scale.

Stored item

See Named item.

String properties

Text, or a mixture of text, numbers and punctuation is called a string. Properties which hold a string are suffixed with a dollar sign (\$). An example is `_dataset$` (the name of an item's dataset).

The value of a string is stored in Unicode, which means you can safely use any foreign language characters (although to appear correctly, the computer displaying them must have the correct language installed).

The size of a string property value is virtually unlimited, but the user interface is only designed to handle comfortably about 80 characters. Therefore, if you wish to use longer properties, you may consider using a GISLink customisation.

Styles toolbar pen/brush

The Styles toolbar pen and Styles toolbar brush are the pen and brush currently shown on the Styles toolbar.

If any items are selected, the Styles toolbar pen shows which pen they use (if they all have the same pen), or nothing (if they have different pens). Similarly, the Styles toolbar brush shows the brush they use (as long as they all use the same one), or nothing (if they use different brushes).

If no items are selected, the Styles toolbar pen and brush show the default pen and brush, which will be adopted by any new items you create.

Surface

A surface is a three-dimensional planar item, which has area but no volume.

SWD (Saved Window Definition)

A Saved Window Definition is the list of overlays to be included in a view, together with any overrides or filters applied to the overlays. This can be saved with a name, so that in future you do not need to rebuild the map base.

The saved file has the extension *.swd, and can be saved anywhere on your computer or network; it contains all the necessary information to link up and display the required datasets next time you use it.

SWT (Saved Window Template)

A Saved Window Template is a collection of overlays and a view which you can save. This allows you to have one Saved Window Template (SWT) which will act as a basemap, which you can recall, add overlays to, and save as an SWD. For example, there could be one SWT for a council, and individual SWDs based on the SWT for Planning, Environmental Health, and so on.

The saved file has the extension *.swt and can be saved anywhere on your computer or network. It contains all the necessary information to link up and display the required datasets next time it is opened.

Symbol

A symbol is often used to represent a point item; symbols are stored as a named object. These can be system-defined, when they are stored in the (standard) library or they can be user-defined where they are stored in the (current) library. Point items have a symbol assigned to them as an attribute. The point item can store information which scales and rotates the symbol.

System properties

System properties come with the data and are a necessary part of the data. They can be recognised by the underscore character at the beginning of their name eg _FC&. Some system properties are called members, as Cadcorp SIS implements them as members of C++ objects. Other non-editable system properties are called derived properties (see Derived Properties), since they are always calculated on the fly by Cadcorp SIS (eg the length of a line item).

T

Table window

Table windows allow you to display properties, attributes and data from external databases in a tabular form. A table window is associated with a map window, and every graphical item in a map window has a corresponding entry in the table in the table window.

A table window is dynamically linked to the map window, so that any changes to either window causes the other to be updated automatically.

TARGA

TARGA (often known as TGA) is an image format developed by Truevision Inc. (now AVID Technology)

Text

Text is an item class consisting of different text types; point text, box text, line text, label text, and secondary annotation.

Thematic mapping

A thematic map is one which communicates a single theme or subject, based on attribute data. For example, a population density map and political boundary map are both thematic maps. This contrasts with a topographical map which is a general purpose map containing landscape features such as rivers, roads, landmarks and elevation.

Thematic mapping is achieved by controlling the styling of the map (eg using colours to represent attribute data) or by annotating it with extra graphics (such as pie charts or labels).

Thiessen areas

Thiessen areas are areas of influence where adjacent areas are constructed around each selected item such that their boundaries are equidistant from the selected items.

TIFF

Tagged Image File Format. This is a widely used, general-purpose image data format.

TIN

TINs, or Triangulated Irregular Networks, are three-dimensional planar items. A TIN is made up of many triangular surfaces which connect adjacent points containing height attributes. Each surface contains graduated height values, or a slope, thus contour and/or flow themes can be superimposed on TINs. Greater detail is obtained by using smaller triangles.

Toolbars

A toolbar is a moveable group of icons which are designed to provide rapid access to specific commands. All commands in Cadcorp SIS have a corresponding icon. Clicking the icon on the toolbar runs the command in the same way as selecting it from a menu.

Topo-Line String

A topo-line string is a topological item, consisting of a number of links collected together to form a single item. An example is a number of difference streets in a town plan, which, when linked together, form a bus route.

Topology

Topology concerns spatial relationships between connected or adjacent geographical objects, independent of their size and shape.

Topological graphics are made up of link, node, chain and polygon items. These items all store references to each other where they touch or join.

The essence of topology is that if a topological item changes, then its spatial relationships with connected topological items are maintained. For instance, if you move a node item, then the ends of all connected link items will be moved to the new node position. In addition, because chains and polygons only refer to link items, their path (for chains) and boundary (for polygons) will follow the new link line. Furthermore, if the link is a shared boundary between adjacent polygons, then the adjacency of the polygons is maintained.

Topo-Polygon

A topo-polygon is a topological item which represents an enclosed region. Its boundary consists of a number of links. Sometimes these boundaries are shared with other topo-polygons covering a similar area. They can often be used to represent administrative districts, planning constraint zones, property boundaries etc.

Transparent zoom commands

You can use most of the Zoom commands while you are in the middle of another operation, such as constructing a line or measuring graphics. You can select this option on the Preferences dialog.

U

User overlay

A user overlay is an overlay on which you can save your own data. This is a BDS file or an internal dataset.

User overlays can have any status.

V

Vector data

Vector data consists of point, line or area data that is defined in space by a series of co-ordinates. This data can have tabular or attribute data associated with it.

View

A view is the extent of the map base currently displayed in a map window. You can save views (as named objects), and return to them later.

View scale

See Map scale.

W

Wizard

A Wizard is a self-contained unit within a program, which leads you through a process by means of explicit dialogs. It is designed so that the process is straight-forward. You can progress to the next step only when you have completed the current one.

Workspace

A project workspace file (*.sis) saves the following information: the user set-up (including toolbars, preferences, open SWD files and windows); named tables from databases; the (workspace) library; linked libraries; and the default co-ordinate system and viewing projection. Workspaces are useful for saving the state of the current session.

Workspace window

The workspace window displays detail about the current session. It also allows settings and properties to be changed, and provides access to many commands and operations.

The workspace window has five tabs, dealing with different areas of the system: the display view tab (for access to SWDs, overlays and their contents), the property view tab, the theme view tab, the table view tab and the library view tab.

You can choose whether or not to have the workspace window displayed. When it is displayed, it appears to the left of the map window.