Studio 3 Migration

From Studio 2.1 to Studio 3

Course Aims

This course has been designed to assist experienced Studio users quickly to appreciate the extra power and versatility of Studio 3, and turn it to their advantage.

The course aims to provide users with:

- A thorough overview and explanation of new functionality.
- A summary of the benefits of using Studio 3 such that these might be exploited as quickly and effectively as possible.
- A detailed explanation of software changes from earlier versions.
- An introduction to the changes in working practices necessary to make best use of the software.
- Practical experience of using Studio 3 to reinforce understanding of the concepts.

Course Aims

To gain maximum benefit from the course, students should satisfy the following criteria:

- They should be experienced users of Studio 2.1 with a sound knowledge of its core functionality.
- They should have a computer with the recommended specification for both hardware and software.
- They should have the course-specified version of Studio 3 installed.
- They should have licenses for all modules that will be used during the course.

Experience of the following would be advantageous but not essential (not assumed):

- Downhole Explorer or Present.
- InTouch
- Legends

Course Structure

- The course has been broken up into logical sessions of variable duration.
- Generally, a session will consist of:
  - A presentation of functionality, features and concepts.
  - A demonstration of the concepts etc. presented.
  - An exercise or walk-through to reinforce understanding of the concepts and different ways of working.
- Discussion is encouraged throughout.

Course Agenda

1. Introduction and Background
2. The Project File
3. Interface
4. Data
5. Drillhole Data
6. Overlays and Legends
7. Table Editor
8. Wireframes
9. Grade Estimation
10. Plots Window
11. VR Window
12. Scripting
13. Summary and Feedback

Session 1 – Introduction and Background

Session Structure

This session will be slightly different from most others; it will consist of:

- The background to Studio 3
- The benefits of Studio 3
- The areas of major change
- A brief demonstration of some of the changes, benefits etc.

… but it will not have an exercise as it would be inappropriate at this point.

Background

In recent years, the Datamine group has developed a broad range of products and tools for the mining industry, which are based on a variety of technologies and data handling strategies.

Studio 3 has benefited from the merging of some of these products such that it has inherited:

- The object model from Downhole Explorer.
- Object display control from Downhole Explorer.
- The ability to display non-native file formats from Downhole Explorer.
- A virtual reality world from InTouch.

Some Benefits

The mixed origins of Studio 3 bring many benefits, including:

Multiple Views – integrated VR, Plots and other windows, to give multiple linked views of the loaded data.

Shared Data – All data in memory is viewable in many windows. Can update and view data simultaneously in multiple windows, making it easier to understand the data and identify problems.

Improved, more intuitive plotting – All loaded data available to all windows – Design work instantly ready for plotting.

New Data Types – Studio can now load and display non-native data formats. Also links to data in remote databases ensuring the latest version of the data is always available.

Data Objects – All loaded data are objects - makes data selection and manipulation easier, more intuitive and more flexible.

Easier Interface Customization – Easy to make Studio 3 look and work as you wish.

Scripts – Full data object model to allow easy development of customized applications.

New Features – Many new functions and features detailed later.

Summary of Changes

Studio 3 has numerous new features and modifications in many areas including:

- **The Project File.**
- **The User Interface.**
- **Data Types.**
- **Data Objects.**
- **A Diversity Of Views.**
- **Flexible Object Formatting.**
- **Integrated Plotting.**
- **Improved Wireframe Functionality.**
- **New Scripting Object Model.**
- **Lots and lots more…**

Online Help and Tutorials

Online Help and Tutorials have been rewritten for Studio 3:

- New template for easier navigation
- Lots more information available online
- Tutorials available with first release include:
  - Introductory
  - Open Pit Design
  - VR
  - Scripting
  - Data Presentation

A Note on License Services

Studio 3 comes with Maintenance Aware Licensing (License Services 4.0 onwards).

- For “Full” licenses, a separate key is registered for maintenance.
  - Permits software upgrades for the maintenance period purchased.
  - Upgrades beyond the licensed maintenance period will not run.
- Renewable and other time-limited licenses have maintenance included.

Solution management available in all installations.

- No longer requires a separate key.
- Facilitates the setting up of customized license solutions.

Session 2 – The Project File

Introduction

The ***Studio 3*** Project File has evolved from that of earlier Studio versions and other products. It will open Studio 2 projects, Downhole Explorer/Present documents and InTouch documents.

- The Project File now contains many more settings than before, e.g. memory load options, toggle settings, view, etc.
- The extensions to the existing project concept negate the need for many “start-up scripts”.
- Studio 3 can create *archive* documents which contain all settings, legends and data. This is a powerful way for both distributing information and taking temporal snapshots.

Glossary

Studio 3 uses features, functionality and terminology from Studio 2.1, and from other sources:

File	Data stored on a physical device such as a disk, which can be accessed and manipulated as a single named unit e.g. in a Datamine process. Not data in memory.
Table	Data in memory organized in rows and columns (fields and records). Synonymous with a Datamine object.
Object	Data in memory (table). If it has a spatial context it will be a 3D object – points, strings, drillholes, wireframes and block models. Other objects are simply tables.
Loading into memory	The act of transferring data from a file on a physical device to the computer's memory.
Project Folder	The local system folder where the .dmproj is stored, by default, and where new and temporary files are stored by default
Data Links	Relationship with an original data source which allows any data saved as a Datamine file to be refreshed. Also refers to external data sources which were loaded directly into memory.
Archiving	The capture of all loaded data and settings at a specific time. Actual data is saved rather than links. The loaded data is saved into a separate Project File.
Sheet	A window, whether Design, VR, Plots etc. has at least one sheet which is a printable/plottable area. Some windows (Plots, Tables) may have many sheets.
Projection	A discrete view of the data in memory. The Plots window allows multiple projections to be displayed on a single sheet. Other windows (e.g. the Design window) follow the window : sheet : projection hierarchy on a 1 : 1 : 1 basis.
Overlay	A representation of a 3D object. An overlay has two main components: the object that it represents - shape, size and location in 3D space, and its formatting instructions. A single overlay can only represent a single object, but a single object may be represented by many overlays.

Functionality

Studio 2 Project File (.dmd)

Links to Datamine files in the project folder

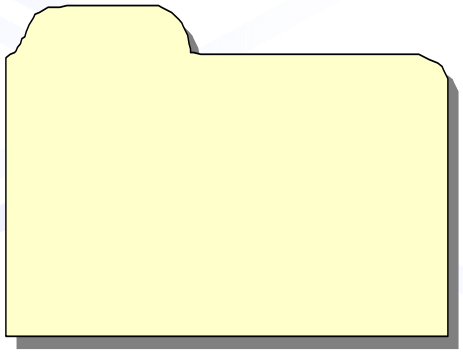
Links to other (non-Datamine) file saved as Datamine files

Process (batch command) history. Save and restore settings

Studio 2 Project File

For selecting and managing project data:

- Keeps links to Datamine files.
- Maintains links to files brought in from other data formats using the data source drivers. These are saved in Datamine format but can be refreshed from their original source.
- History files for batch commands (processes).



Studio 3 Project File

Still for managing and selecting data but with extra functionality:

- Keeps links to Datamine files in the project folder.
- Maintains links to files brought in from other data formats using the data source drivers. These are saved in Datamine format but can be refreshed from their original source.
- Keeps links to non-Datamine data loaded, using the data source drivers, into memory but not saved as a Datamine file (for display only).
- Keeps data and settings saved to an archive.
- Retains and manages legend information.
- Maintains toggles and settings.

Studio 3 Project File (.dmproj)

From Data Source

Links to data to be loaded automatically into memory

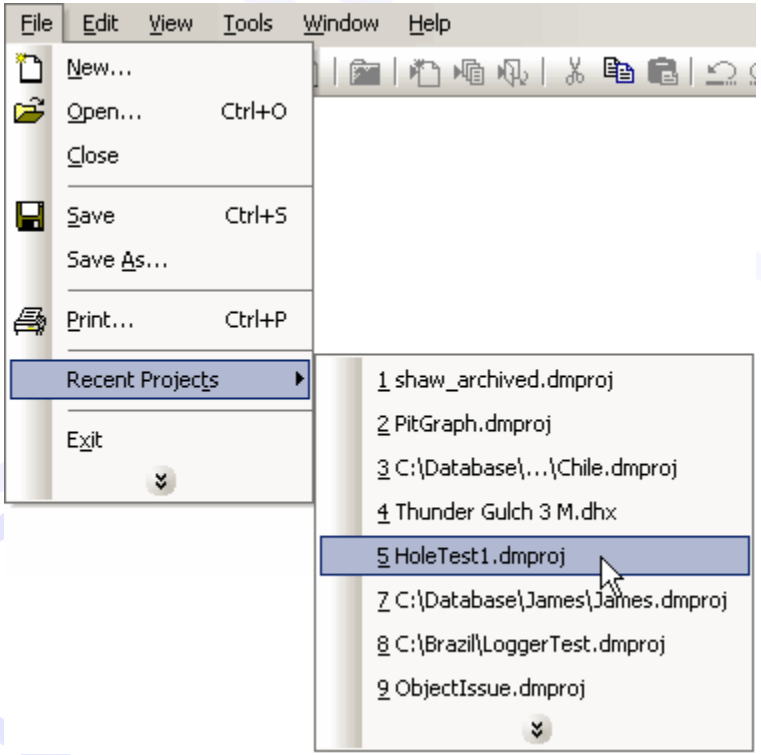
Archived Data

Legends

Toggle states and other Settings

Starting a Project

By default, Studio 3 opens with a “Start” page, which can be used to open a new or an existing project.

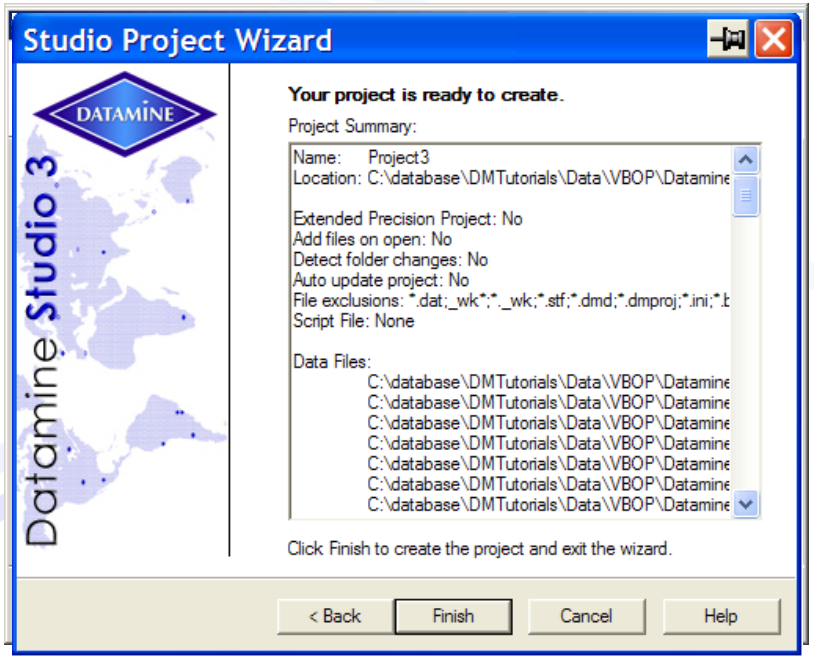


…but, as you would expect, you can also use the File menu.

Starting a Project – The Wizard

By default, Studio 3 starts a new project in single-precision.

- The wizard does have a check box for creating an extended-precision project
- Another check box will let you add all the files in the selected folder to the project.
- Choose which files you wish to add.
- Check the summary page to ensure that the project is as you would like it before completing the project creation.



Exercise: Create a new project

Install Studio 3!

Copy the folder containing the introductory tutorial data to a new folder:

- Open Windows Explorer and navigate to:
  C:\Database\DMTutorials\Data\VBOP
- Highlight and copy folder *Datamine*
- Create a new folder (*Studio3_Training*) under *C:\Database*
  C:\Database\Studio3_Training
- Paste the folder *Datamine* into *Studio3_Training*
  C:\Database\Studio3_Training\Datamine
- Rename folder *Datamine as Intro*
  C:\Database\Studio3_Training\Intro

Create a new Studio 3 project

- Open Studio 3
- In the *Recent Projects* pane select *Create Project*
- Use the Studio Project Wizard to create a new Extended Precision Studio 3 project *Train_Intro* in folder *Intro.*

NOW STOP!

Session 3 – The Interface

Introduction

The Studio 3 User Interface supports many more data views with corresponding contextual controls than earlier Studio versions.

Main Windows (Data views)

- Start Page, Files
- Design, Visualizer, VR
- Plots, Logs, Tables, Reports

Control Bars and Other Windows

- Project Files, Loaded Data, Sheets, Holes
- Properties, Data Properties.
- Compositor, Customization.
- Command, Output, Desurvey Report

Tool Bars

- Displayed according to work and view context.

Menus

- Both menu bars and context menus displayed according to work and view context.

Components

Studio 3 interface has many components: some familiar, some less familiar:

Title Bar – Program name, project name and whether saved

Menu Bar – Main menus context-linked to active window

Toolbars – Buttons for easy access to common commands

Control Bars – For navigating to files, objects and display overlays

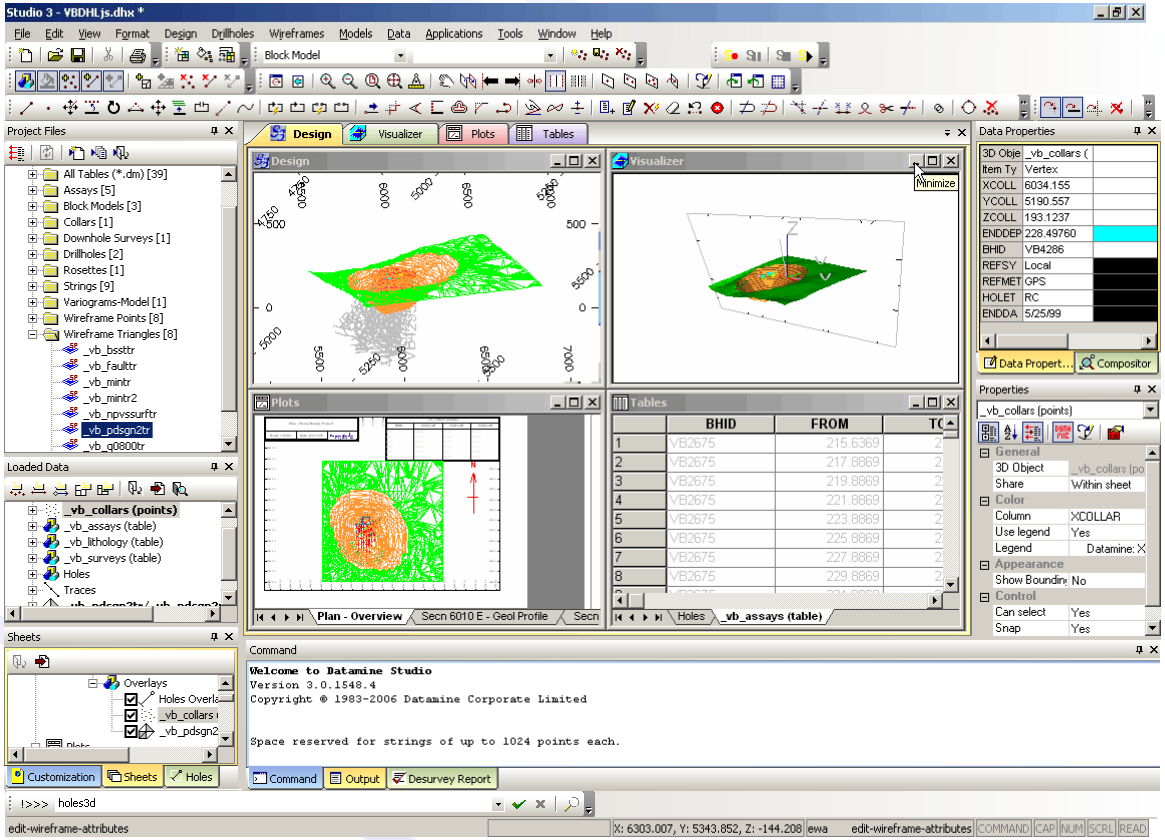
Control Bars – For changing settings for the project, windows, overlays etc.

Main Windows – For viewing and manipulating data objects and overlays: tabbed or tiled

Control Bars – For viewing progress and results of commands and processes

Command Bar – For browsing, entering and running commands

Status Bar – Shows tool tips, command progress and cursor position



Main (View) Windows

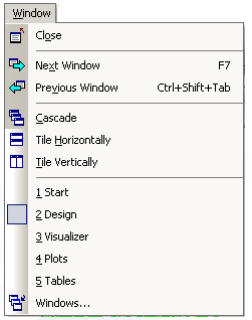
Studio 3 has nine main data viewing windows:

Design	As in Studio 2, but with enhanced rendering using Open GL, and with 3D manipulation using the mouse with the shift key. For data display and design work.
Visualizer	As in Studio 2. For rapid display and manipulation of 3D data.
Plots	From Downhole Explorer. Gives many views of loaded data and provides tools for setting up and producing plotted output.
Logs	From Downhole Explorer, it represents graphically drill core log using dynamically desurveyed data.
Tables	From Downhole Explorer, provides a tabular and graphical view of loaded data.
Reports	From Downhole Explorer, reports on data loading and validation.
VR	From InTouch, creates a 3D Virtual Reality world from the loaded data.
Start	New HTML window with tools for selecting and changing projects.
Files	New window which, when used with the Project Files control bar, provides the functionality of Windows Explorer within the program.

Arranging and Selecting Main Windows

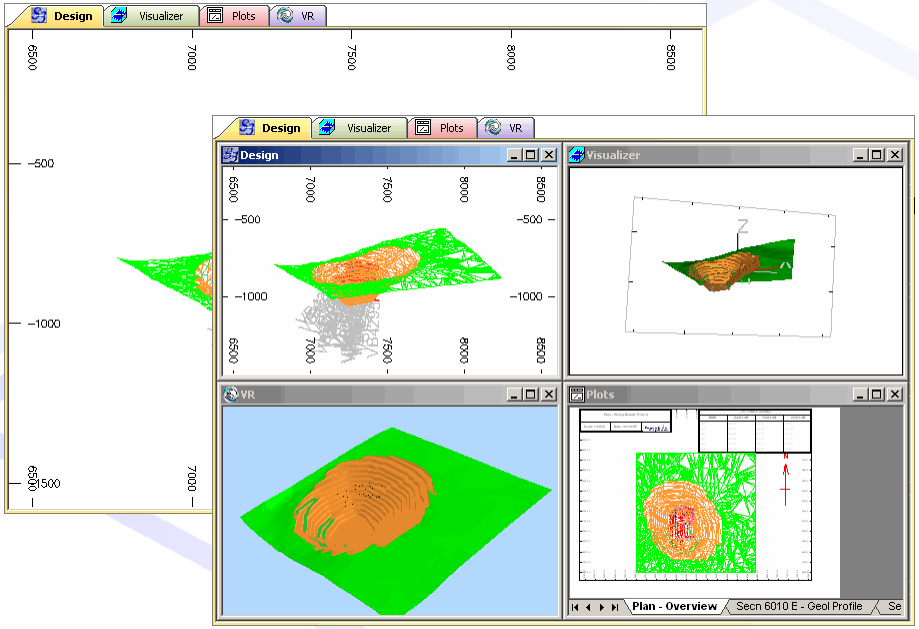
Studio 3 allows you to see as many windows as you wish and to arrange them as you prefer.

Use the Window menu options to select how to arrange the windows:



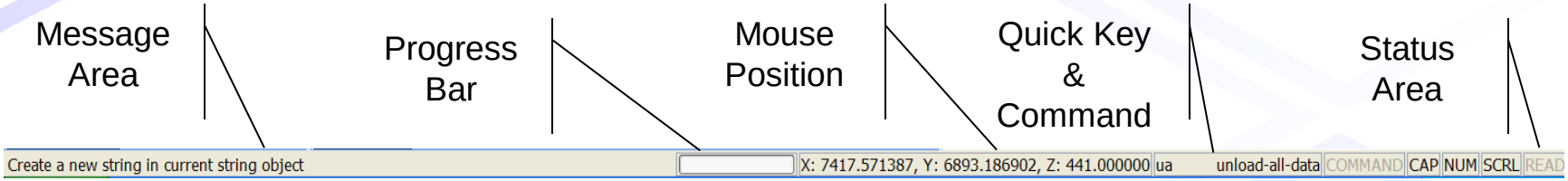
- As a single maximized window with tabs to allow movement between windows.

- As multiple windows tiled or cascaded with movement from one to the next using tabs or by clicking in the window.

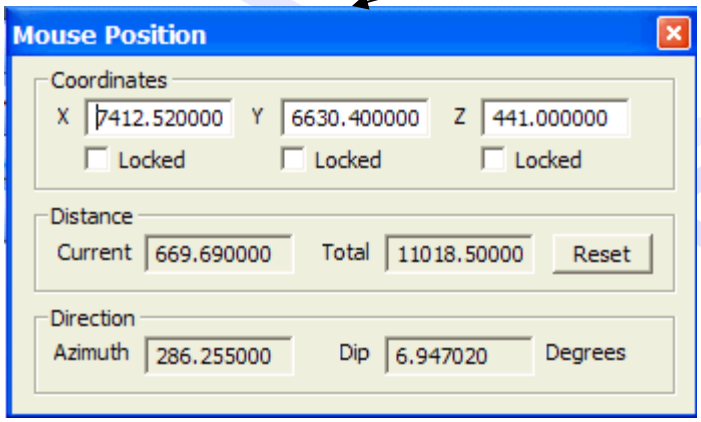


Status Bar

The application status bar has several distinct and defined areas, and it reports some of the information that used to appear in the Design Window status bar.



Double Click



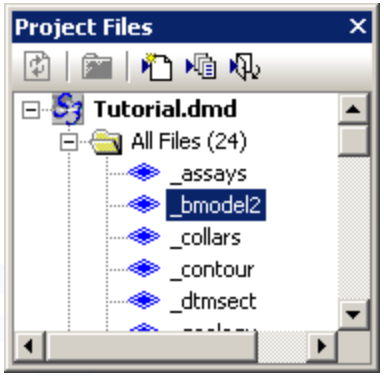
COMMAND	- indicates if a command running
CAP	- caps lock key status
NUM	- number lock key status
SCRL	- scroll lock key status
READ	- read only status of current document

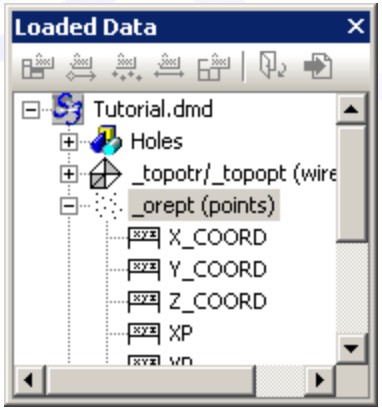
Control Bars – For Navigation

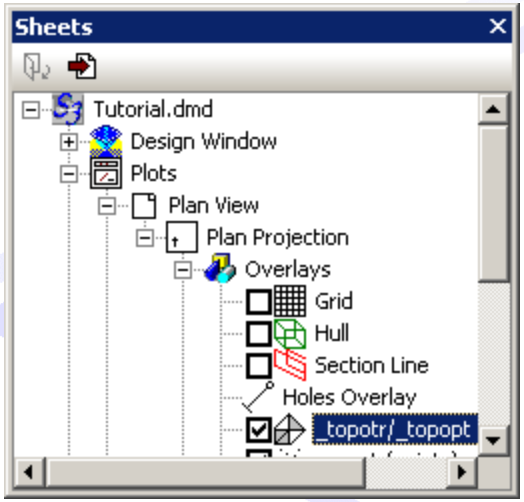
Project Files, Loaded Data, Sheets and Holes

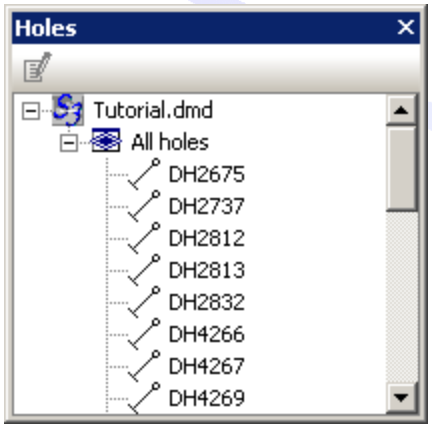
These control bars deal with the data in different states and program locations; each provides access to data in a specific state and facilitates selection and manipulation:

- **Project Files** – Lists, and categorizes, all files (data on disk) in the project. Provides standard "file" functions: Open, load, copy…
- **Loaded Data** – Shows the data loaded into memory as tables (objects) and 3D objects (displayable data). Highlights the "current object" of each data type. Supports unloading, reloading and data refreshing actions.
- **Sheets** – Lists overlay representations of objects in various projections, sheets and windows – Provides access to display formatting options.
- **Holes** – Allows different subsets of drillhole data to be defined and displayed.





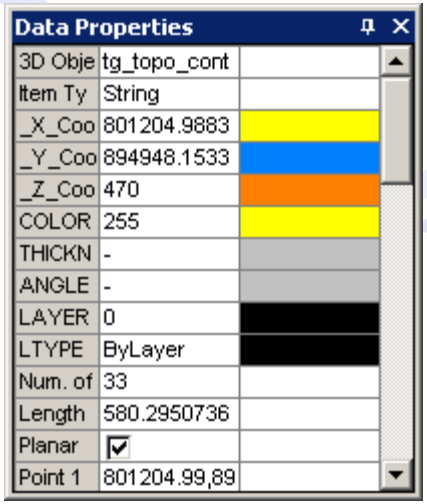


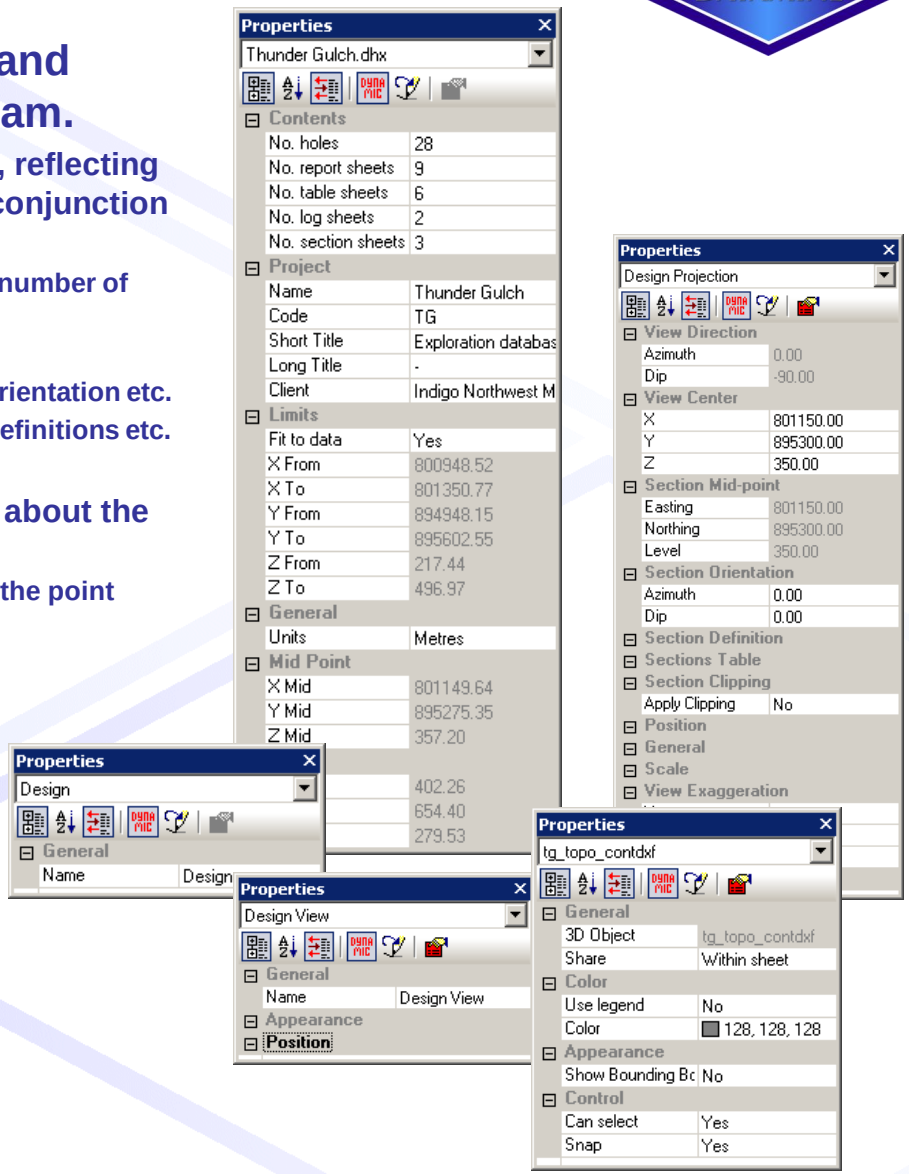


Control Bars – Properties and Data Properties

Other control bars deal with the properties and settings of specific aspects of the program.

- The Properties control bar operates on several levels, reflecting the hierarchical structure of the program – Works in conjunction with the Sheets Control Bar.
  - Project Level – Project specific properties: project name, number of sheets in each window, number of holes and data limits.
  - Window Level – Name of window.
  - Sheet Level – Name of sheet, sheet specifications: size, orientation etc.
  - Projection Level – Name of projection, section and view definitions etc.
  - Overlay level – 3D object represented, legend etc.
- The Data Properties control bar provides information about the current selection in the active window.
  - Information is specific to the type of data selected and to the point selected. Can be used like “query point”.





Control Bars – For Showing Output

Studio 3 has three control bars for providing feedback on queries or process/command progress:

- Command window and Output window – Both work in conjunction with the Design window.
- Compositor – Works with the Plots, Logs and Tables windows.

Command Window

- Reports on progress of process execution.
- Has a toolbar for entering command or process name. Includes a Run Command button and a Find Command button.

Output Window

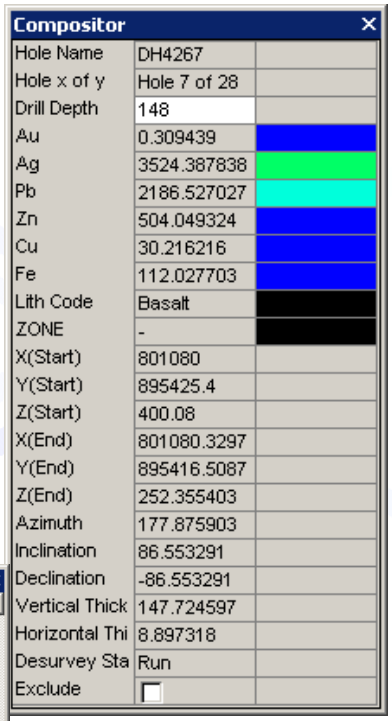
- Reports on interactive queries in the Design window.

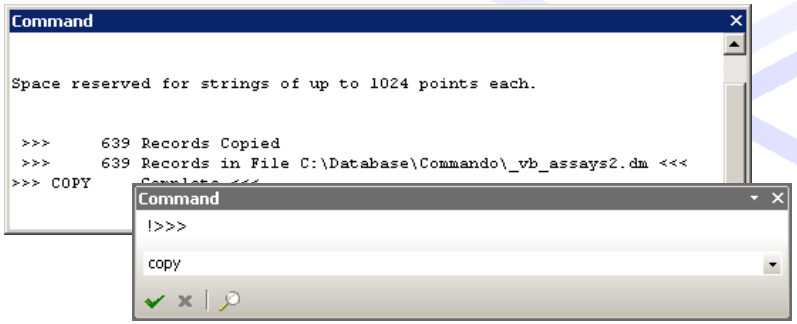
Compositor

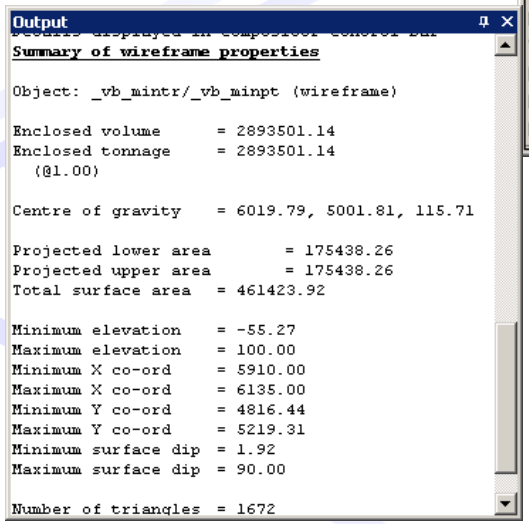
- Feeds back data from querying drillhole data in the plots, logs and tables windows.

Desurvey Report

- Reports validation information and errors for dynamically desurveyed drillholes.







Appearance and Customization

We all work best when we are comfortable with our environment.

Studio 3 is easy to customize and you can create profiles to suit the type of work you are doing.

Work Space

- Studio has autohide controls that slide away when not needed – Maximizes work area.
- Studio has an intuitive tool which assists in the organization of controls: grouping them appropriately and placing them in helpful locations.
- You can choose which toolbars, if any, you wish to display.
- You can save your favoured arrangements as restorable profiles.

Appearance

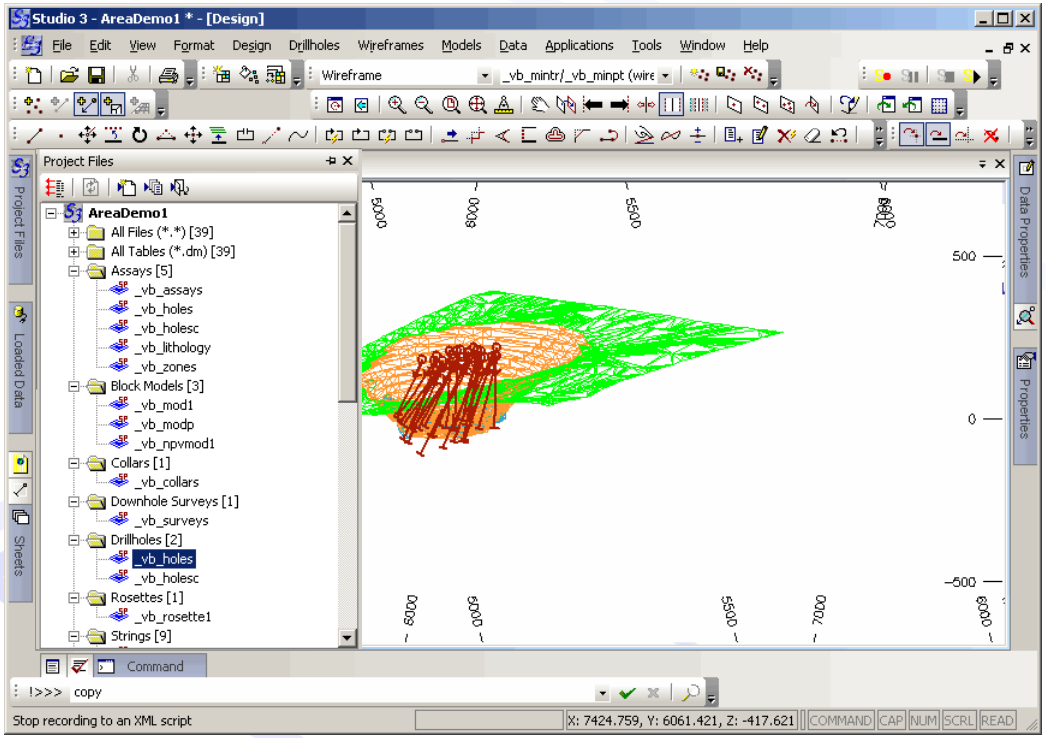
- Studio has a number of “look and feel” options. These might appear cosmetic, but they can help to make the display clearer depending upon your computer.

Maximizing Work Area

Studio 3 is a versatile program that provides many options for making best use of your computer screen area.

Think about the work you will be doing and select the tools that you will need.

- Autohide control bars using the tack buttons
- Arrange and group the control bars to suit the way you work
- Show only the toolbars that you need
- Use a second screen (dual monitors)
- Select an appropriate profile or create your own.



Profiles

Studio 3 provides a number of preconfigured profiles designed to help you to set up a work environment that suits you.

A profile is stored as an xml file.

A profile does not control the arrangement of the windows: maximized, cascaded, tiled etc. – These are saved in the project file.

It does control the arrangement of toolbars and control bars – It controls the controls.

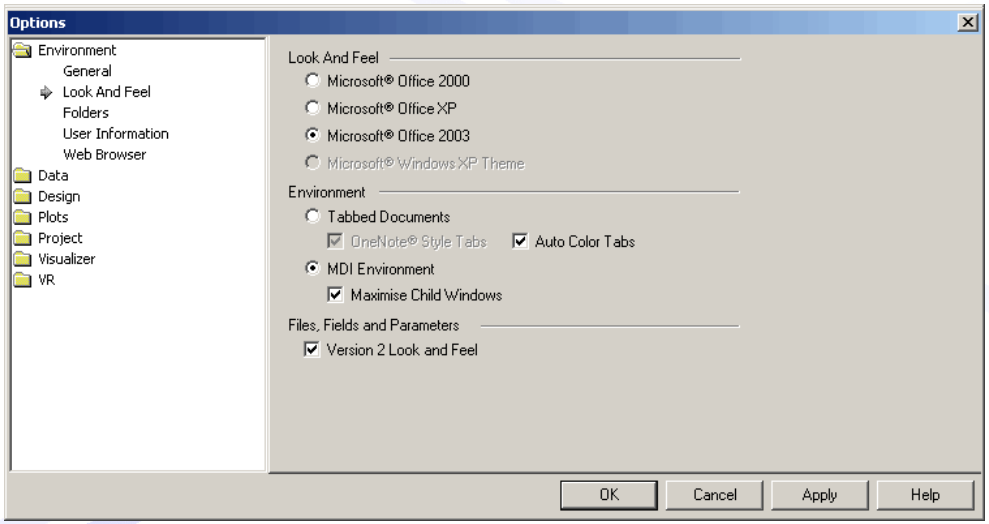
- The “getting started” pane of the Start window has a thumbnail of the current profile.
- The “Select” button opens a list of thumbnails for all the preconfigured profiles available.
- You can save the current working arrangement as a custom profile using “View | Customization | Customization State” from the menu.
- Any existing profile can also be loaded via this menu.

Look and Feel Options

The preferred look and feel of a program may be regarded (by some) as trivial, but we all work better when we are comfortable with our environment.

Studio 3 has several options for customizing its look and feel.

- Start the Options dialog from the menu
- Select the “Look and Feel” page
- Select and apply the various options
- The MDI (Multi Document Interface) environment has no tabs
- The “Version 2 Look and Feel” option refers to the appearance of the Studio process dialogs – this will be demonstrated.



Exercise: Interface and Profiles

Investigate the various options for positioning windows and control bars:

- Open and close windows and control bars by right clicking in the menu area and using the context sensitive menu.
- Use the Windows drop down menu.
- Use the  pin to select / deselect autohide.
- Move a control bar by dragging the title bar and position it using the arrows on another bar.
- Select the right click menu on the title bar of a control bar and choose Floating, Docking, Auto Hide or Hide.

Load and Save Profiles

- Examine the different profiles that are provided from the Start window.
- Create and save your own profiles.
- Close the project and then reopen it to see what configuration is restored.

Window Sensitive Menus

- Change focus to a different main window and examine the menus
- Test the “Tools | Customize” menu

Session 4 – Data

Data Precision - Introduction

Early versions of Studio were restricted to Single Precision (SP) format.

The Extended Precision (EP) option was introduced in Studio 2.1.

Advantages of EP include:

- More significant figures for coordinates,
- Block models can include many more parent cells,
- More fields in files (maximum of 256 against 64).

QA procedures have been set up to validate the results of the EP version.

SP is the default format for new projects in the first release of Studio 3.

At some stage in the future only the EP option will be available.

Data Precision – The Details

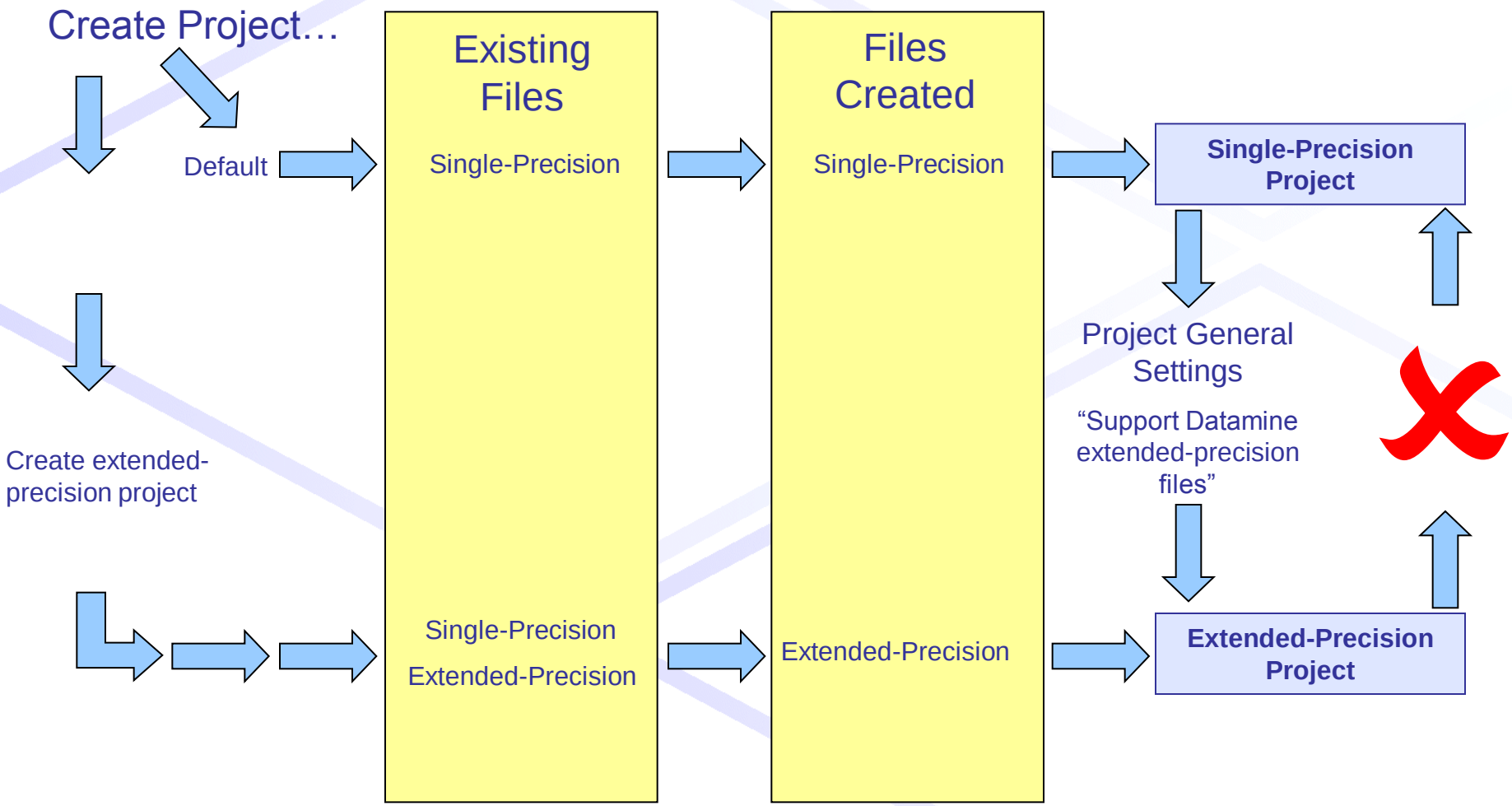
Both single and extended precision formats adhere to the IEEE-754 standard.

Precision	Minimum Value	Maximum Value	Significant Digits
Single	1.17549435E–38	3.402823E38	7
Extended	2.2250738585072014E–308	1.797693134862316E308	16

One of the main advantages of extended precision is the much greater IJK index value that can be used in a block model.

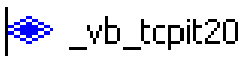
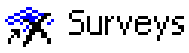
Precision	Maximum IJK
Single	9,999,999
Extended	2,147,483,646

Data and the Project File



Data Type Symbols in Studio 3

The Project Files control bar lists all files within the project whatever the format. Studio 3 uses symbols to help you to identify the data. Standard symbols are used for Non-Datamine formats (e.g. text).

Symbol	Description
	Single-precision Datamine format file in the project working directory.
	Single-precision Datamine format file imported to the project from another data format using the Data Source Drivers.
	Existing single-precision Datamine file added to the current project (not in the working directory).
	Single-precision Datamine format file imported to the project from another data format using the Data Source Drivers – Compressed on disk.
	Extended-precision Datamine format file in the project working directory
	Extended-precision Datamine format file imported to the project from another data format using the Data Source Drivers.
	Existing extended-precision Datamine file added to the current project (not in the working directory).
	Extended-precision Datamine format file imported to the project from another data format using the Data Source Drivers – Compressed on disk.
	Datamine file that is in the project but whose physical file cannot be found (in this case, an uncompressed extended-precision file)

Studio 3 Data Categories

The data in a Studio 3 project is divided into seven categories depending on the format, the location and how they are accessed.

Data Type	Description
Datamine file (.dm)	Datamine files in the project.
Distributed Datamine file (.dm)	Datamine files in other locations.
Imported by DSD and cached as Datamine file (.dm)	Datamine files created in the project from a DSD import. Can be refreshed from their original source.
External Data, automatically imported	Data which is always loaded into memory, from an external data source, when the project is opened. Uses DSD.
Archived Data	Data, stored in the Project file, which is loaded into memory when the project is opened.
Other Files	All other file-based data relevant to the project such as .htm, .mac, .xls, .doc , gvp replay files, .bmp , emf, etc.
Memory Only Data	Stored in memory but not saved to file.

Loading Data Types

What data have you got? Where is it and what do you intend to do with it?

In that case:

Data format	In Project	Purpose	Relevant menus
Datamine	Yes	Display	Data | Load | Points, Strings etc
		Processing	!>>> Commands
	No	Display	Data | Load | External Datamine File | Points, Strings etc.
		Processing	File | Add To Project | Existing Files..
Non-Datamine	Yes	Display	Data | Load | Data Source Driver | Collars, Surveys, etc
		Processing	File | Add To Project | Imported From Data Source
	No	Display	Data | Load | Data Source Driver | Collars, Surveys, etc
		Processing	File | Add To Project | Imported From Data Source

Loading Data into Memory

Non-Datamine Data

- All non-Datamine data must be loaded using a Data Source Driver.

Datamine Data

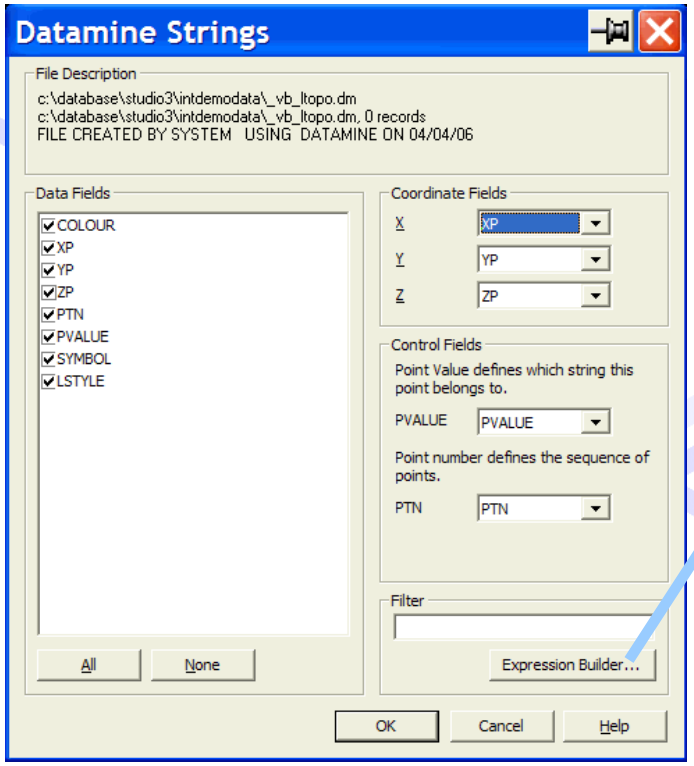
- Datamine data can be loaded in a number of ways:
  - Drag-and-drop a Datamine file from Windows Explorer into one of Studio's display windows.
  - Drag-and-drop a Datamine file from Project Files control bar into one of Studio's display windows.
  - Right-click on a file in the Project Files control bar and select Load from the context menu.
  - Choose Data | Load | Points… Strings… Wireframes… etc. from the main menu.
- Pressing the Ctrl key whilst loading will, for all methods, open the filter dialog for filtering data on loading.

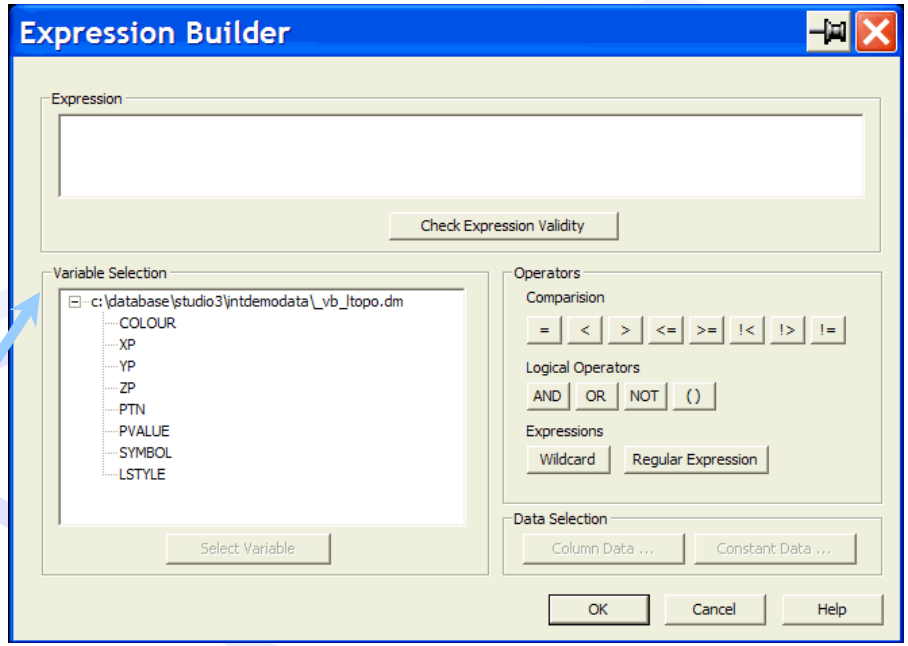
Filtering Data on Loading

When loading Datamine data, press the Ctrl key to open the Filter dialog.

The one below is for a string file.

- The Data Fields check boxes let you select which fields to load.
- You can also add a filter expression directly into the Filter box or use the Expression Builder to help you.





Controlling Loading Data

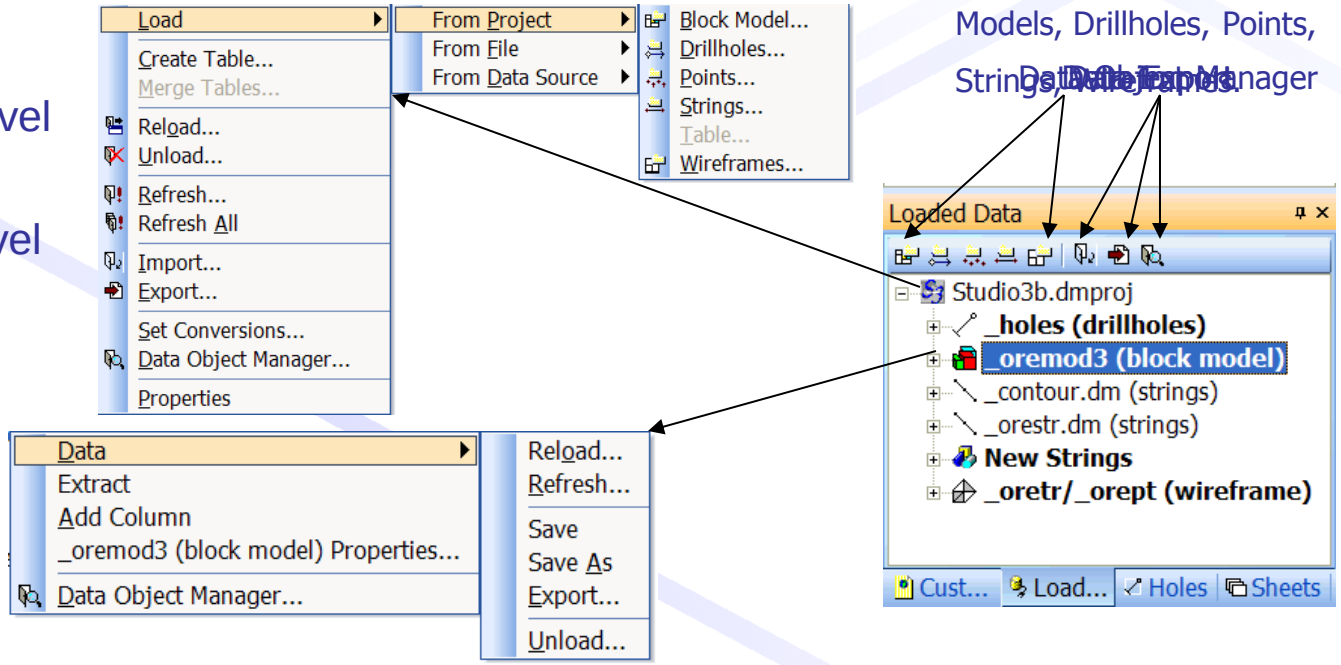
Once data is loaded into Studio 3 it becomes objects; each file being loaded as a separate object.

Studio 3 provides a fast, intuitive tool for managing (unloading, reloading and refreshing) data – The Loaded Data control bar.

It has several useful tool buttons…

…and each level has its own context menu with appropriate options.

- Project level
- Object level



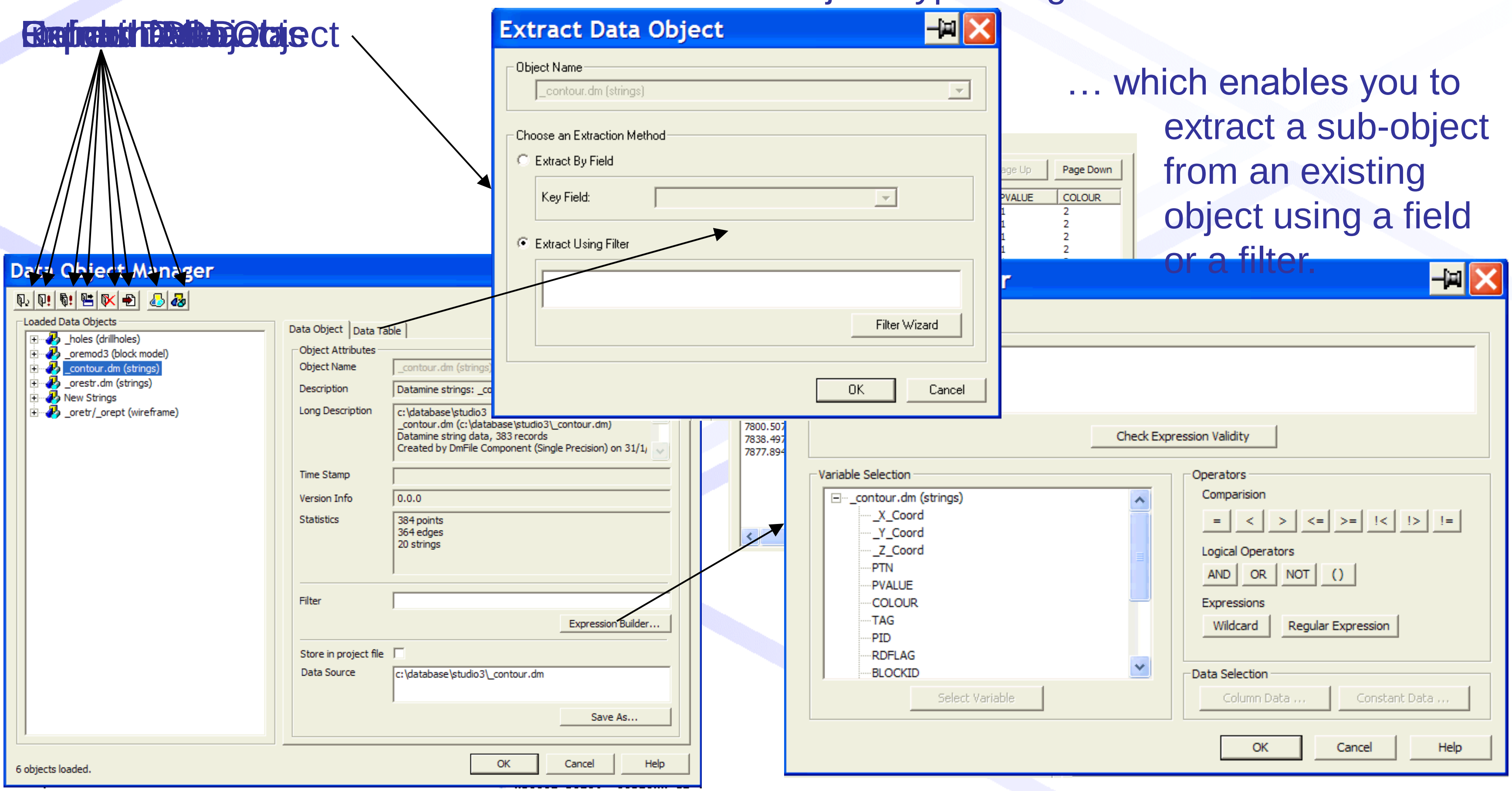
Data Object Manager

The Data Object Manager is a powerful tool for interrogating and manipulating objects.

It displays all loaded objects in the Loaded Data Objects panel.

It has buttons for many of the main data actions:

Extract Data Object

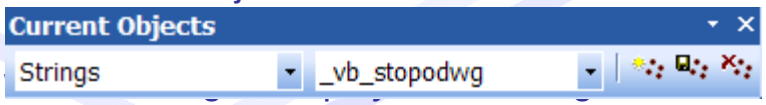


… which enables you to extract a sub-object from an existing object using a field or a filter.

Exercise: Data

Try the following:

- Click  the Project Files control car (PFCB) to contract all categories.
- !COPY file _vb_assays to temp1 and examine both files in the Files window and the Properties control car.
- Highlight the Assays category in the PFCB and examine the Files window.
- Open the Project Settings dialog (File | Settings or right click in Design window and select Settings). Examine “General”.
- Double click the Mouse Position bar, and test options.
- Load c:\database\DMTutorial\Data\VBOP_vb_stopo.dwg directly into memory (right click in Design window | Load | External data source).
- Drag and drop a model file from Windows Explorer or PFCB.
- Click a model cell in the Design window and examine the Data Properties Control Bar.
- Test the options on the Current Objects Menu Bar. Create a new string. Link strings to create a new wireframe.
- Use the Control key
- Test options on the Loaded Data Control Bar
- Test options on the Data Object Manager



Session 5 – Drillhole Data

Introduction

Studio 3 has very powerful drillhole processing, providing two routes for desurveying drillholes; each with its own benefits.

Static Desurveying – using files in Datamine format.

- Uses Datamine collars, surveys and sample (assay, lithology) files.
- Uses HOLES3D process to create a Datamine desurveyed drillhole file.
- Produces a Datamine desurveyed drillhole file which can only be changed by running the HOLES3D process again – Hence STATIC.

Dynamic Desurveying – using data loaded into memory.

- Uses collars, surveys, assays, lithology etc. tables loaded into memory. These may be any data format: text, ODBC, Datamine, etc.
- The purpose of each table is identified in the context of the desurvey process – Desurveying is then automatic and on-the-fly, creating and displaying drillhole traces and downhole columns.
- Refreshing with modified data will update the drillholes automatically – Hence DYNAMIC.

Static Drillholes

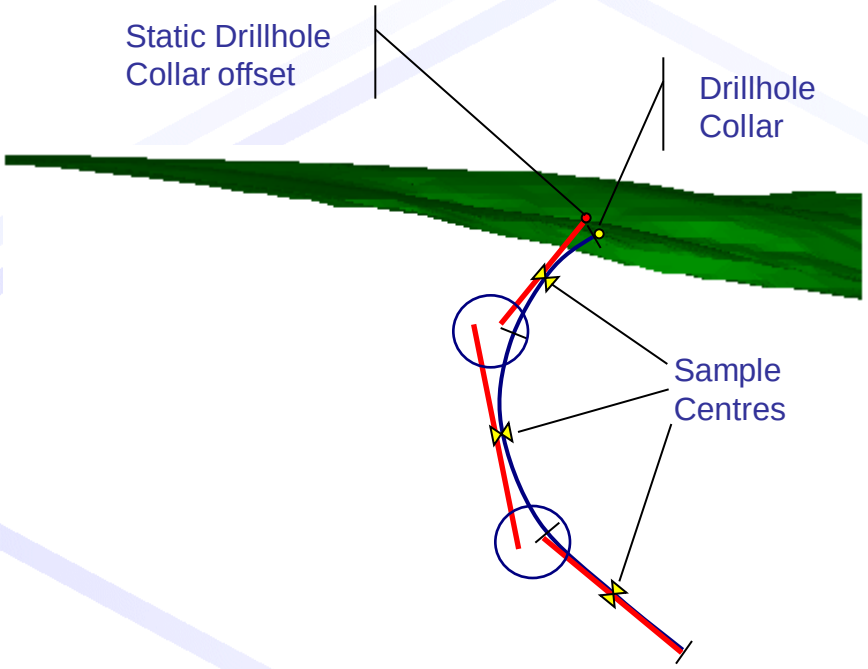
Static and dynamic desurvey methods use the same algorithm…

… but they represent the trace of a curved drillhole differently for very good reasons.

All drillholes start from a collar location.
When the hole is drilled, it may curve depending on the condition of the ground.
The hole is divided into sample lengths…
…and the sample centre points are located.

Static Drillhole requirements and how achieved:

- Sample centre should be a the correct location.
- Sample length should be correct.
- Sample represented as a tangent to the centre point with the correct length.



There are one or two drawbacks:

- Collar will be offset for curved drillholes.
- There will be gaps between samples.

Dynamic Drillholes

Remember – The desurvey algorithm is the same.

This describes the dynamic representation.

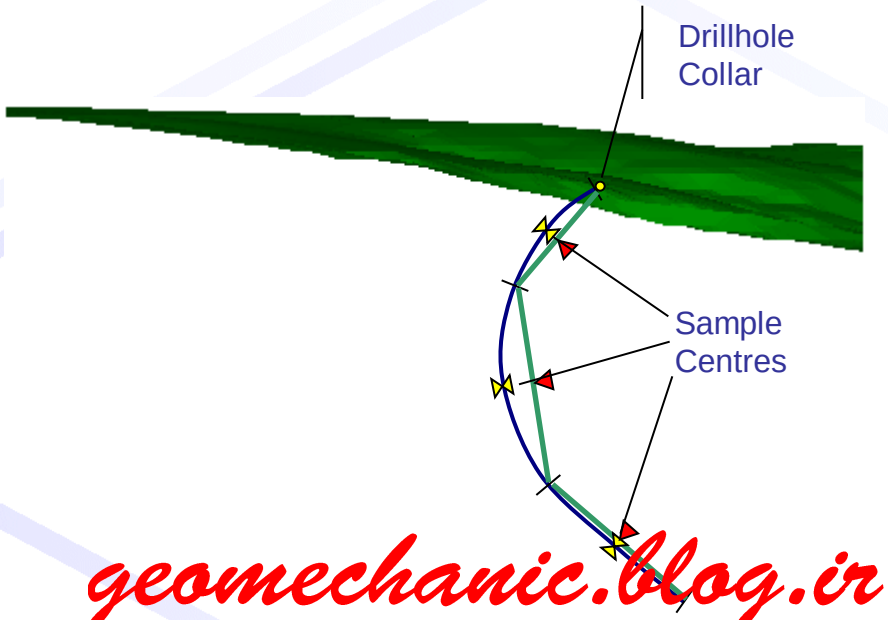
As before, the drillholes being represented start from a collar location.
When the hole is drilled, it may curve depending on the condition of the ground.
The hole is divided into sample lengths…
…and the sample centre points are located.

Dynamic Drillhole requirements and how achieved:

- Samples should meet and form a continuous trace.
- Drillhole collars should be in the correct locations.
- Sample drawn between sample end points including collar.

Again, there are one or two drawbacks:

- The samples are not the correct length (short).
- The sample centre points are offset.



Uses and Differences - Summary

Static and dynamic desurvey methods use the same algorithm…

- … but they represent the trace of a curved drillhole differently for very good reasons.

We need statistically valid drillholes for:

- Interpolating grade values into block models.
- Resource categorization.

Static Drillhole properties:

- Sample length is correct.
- Sample represented as a tangent to a curved drillhole.
- Centre point of sample is correctly located in space.
- Collar may be offset for curved drillhole.
- May have gaps between samples.

We need a continuous representation of drillholes for:

- Geological interpretation.
- Presentation.

Dynamic Drillhole properties:

- Represented sample length shorter than real sample length.
- Sample represented as a chord of a curved drillhole.
- Sample start and end points are correctly located.
- Collar position is correct.
- No gaps between samples.

In Summary:

- A static drillhole is statistically correct for use in interpolation processes.
- A dynamic drillhole is a better graphical representation and more suitable for geological interpretation.

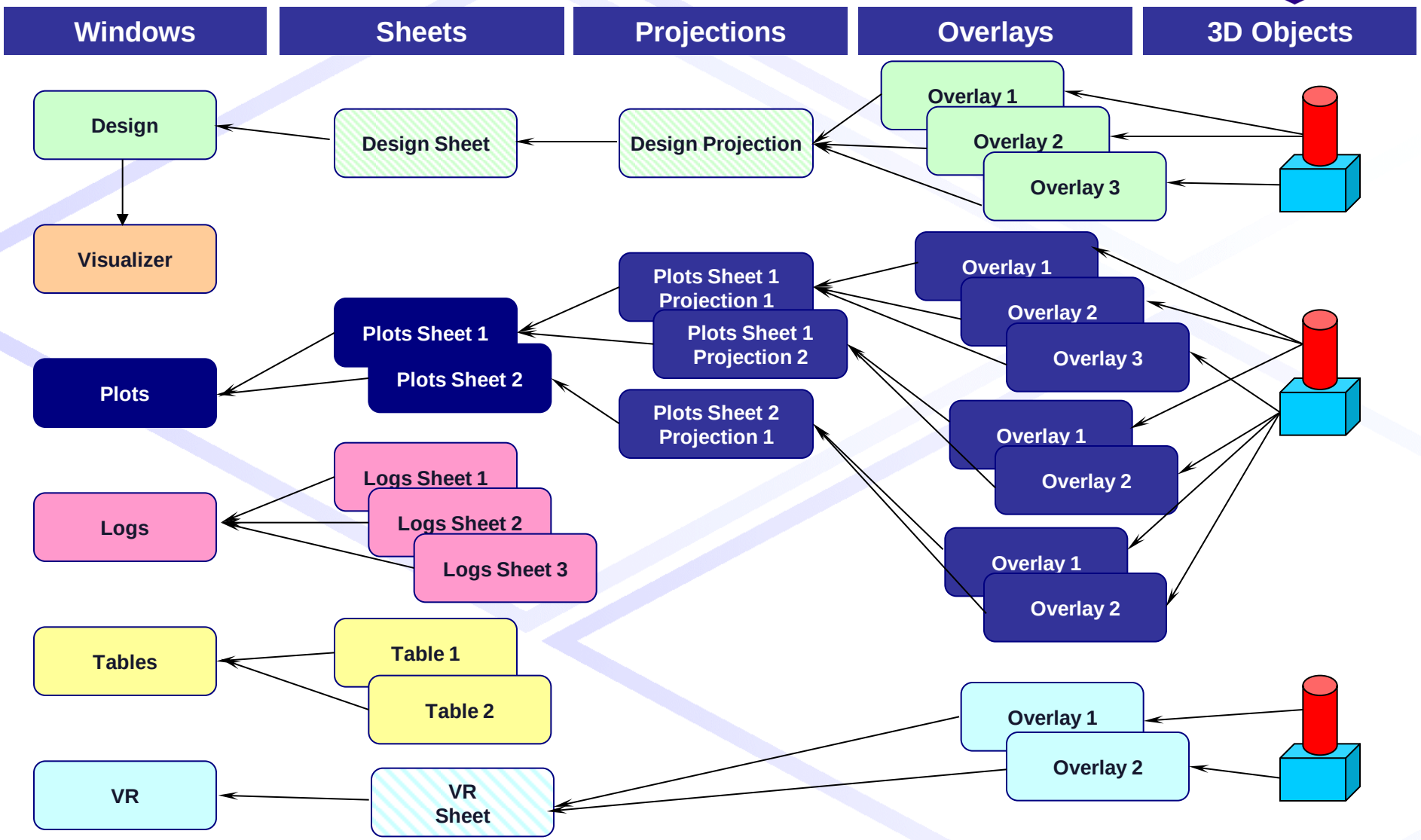
Session 6 - Overlays & Legends

Glossary

Studio 3 is a multi-layered environment, containing windows, sheets, projections and overlays in a common display hierarchy:

Main Window	The highest level of display – A window contains one or more sheets. Examples: Design, Visualizer, VR, Plots etc.
Sheet	The means for showing more than one view of the data (3D objects) within a single window. In the common, display hierarchy, each window (Design, VR, Plots etc) has at least one sheet. Some windows (Plots, Tables) have many sheets.
Projection	A discrete view of the data in memory. The Plots window allows multiple projections to be displayed on a single sheet. Other windows (e.g. the Design window) follow the window : sheet : projection hierarchy on a 1 : 1 : 1 basis.
Overlay	A representation of a 3D object. An overlay has two main components: the object that it represents - shape, size and location in 3D space, and its formatting instructions. A single overlay can only represent a single object, but a single object may be represented by many overlays.

Display Hierarchy

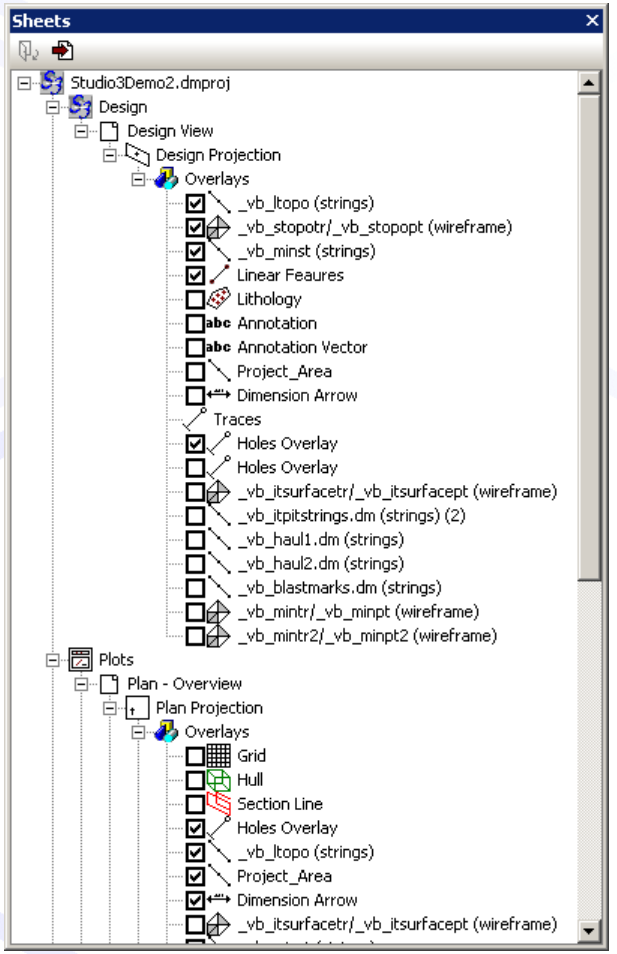


Controlling Display

The Sheets control bar is the nerve centre of Studio 3's display control. It consists of a tree which expands to reflect the display hierarchy:

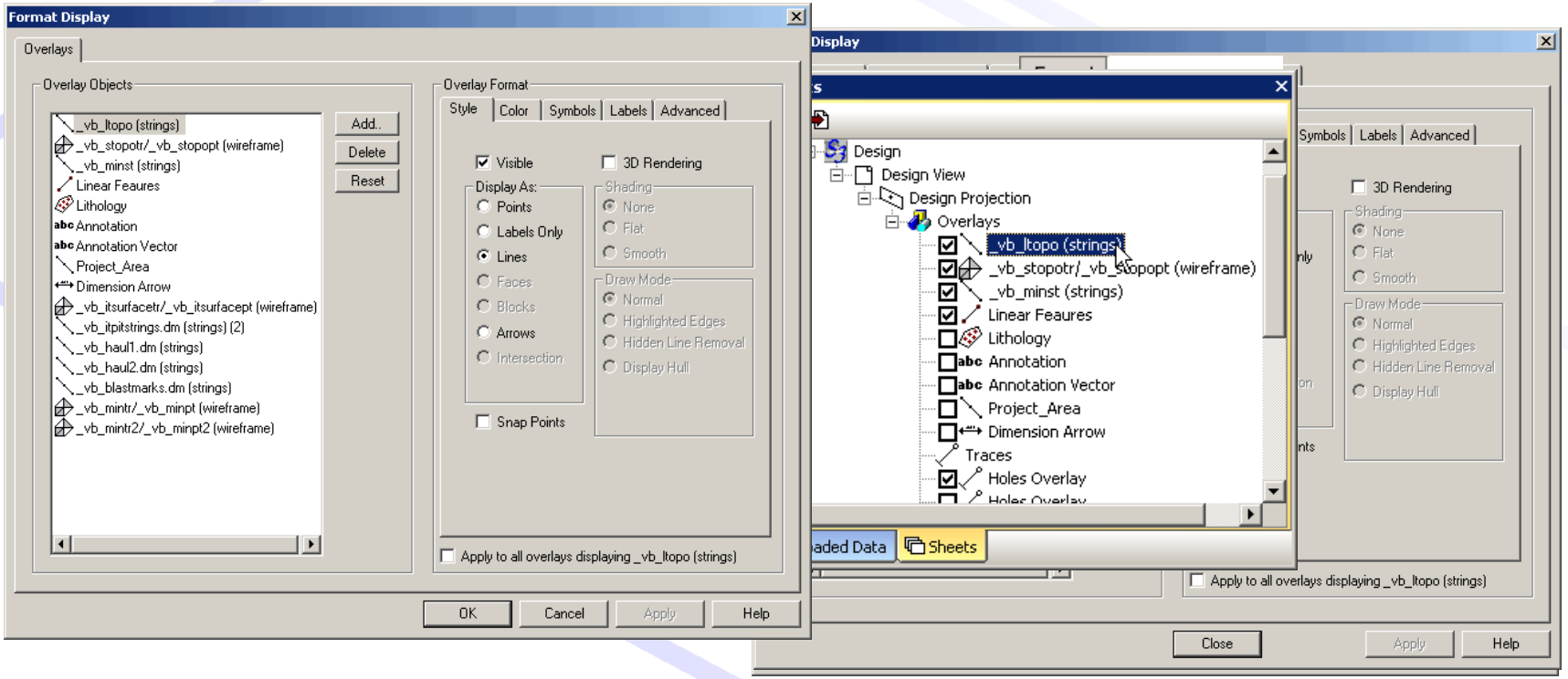
- Windows
- Sheets
- Projections
- Overlays

- It controls which overlays are visible within each projection.
- Double-clicking an overlay opens the Format Display dialog for that overlay.



Formatting the Display

The appearance of overlays in the main display windows is controlled by the Format Display dialog, which can be reached in several ways:



- Note that the dialog opened from a menu (right) is slightly different from the “double-click” dialog, which is specific to overlays.

Exercise - Format Display

Try the following:

- Open the Format Display dialog (Format | Display) and examine the Help!
- Load different data types:
  - Points, strings, drillholes, wireframes, block models.
- Examine the Sheets control bar. Expand the Design tree.
- Double click an overlay (object) name to open the Format Display dialog.
- Examine the range of tabs for each data type. Change the values and apply.
- Re-colour objects by selecting a different legend (Color tab) or choose a fixed colour.
- For wireframe faces choose “Filled” colour and select “3D rendering” on the style tab. Vary the “shading” and “draw mode” options and get a feel for what each does. Press the shift key and use the mouse to rotate the view. Compare this with normal rendering.
- Do the same for the block model.
- Display points as “labels only”. Use reset on the “labels” tab to list the fields that can be used. Choose the position for the label relative to the point and format the label.
- Create two overlays for the wireframe object – one for displaying the triangles and one for displaying the wireframe slice.
- Use the Drillhoel formatting options, including Downhole Columns.

Legends

- The default appearance of all loaded data in ***Studio 3*** is controlled by a legend.
- A legend is a convenient way of assigning a consistent but unique appearance to a predefined value or range of values. By creating and using legends, the representation of data may be made both distinctive and consistent between projects.
- Legends provide everything you need to control the line-styles, patterns, symbols and colours necessary to enhance the presentation of your data, and aid its interpretation.
- Each overlay can be displayed using its own legend.
- There are three types of legend: System Legends, Project Legends and User Legends.

Legends – Types of Legend

- **System Legends** are provided with the installation and are data independent.
  - They cannot be edited or deleted. They can, however, be copied and pasted to the other legend categories where the copies may be edited.
  - They are stored in the Legends folder (...Program Files/ Common Files/ Earthworks/ Legends).

- **Project Legends** are stored in the project file.
  - They are created automatically when data is loaded into memory.
  - They are created automatically when Data Source Drivers are used to import data, and referred to as Driver Legends.
  - They can be created by the user through the Legend Wizard.

- **User Legends** are stored independently of the project.
  - They can be shared between different projects.
  - By default they are stored in C:\Documents and Settings\<username>\Application Data\ Datamine\ Legends\ user.elg. However they may be saved to and loaded from any location.
  - They can be created by the user through the Legend Wizard.

Legends – Key Features and Functions

- **Legends Manager** provides some very powerful tools for creating, editing and managing legends.
  - The default appearance is a list box displaying the SYSTEM, USER and PROJECT legends currently loaded..
- **Legend Wizard** aids creation of new legends.
  - The legend wizard is a quick way to create legend items covering the full value range of an object field. The Legend Wizard takes you logically from step to step to produce a functional legend.
- **Creating a new legend**
  - From the Legends Manager, click the **New Legend** button.
  - The wizard will help you every step of the way.
- **Modifying a legend**
  - From the Legends Manager, ensure that the desired legend tree (e.g. USER) is expanded to reveal the current legend names.
  - Expand the required legend to show the intervals, select one and click the **Edit** button.

Exercise - Legends

Try the following:

- Open the Legends Manager (Format | Legends) and review the Help!
- Create a legend for each data type and save them as Project Legends.
- Copy a Project Legend to a User legend.
- Load the grade model (_vb_modgrd) and apply the default legend for AU.
- Examine the correspondence between the colour of a cell in the Design window and the AU colour in the Data Properties control bar (they should be the same!).
- Edit the default AU legend, and make sure the colours in the Data Properties control bar still match.
- Create a new legend using Object Field ZONE, and select the Unique Values and Convert to Filter Expression option. Examine and apply the resulting legend.

Session 7 – Table Editor

The Table Editor

- Is a standalone tool for viewing, creating and editing Datamine (.dm) files. It can be run from within Studio or by double-clicking on a .dm file in Windows Explorer.
- It can create standard Datamine files using templates (e.g. points, block models, strings, section definitions etc.).
- It can save a Datamine file as a CSV file and it can open CSV files.
- It supports single and extended-precision file formats and converts between them.
- It has an interface based on the look and feel of Excel.
- It has a scriptable interface.

Table Editor – Glossary

Field Name	A description of the data contained in a vertical column of cells. Maximum 8 characters.
Column (Field)	A vertical list of cells
Row (Record)	A horizontal list of cells
Implicit Field	A column for which the value is the same for all records, and is only stored once.
Explicit Field	A column for which the value may differ between records and is stored individually for each record.
Table	A 2D matrix of columns and rows
Numeric Field	A field containing an integer or real number
Alphanumeric Field	A field that may contain a mixture of alpha and numeric characters. Each group of 4 characters uses the same storage space as one numeric field.

Exercises – Table Editor

Try the following:

- Take a copy of a file eg _vb_stopo and open it in the Table Editor.
- Review Help!
- Use all the tools on the tool bars.
- Use the Definition Editor to define a new points file.
- Copy and paste to and from multiple occurences of the Table Editor and/or Excel.

Try the Previewer:

- Right click menu from Project Files control bar or from Windows Explorer

Session 8 – Wireframes

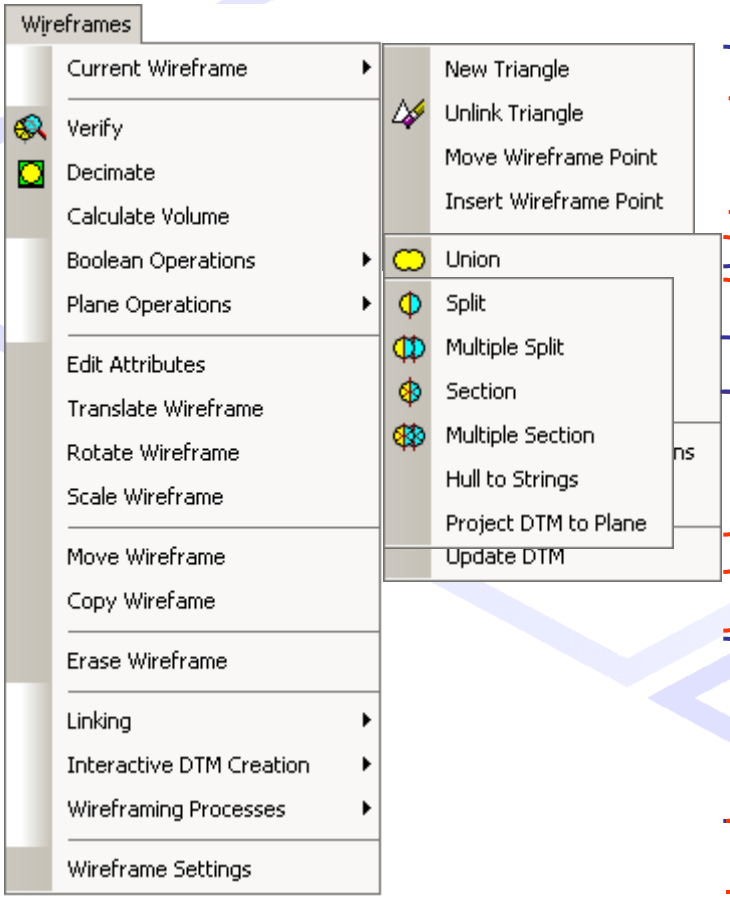
Glossary

Wireframing and Boolean Definitions:

Decimation	Reduction of the quantity of data (points and triangles) required to represent an object.
Verification	Removal of duplicate points and faces.
Union (Boolean)	Creates a single wireframe object with the same surface appearance and characteristics as the two component wireframes together. Any common volume is not distinguishable.
Intersection (Boolean)	Creates a single wireframe from two, consisting of the common volume of the two.
Difference (Boolean)	Creates a single wireframe from two component wireframes by removing from the first wireframe any volume that is common to the second. X-Y is different from Y-X.
Extract Separate (Boolean)	Creates a separate wireframe for each logically discrete piece of a two wireframe interaction. Includes "differences", "intersections" etc.
Cookie Cutter	Excludes any of the second object from the resultant object in a Boolean operation.
Split	The separation of a wireframe into two at the intersection with a plane.
Section	The creation of a string along the intersection of a wireframe object with a plane.

The Wireframes Menu

This overview of the menu summarizes the changes to wireframing and to the Boolean operations.



These commands have been moved, but not changed.

This command has not changed.

These commands have been rewritten.

These commands have been rewritten.

These commands have not changed.

This command has changed.

Summary of Changes

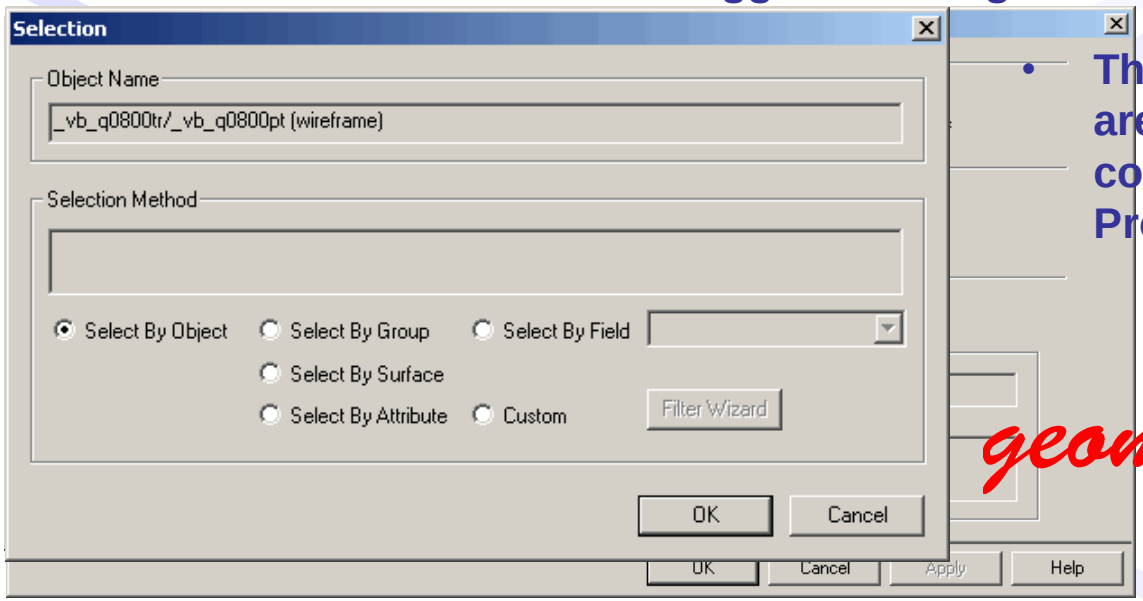
The wireframing capabilities of Studio 3 have been greatly enhanced from those of previous versions. The main changes are:

- New look and feel – Common dialog for similar commands.
- Options specified up front (using the dialog)
- New Boolean engine which is:
  - Faster.
  - Able to cope with some wireframes which failed previously.
- Selection by whole object, but group, surface and attribute selection still available.
- Can translate, rotate and scale objects interactively.
- Boolean operations create new objects.

Wireframe Selection

The default selection method is by whole object. A single-object wireframe command will automatically select the current wireframe object.

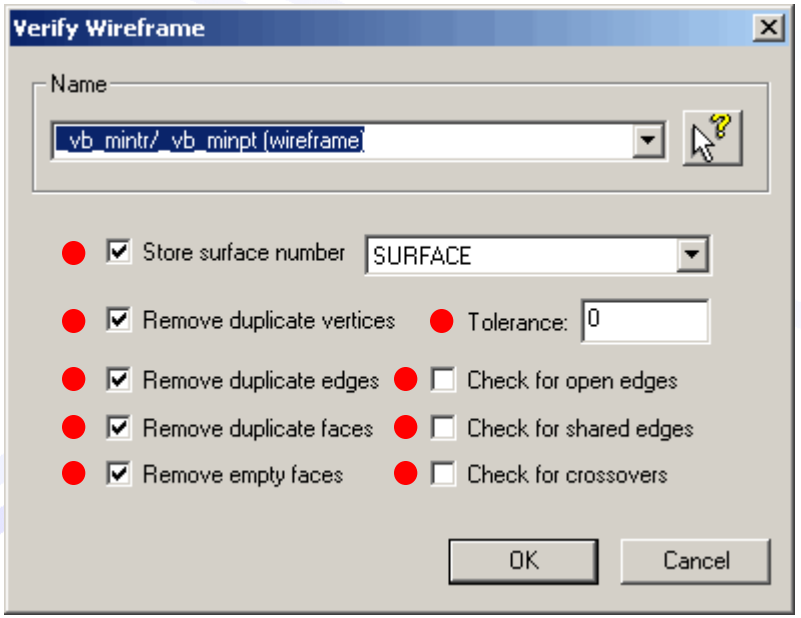
- Opening the combo box provides choice of other loaded wireframe objects.
- Clicking the “Pick” button enables you to select a wireframe by clicking in the Design window.
- When using the pick tool, the action is preordained by the Project Settings dialog – Provides a choice of default actions…
- …or no default action which triggers a dialog with the Pick tool.



- The same selection options are available on picking as could be set using the Project Settings dialog.

Wireframe Commands - Verify

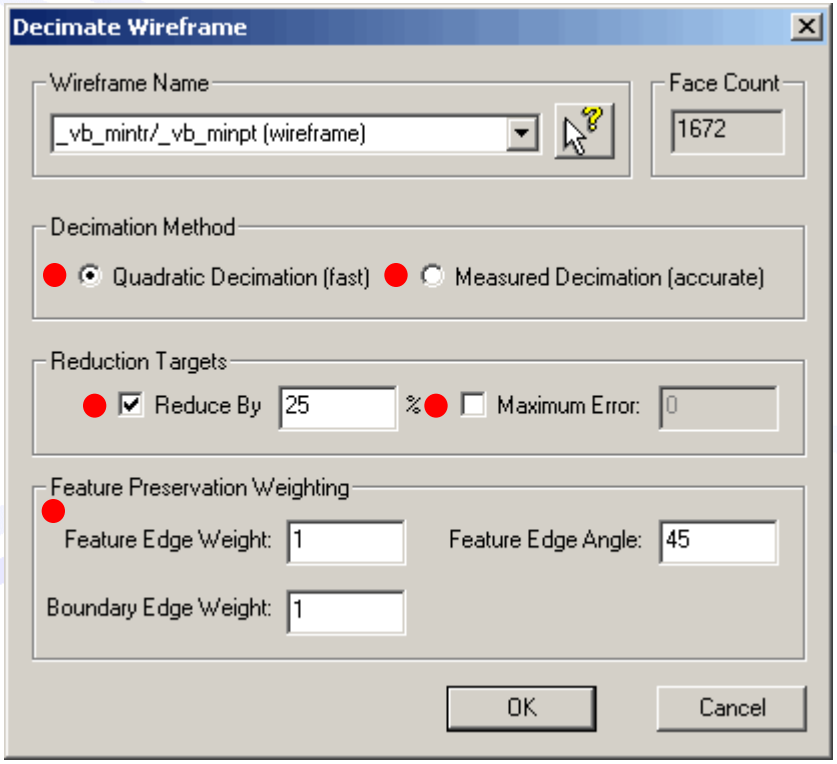
The **Verify** command attempts to identify separate surfaces, and ensure their faces are consistent and upward/outward facing as required by Boolean operations. The dialog has the following options:



- Stores the surface number in the field specified.
- Removes vertices which share the same location.
- Tolerance for duplicate point identification.
- Removes edges which share the same vertices.
- Removes faces which share the same vertices.
- Removes faces that have an area of zero.
- Checks for edges which are not shared by at least 2 faces, and creates strings from them.
- Checks for edges which are shared by more than 2 faces, and creates strings from them.
- Checks for faces which penetrate each other, and creates strings from them.

Wireframe Commands - Decimate

Decimate attempts to reduce the number of polygons in a wireframe, whilst preserving the wireframe shape. The dialog has the following options:

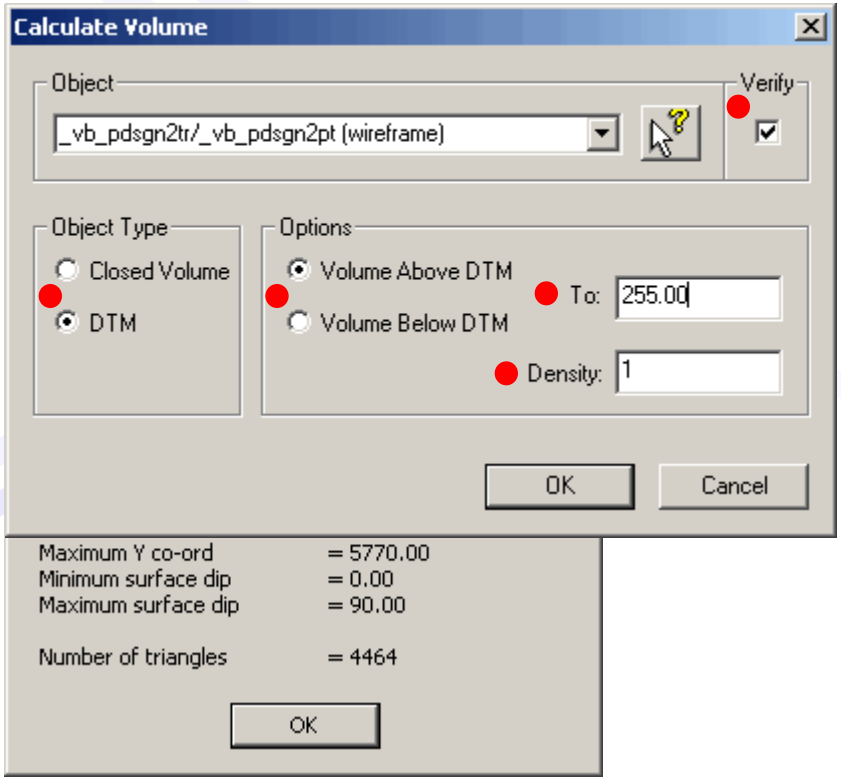


- Choice between speed and accuracy – Experience has shown the fast method to be perfectly adequate in most cases.
- Reduction Target can be set to:
  - Percentage reduction – Default because knowledge of data necessary for other options.
  - Maximum error – The maximum distance that a face can move when a vertex is removed, or
  - Both of the above - The first target met will be used.
- Features within the wireframe can be preserved defining a feature edge angle and using weighting factors.
  - A Feature Edge is an edge between polygons where the angle is sharper than the defined angle - It can be used to preserve features such as ridge lines.
  - A Boundary Edge is an edge used by only one face (i.e. it is open).
  - Both Edge weights have a range of 0 to 1 where: 0 = Do not preserve, and 1 = Preserve all.

Wireframe Commands – Calculate Volume

Calculate Volume calculates the volume of a solid wireframe, or the volume between a DTM and a selected elevation above or below the DTM.

- Verify is selected by default as it is recommended that the operation should be performed on a verified wireframe. Not necessary if wireframe is known to have been verified already.
- Specify whether wireframe is a closed volume (solid) or a DTM.
- For either case, you may use a nominal density to get an approximate tonnage for the wireframe volume.
- For a DTM, choose whether you would like the volume above or below the wireframe then…
- …define the elevation to enclose the volume.
- Run the command…
- … and a results summary will open. Results will also be reported to the Output window.

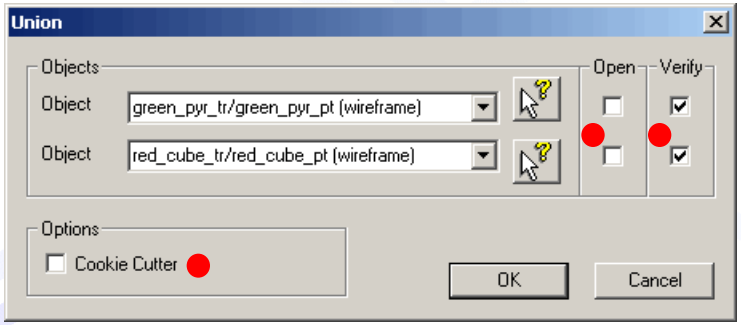


Boolean Functions - Introduction

A true Boolean function performs a logical operation on two volumes to produce a single volume. Not all the so-called Booleans are true Booleans.

These are some general notes for using the Booleans:

- Wireframes should ideally be closed, with no shared edges, or intersecting faces.
- The function will attempt to close wireframes unless it is told the wireframes should be open.
- Open wireframes will generate a warning, and the operation may fail (not always).
- Face direction is very important in Boolean functions. It is highly recommended to verify unless you know the wireframe has already been verified.
- The Cookie Cutter prevents any part of Object 2 from being included in the resultant object.

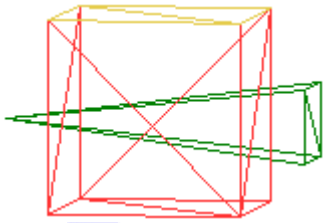


Boolean Functions – True Booleans

The true Booleans are: Union, Intersection and Difference. They all use a variation of the dialog shown on the previous slide.

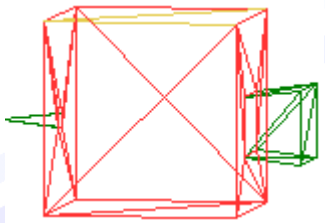
Starting Condition:

- Object 1: Green pyramid.
- Object 2: Red cube.



Union:

- Outer shells of Object 1 and 2 combined in a single object.



Difference:

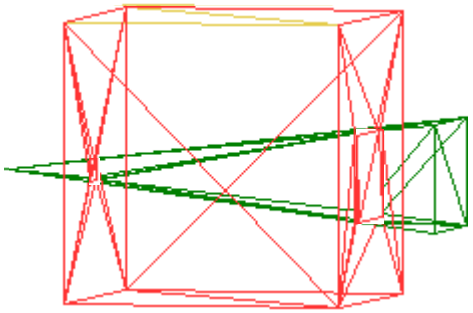
- Object 1 with the volume from Object 2 removed from it.

Intersection:

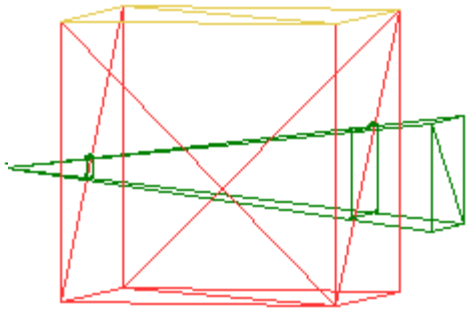
- The shared volume of Objects 1 and 2.

Boolean Functions

Extract Separate splits the two objects into all possible component parts, along the lines of intersection.



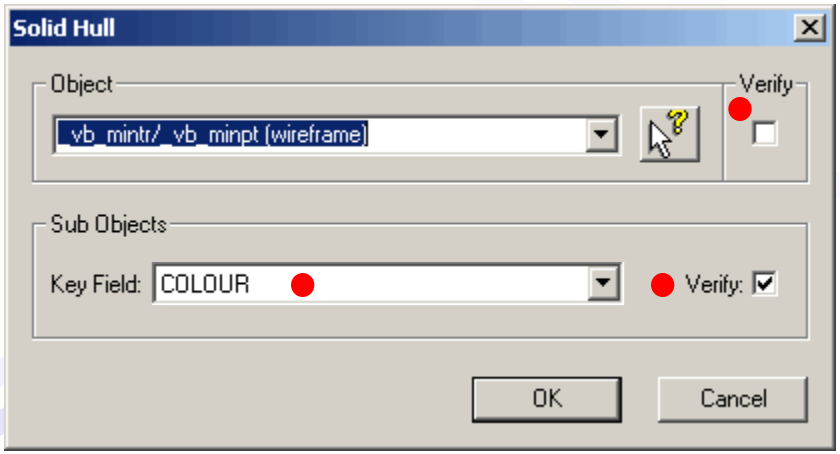
Strings From Intersections creates strings where the faces from the two objects intersect. The attributes for the strings come from Object 1.



Boolean Functions

Some wireframes have many overlapping surfaces. **Solid Hull** attempts to create a single shell around the surfaces, by applying progressive unions to the sub-object formed by each surface.

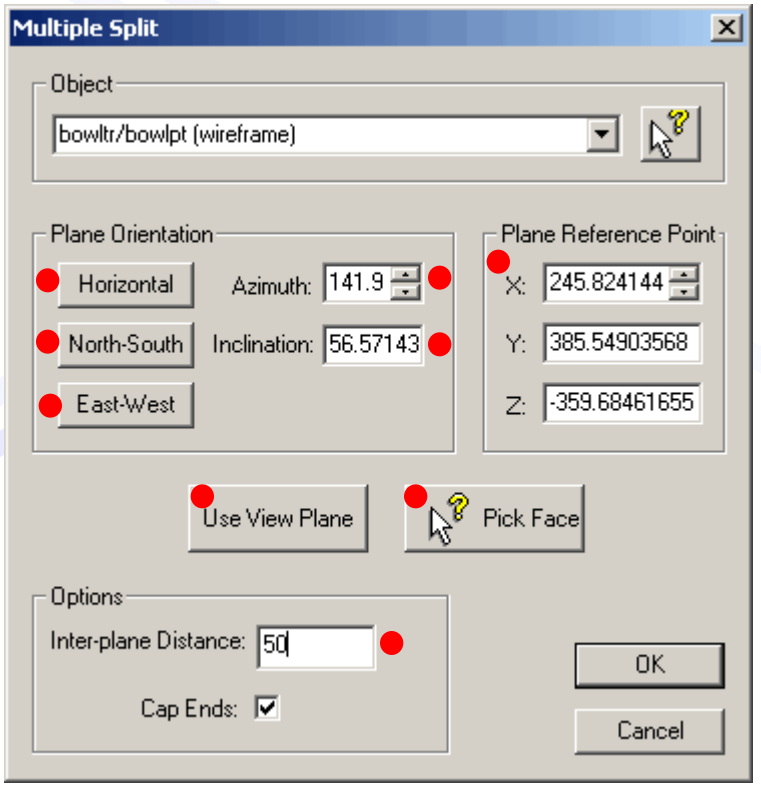
- Different sub-objects may be identified by using Verify, and then using the resultant SURFACE field.
- Alternatively another field (e.g. COLOUR) can be used to identify the different sub-objects.
- Verifying the sub-objects individually ensures they have consistent outward-facing normals, and checks for any problems before the union.



Plane Operations – Defining a Plane

Studio 3 has many more ways for defining a plane than previous versions had. These planes can then be used to interact with a wireframe using the “plane operations”.

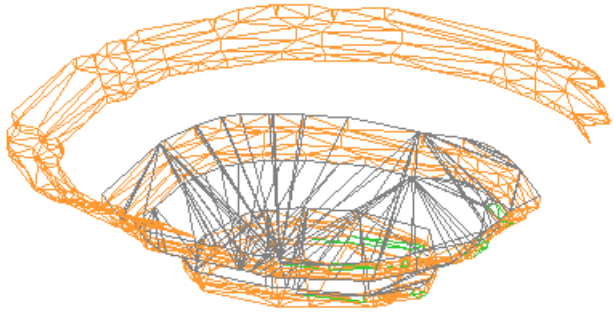
- The Design View Plane is the default plane and this can be reselected using the “Use View Plane” button.
- A plane can be defined as:
  - Horizontal,
  - North-South,
  - East-West, or
  - By Azimuth and Inclination.
- Each requires a “Plane Reference Point” to fix it in space. E.g. A value for the Z coordinate will fix a horizontal plane.
- A face on a wire frame may also be selected as a plane, using the “Pick Face” button. The point picked will be the default reference point.
- The “multiple” plane interaction commands have an “Inter-plane Distance” option which creates parallel planes that distance apart.

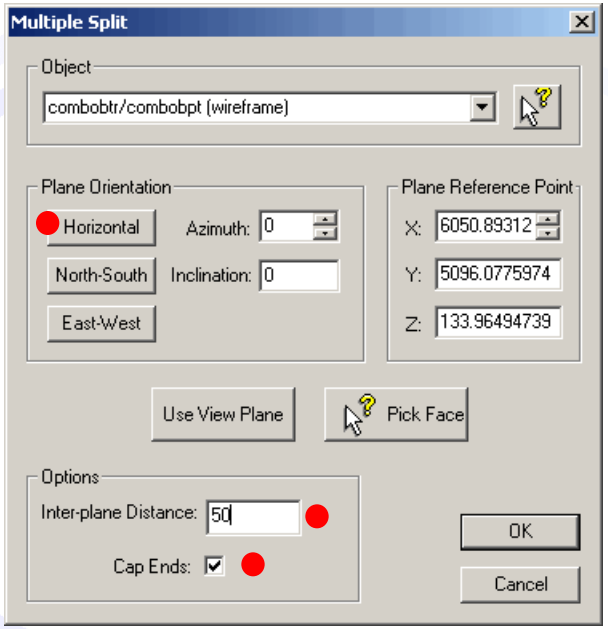


Plane Operations

The Split operation separates a wireframe along a plane or parallel planes.

- With a wireframe loaded, run Split or Multiple Split from the Plane Operations menu.
- Define the plane. In this case, a horizontal plane has been selected (Azimuth and Inclination both 0).
- Set the Inter-plane Distance for a multiple operation.
- Select whether the ends of each wireframe split should be capped (Note that any caps will not take any of the wireframe attributes).

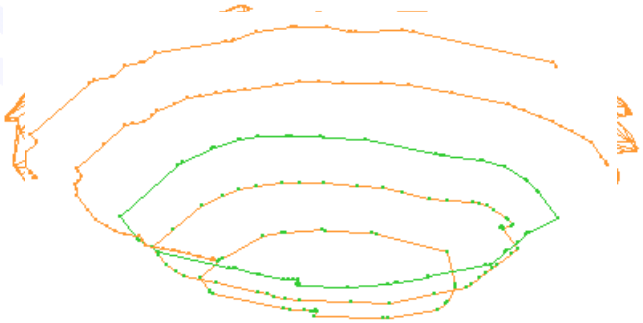


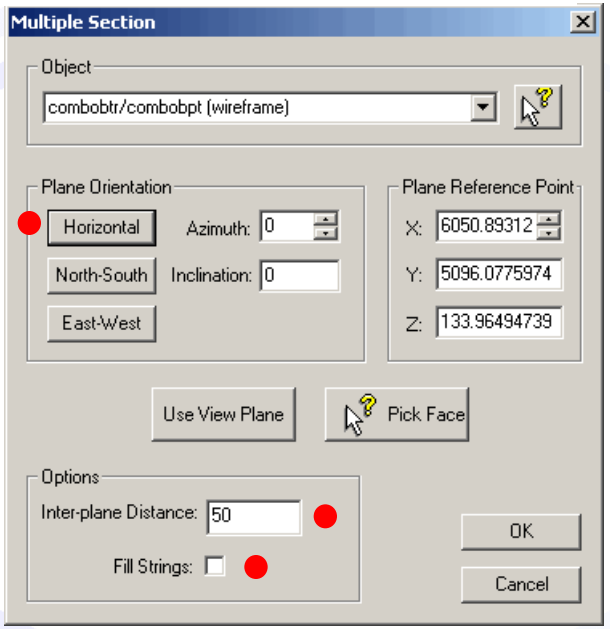


Plane Operations

The Section operation creates strings and/or faces where the object has been sliced by the plane.

- With a wireframe loaded, run Section or Multiple Section from the Plane Operations menu.
- Define the plane. In this case, a horizontal plane has been selected (Azimuth and Inclination both 0).
- Set the Inter-plane Distance for a multiple operation.
- Select whether the strings should be filled.

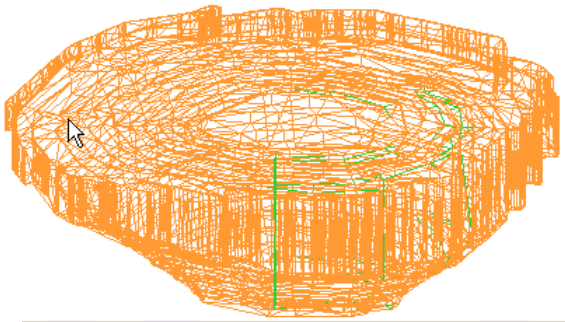


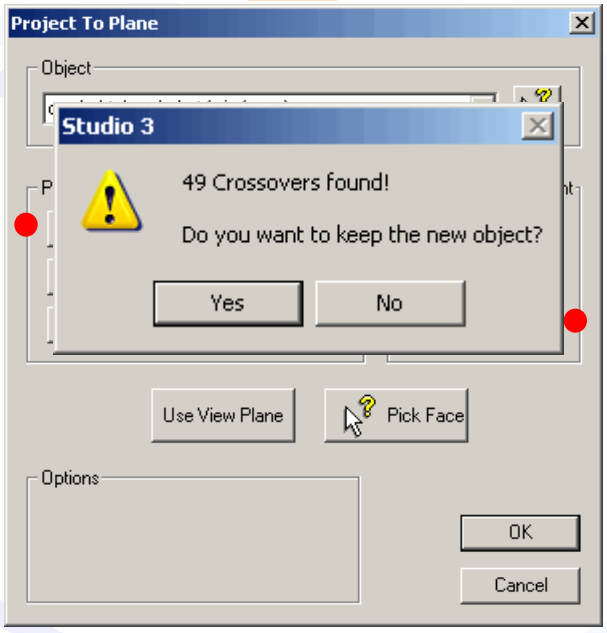


Plane Operations

The Project DTM to Plane operation projects the boundary of the DTM to the plane to create a solid wireframe.

- The projection is always perpendicular to the plane.
- The example projects a DTM to a horizontal plane at an elevation (Z) of 300.
- The DTM should have no overlaps in the projection direction as crossing faces will result.
- Crossing faces will be reported and the resulting wireframe can be kept or discarded.

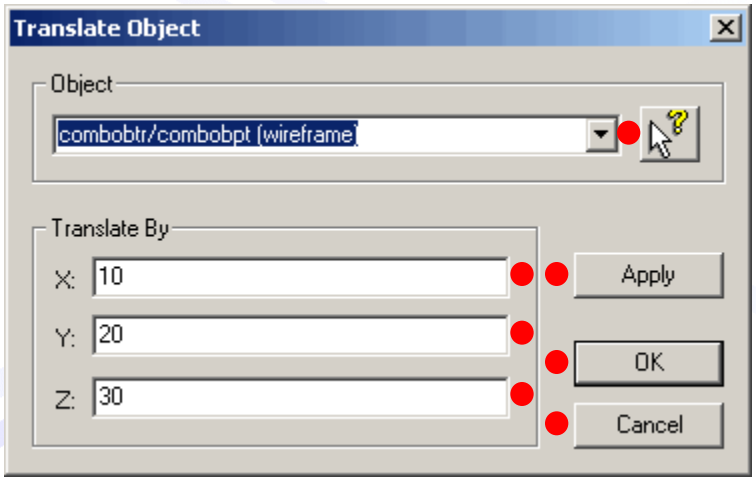




Other Wireframe Commands - Translate

Translate Wireframe will move the wireframe by the specified distance in the specified directions.

- Select the object to be moved using either the combo box or the pick tool.
- Set the translation vector by editing the X, Y and Z edit boxes.
- “Apply” will perform the translation, leaving the dialog open for further or repeat translations.
- “OK” will perform a single translation then close the dialog.
- “Cancel” will close the dialog.

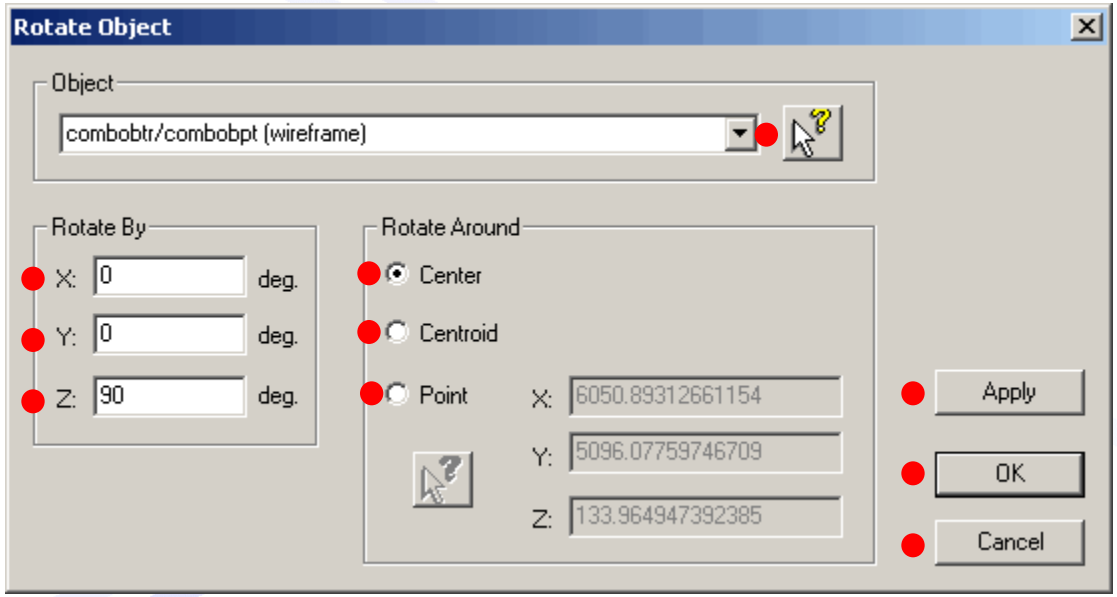


Note: If you have used “Apply” and do not wish to make a further change, use “Cancel” not “OK”.

Other Wireframe Commands - Rotate

Rotate Wireframe will rotate the selected wireframe by the specified angle about the specified axes.

- Select the object to be rotated.
- Set the rotation angle by editing the X, Y and Z edit boxes.
- Set the point around which the object will rotate:
  - Center (of the bounding box)
  - Centroid - Centre of gravity
  - Custom point (picked in the Design window)



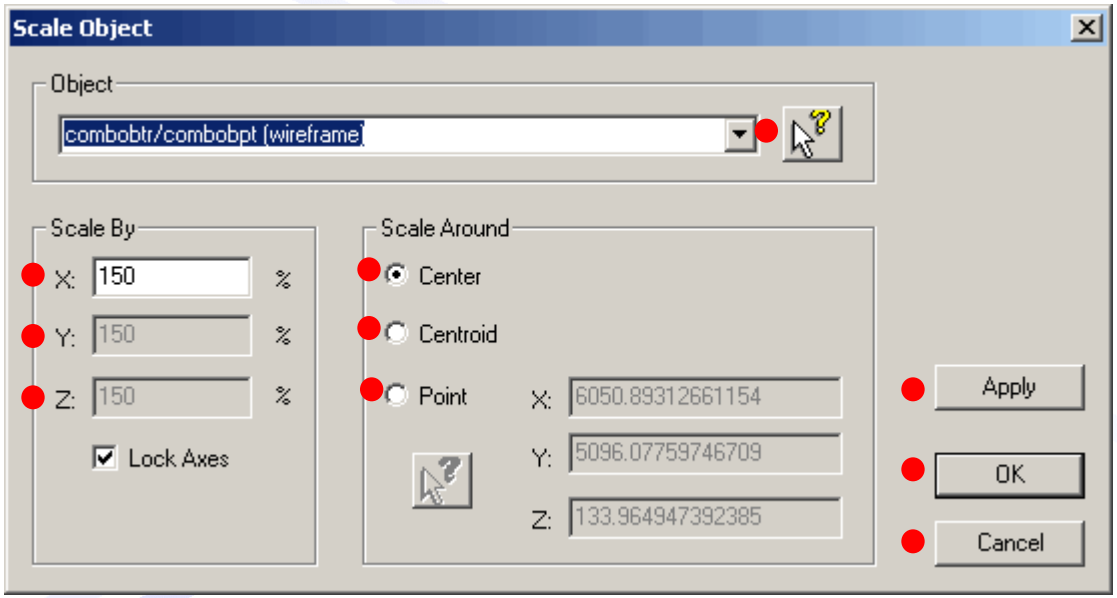
- "Apply" will perform the rotation, leaving the dialog open for further rotations.
- "OK" will perform a single rotation then close the dialog.
- "Cancel" will close the dialog.

Note: If you have used "Apply" and do not wish to make a further change, use "Cancel" not "OK".

Other Wireframe Commands - Scale

Scale Wireframe will scale the selected wireframe by the specified percentage along the specified axes.

- Select the object to be scaled.
- Set the scale percentage by editing the X, Y and Z edit boxes.
- Set the point from which the object will be scaled:
  - Center (of the bounding box)
  - Centroid - Centre of gravity
  - Custom point (picked in the Design window)



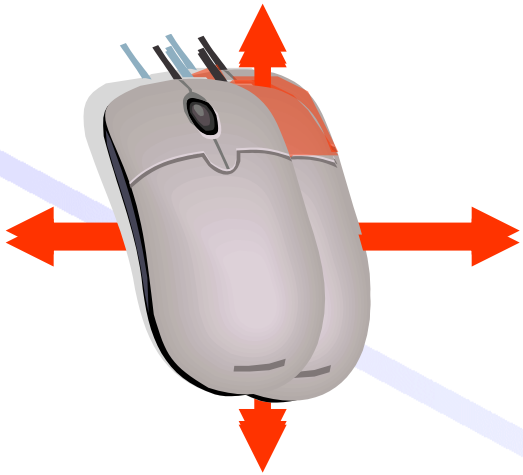
- "Apply" will perform the scaling, leaving the dialog open for further rotations.
- "OK" will perform a single scaling then close the dialog.
- "Cancel" will close the dialog.

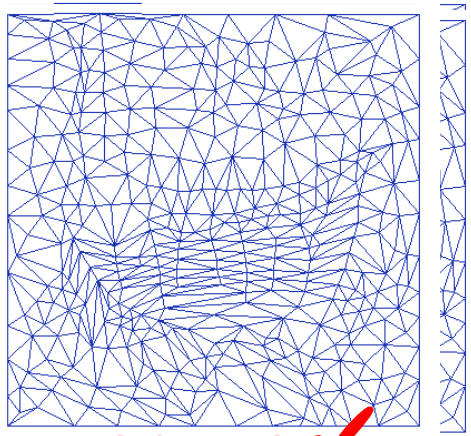
Note: If you have used "Apply" and do not wish to make a further change, use "Cancel" not "OK".

Other Wireframe Commands – Move and Copy

- Select “Move Wireframe” or “Copy Wireframe” from the wireframe menu.
- Click and drag on the required wireframe with mouse button indicated below.

Note: Copy Wireframe will make a copy of the selected wireframe before moving it, leaving the original wireframe where it started.





Exercise - Wireframes

Try the following:

- More than enough options to keep you busy for hours!

Session 9 – Grade Estimation

Introduction

Studio 3 has a completely new interface for ESTIMATE which was a menu driven way of running ESTIMA.

The new interface is much more intuitive:

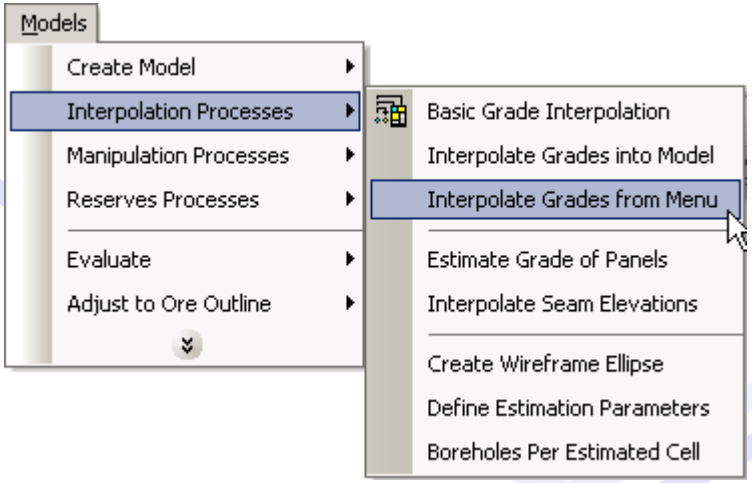
- Leading through the setting up process in a logical, sequential fashion.
- Allowing parameters to be checked and modified at all stages of the process.

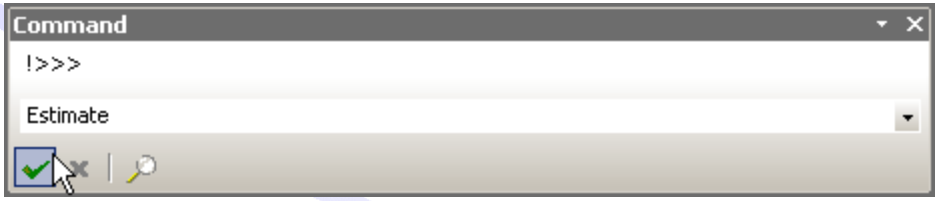
It also includes:

- Indicator Kriging, and
- Macro Kriging.

Starting Grade Estimation

Like most Studio 3 processes, the grade estimation interface can be started from the menu or from the command line.





The Interface – Input Files

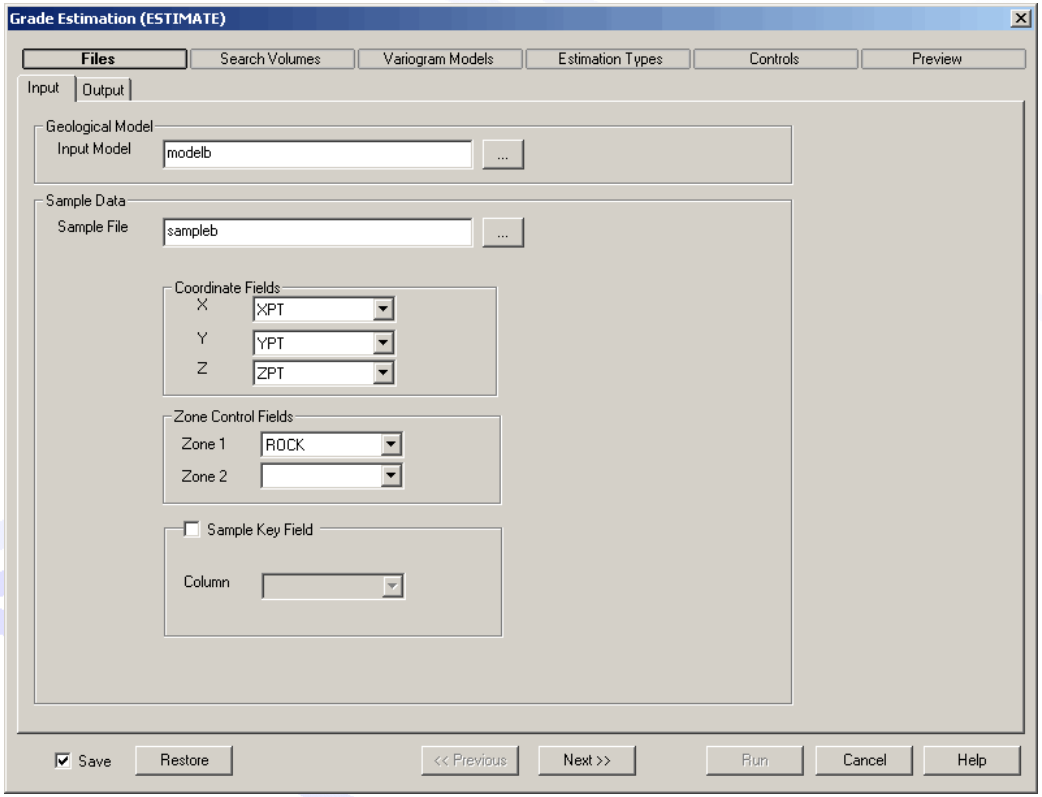
This is not a grade estimation course; it assumes that you are familiar with ESTIMA and ESTIMATE.

The dialog starts by getting you to define the input files:

- Input model
- Sample data

And to specify any Zone Control and Sample Key fields.

Click on the Output tab to nominate the output files...



The Interface – Output Files

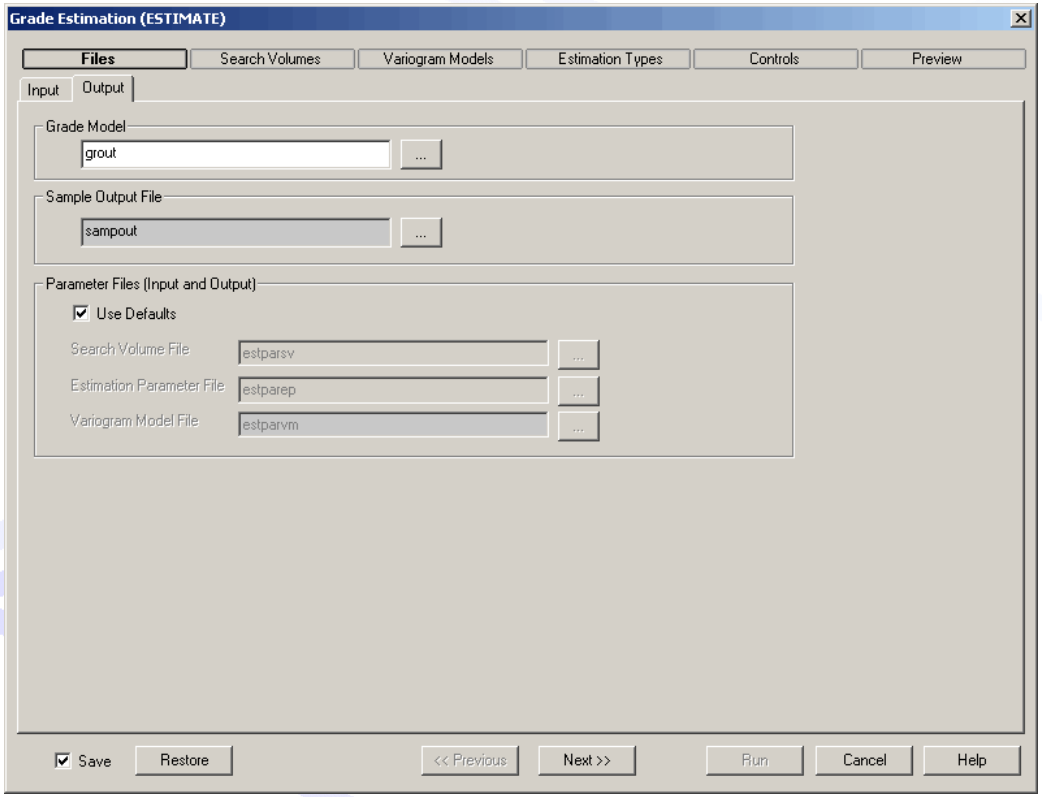
You can use the named buttons and tabs or the Next and Previous buttons to navigate the dialog.

The Output tab is now active for you to define:

- Grade model
- Sample Output file (optional)

And to specify parameter files or elect to use default values.

Next will take you to the Search Volume tab.



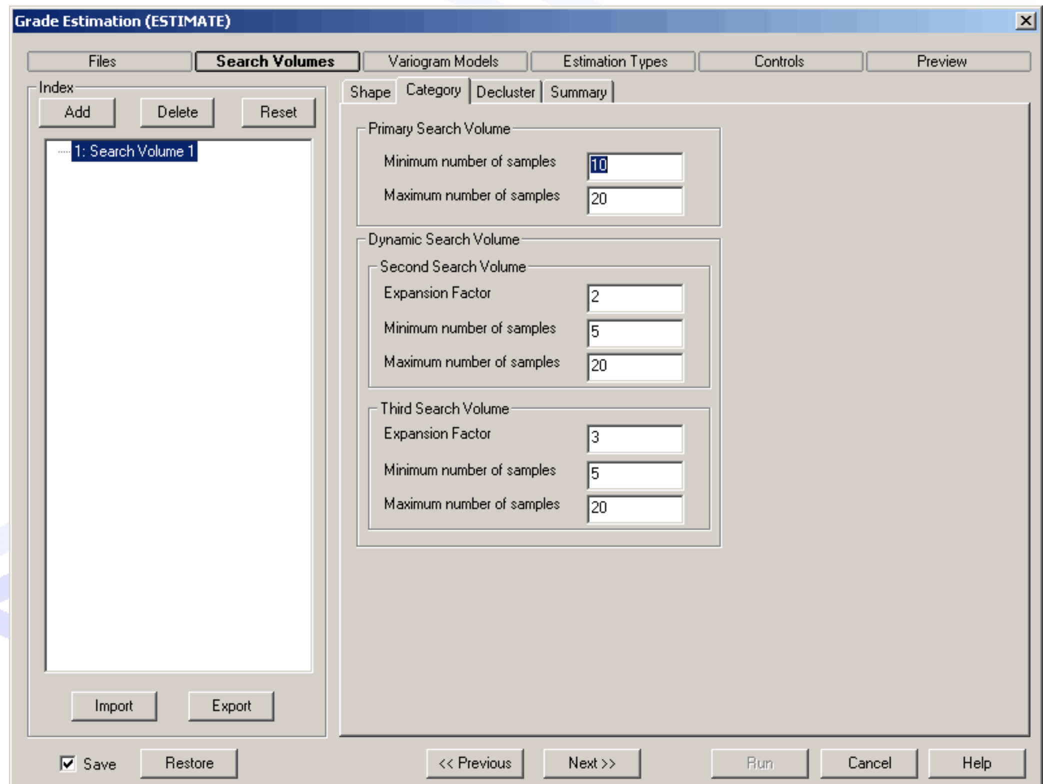
The Interface – Search Volumes

This page helps you to select or define a volume from which samples may be used to interpolate grades into a model cell.

You can import an existing Search Volume file or use the Shape tab to:
- To define the shape
- To give it dimensions and
- Rotate it.

The Category tab allows you to define how many sample values are required in:
- Primary volume
- Dynamic volumes.
  - Second (with expansion factor)
  - Third (with expansion factor)

The process can use more than one Search Volume.



The Interface – Search Volumes

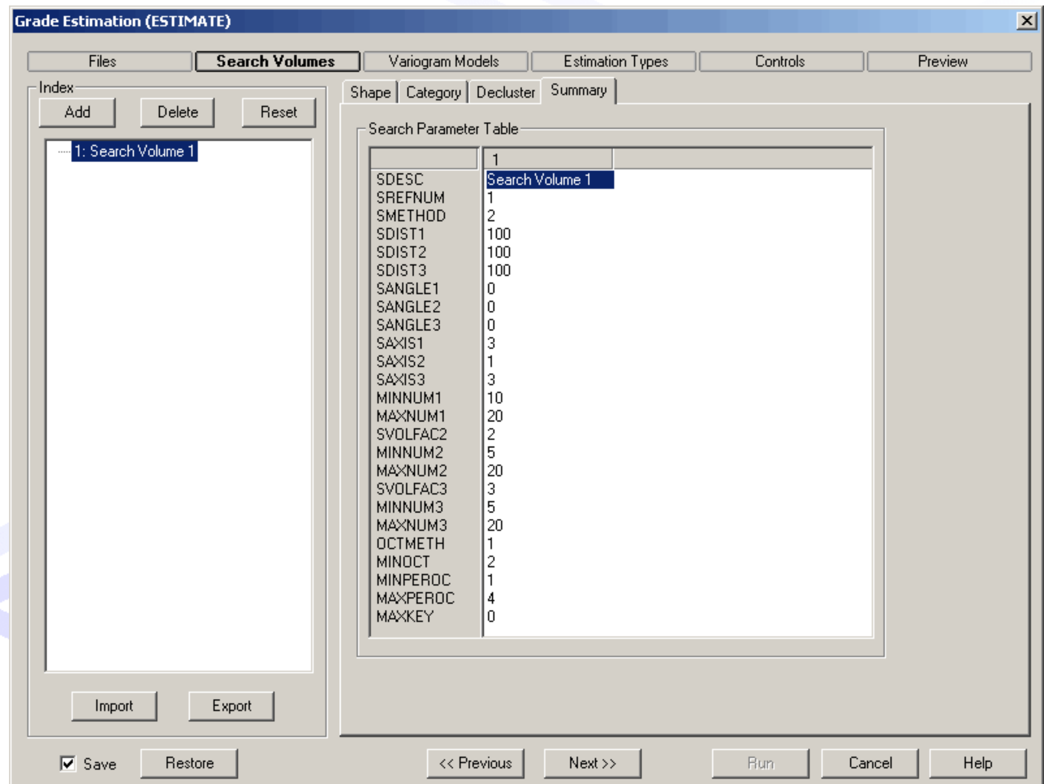
This page helps you to select or define a volume from which samples may be used to interpolate grades into a model cell.

The Summary tab shows all the data you have entered specified so far. It is listed against field names and can be edited in situ.

Experienced users will probably work by restoring old settings and editing the summary pages.

The Decluster tab provides the means for you to define the parameters for declustering your samples data using:

- Octants – minimum to be used and samples required.
- Sample Key field (if defined earlier) – maximum samples.

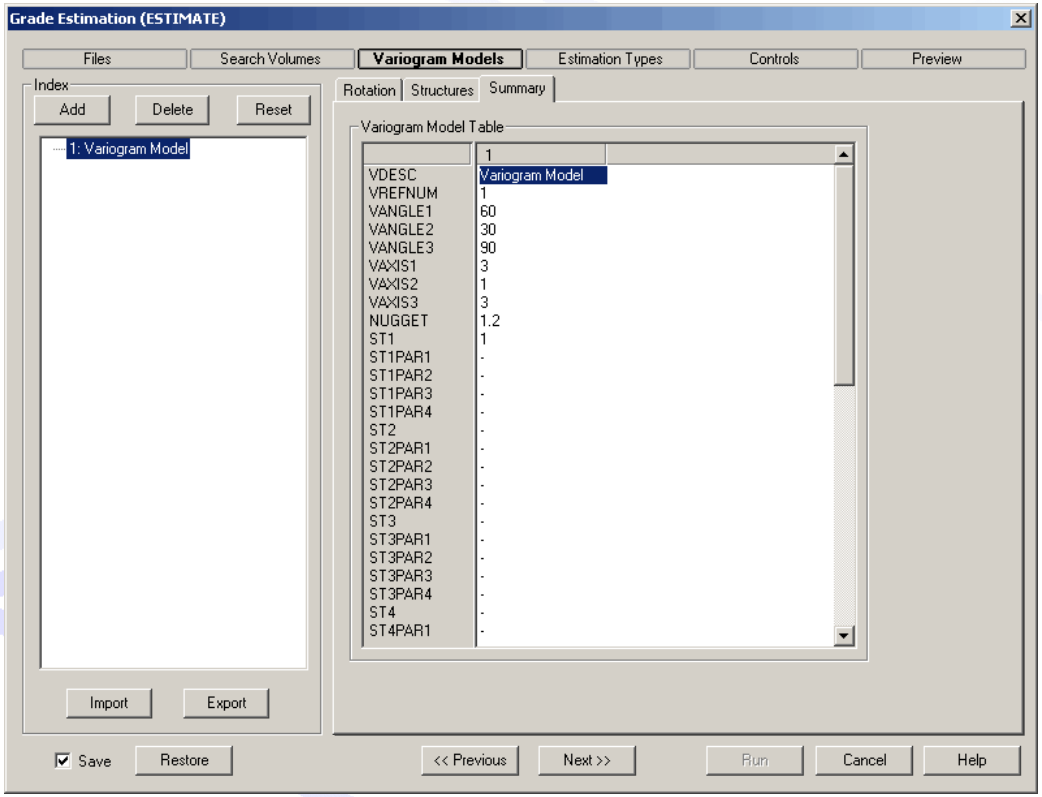


The Interface – Variogram Models

This Varogram Models page lets you import an existing variogram or define a new one.

The Summary tab shows all the data you have entered or specified so far. It is listed in situ.

You can enter more than one structure.

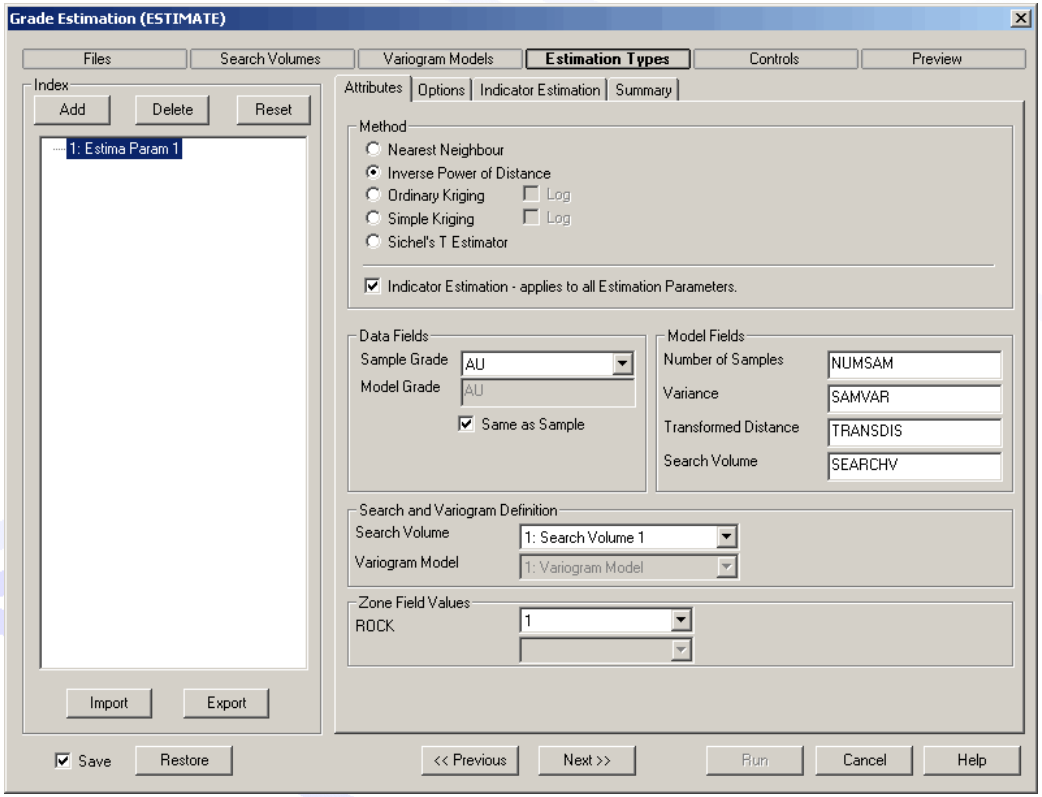


The Interface – Estimation Types

This Estimation Types page allows you to select the estimation method and set the options and parameters.

The Attributes tab is used to define:

- The estimation method
- Data fields to be estimated into the model
- Other model fields
- The search volume and variogram to be used (you may have created several of each)
- Zone field values.

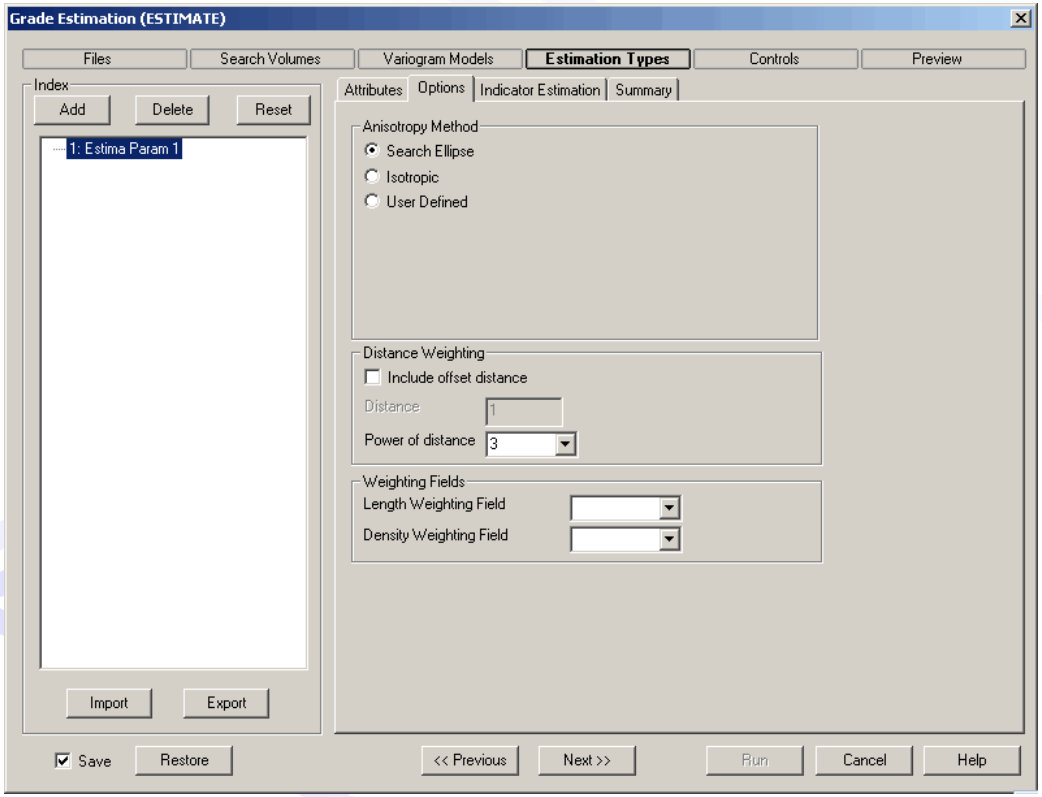


The Interface – Estimation Types

This Estimation Types page allows you to select the estimation method and set the options and parameters.

The Options tab is used to define:

- The anisotropy method
- The distance weighting and power of distance
- Weighting fields to be used.

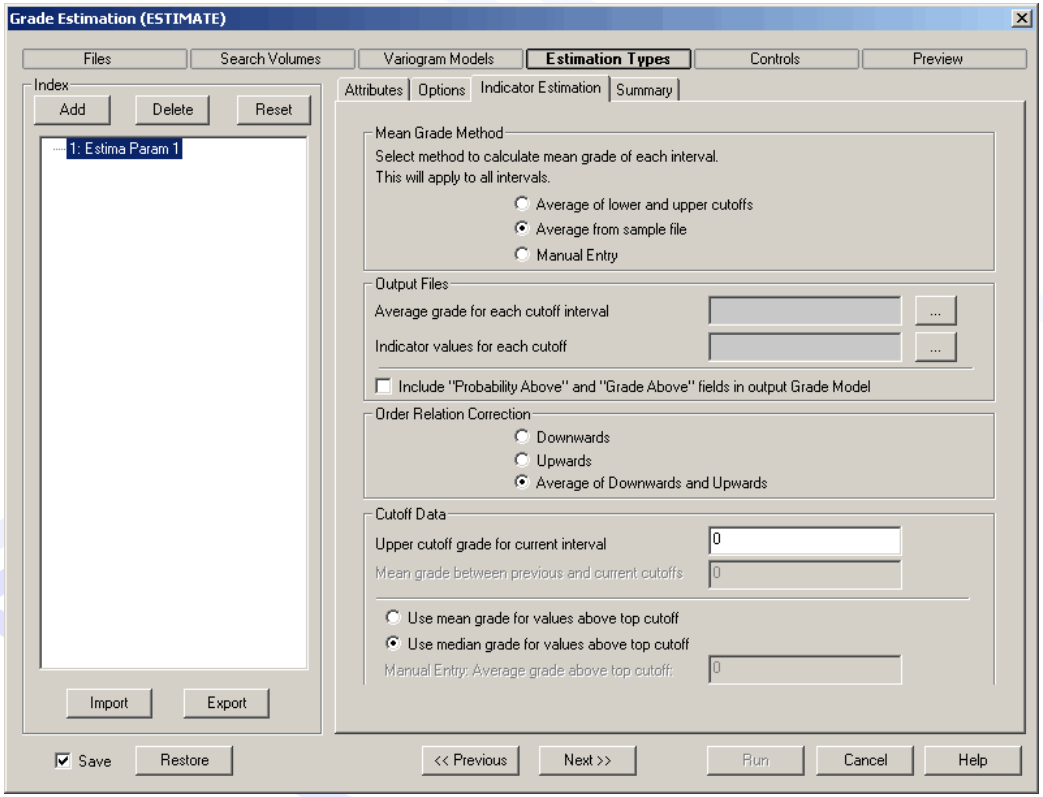


The Interface – Estimation Types

This Estimation Types page allows you to select the estimation method and set the options and parameters.

The Indicator Estimation tab is used to define the settings and parameters for indicator estimation as if selected on the attributes tab:

- Mean grade method
- Output files
- Order relation correction
- Cutoff data.

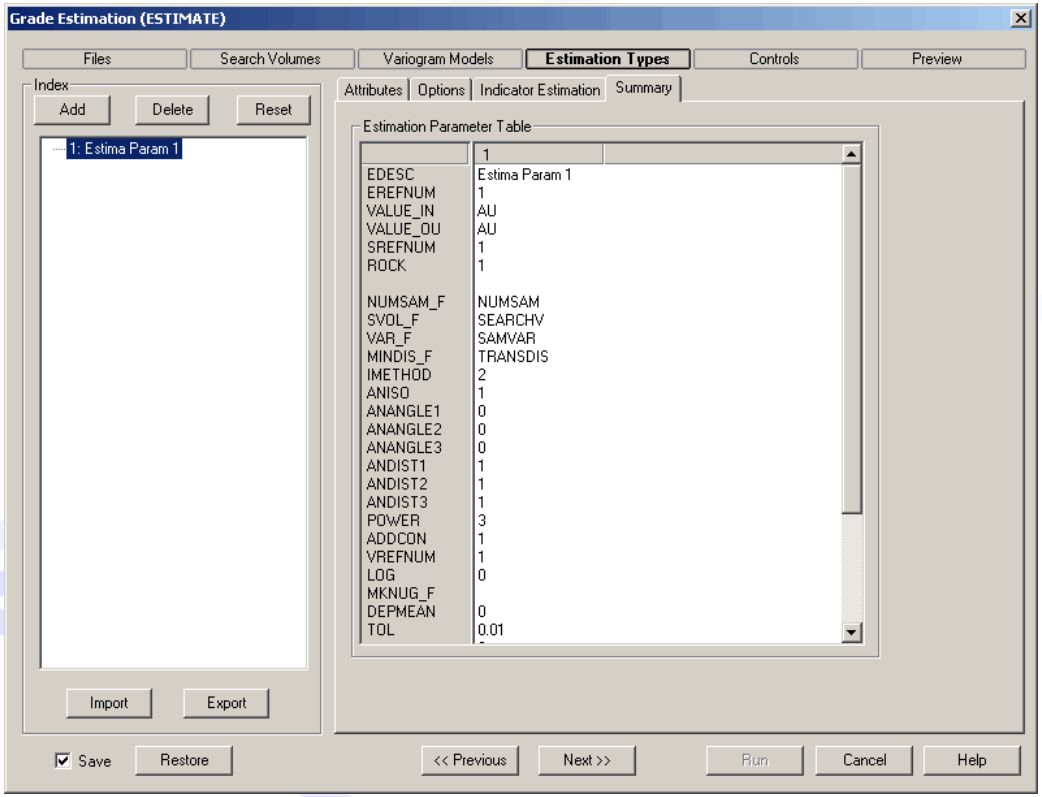


The Interface – Estimation Types

This Estimation Types page allows you to select the estimation method and set the options and parameters.

The Summary tab shows all the data you have entered or specified so far. It is listed against field names and can be edited in situ.

Experienced users will probably work by restoring old settings and editing the summary pages.

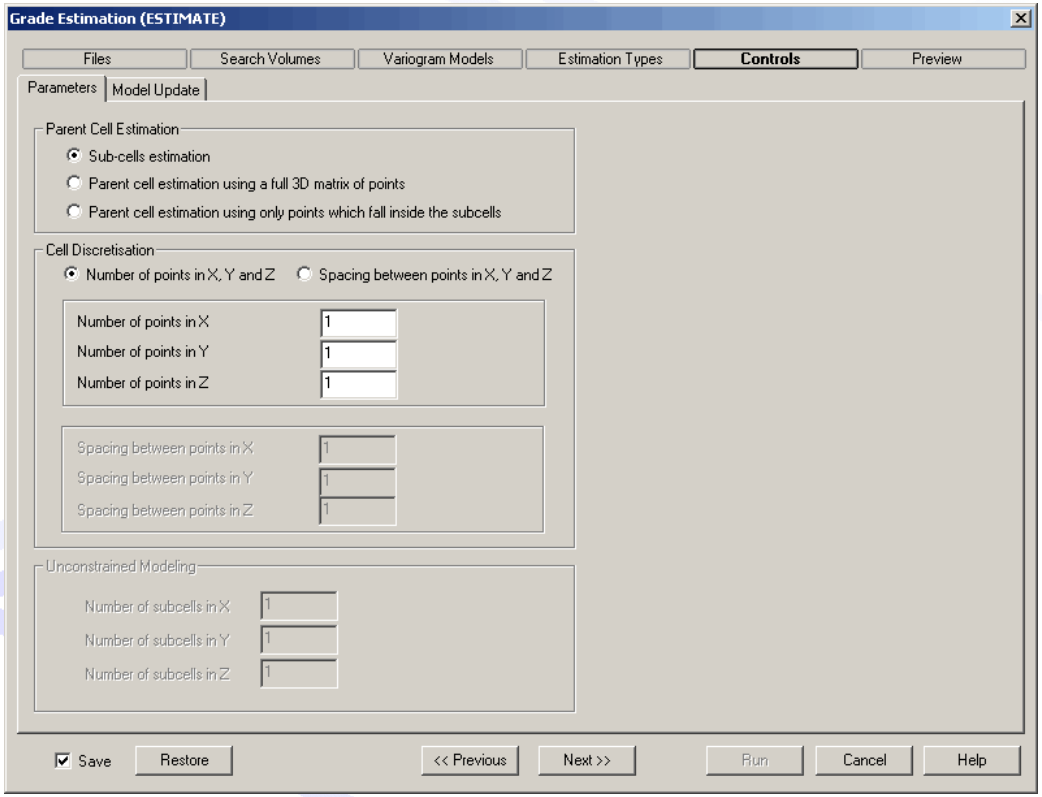


The Interface – Controls

This Controls page allows you to set factors that limit the process.

The Parameters tab is used to set:

- Parent cell estimation method
- Cell discretisation

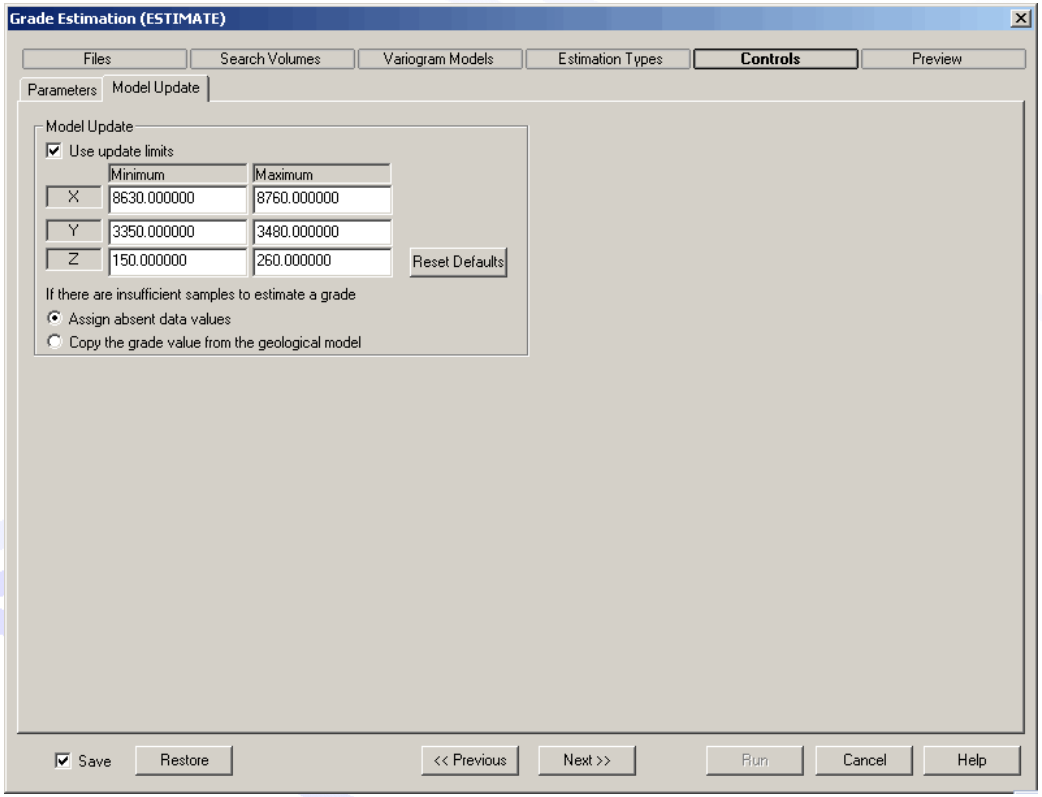


The Interface – Controls

This Controls page allows you to set factors that limit the process.

The Model Update tab is used to set:

- Model Update limits
- Assign absent data values or copy the grade value from the geological model.



The Interface – Preview

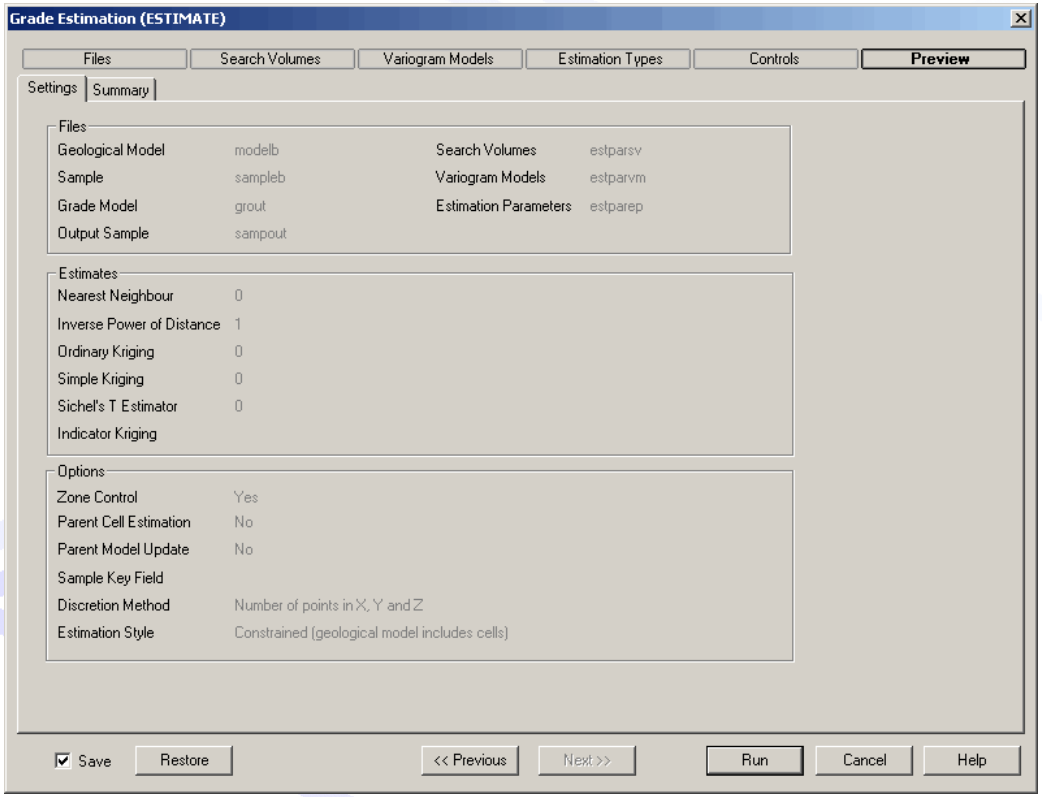
This Preview page shows all the selection and settings that you made for your interpolation.

The Settings tab shows:

- The key settings.

These settings cannot be edited on this tab but you can navigate to the appropriate page and tab or use the summary tab.

The Run button is now active and you can choose to run the process if you are happy with the settings.



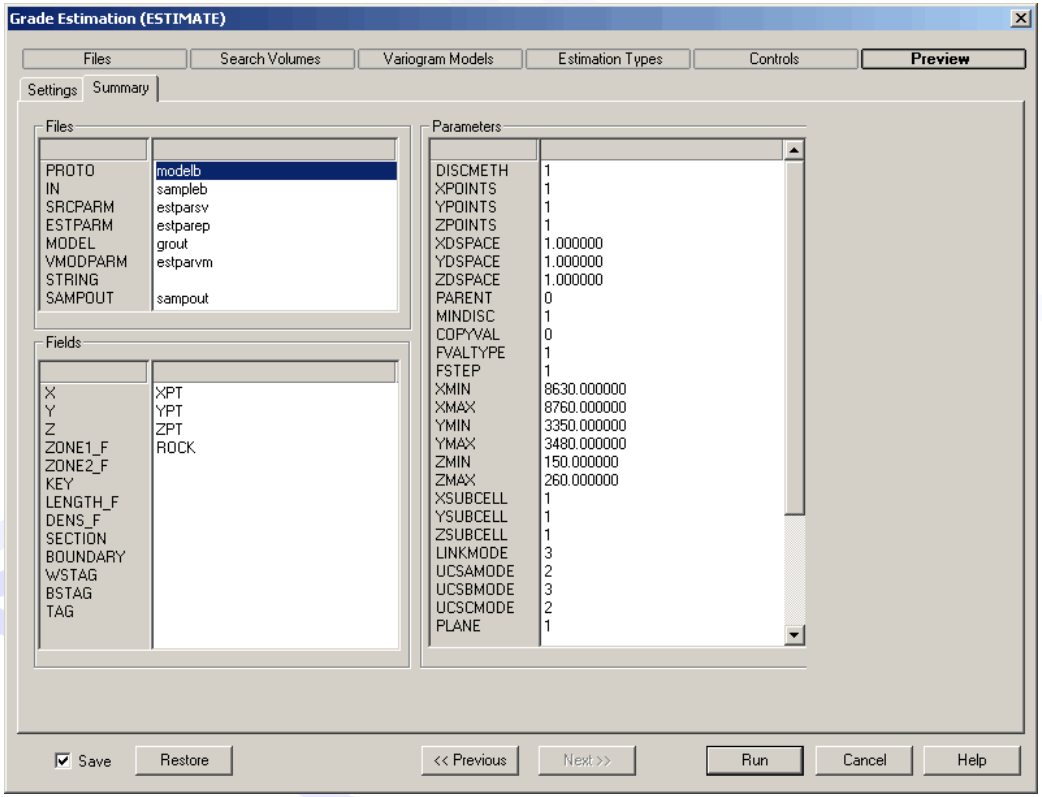
The Interface – Preview

This Preview page shows all the selection and settings that you made for your interpolation.

The Summary tab shows:

- All the selections and settings for the process.
- All values can be edited from here.

The Run button is now active and you can choose to run the process if you are happy with the settings.



Exercise – Grade Estimation

Try the following:

- Use the ESTIMATE menu to set up the parameters and estimate grade into model _vb_modore.

Session 10 – Plots etc.

Plots Window – Introduction

The main purpose of the Plots window is to produce formatted and customized output ready for printing or plotting.

- It adheres to the display hierarchy such that, by default it contains several sheets; some of which contain more than one projection.
- More sheets can be added, and all sheets and projections can be edited and customized.
- Can add intelligent “plot items” such as:
  - title boxes,
  - legend boxes,
  - annotation,
  - features,
  - tables etc.

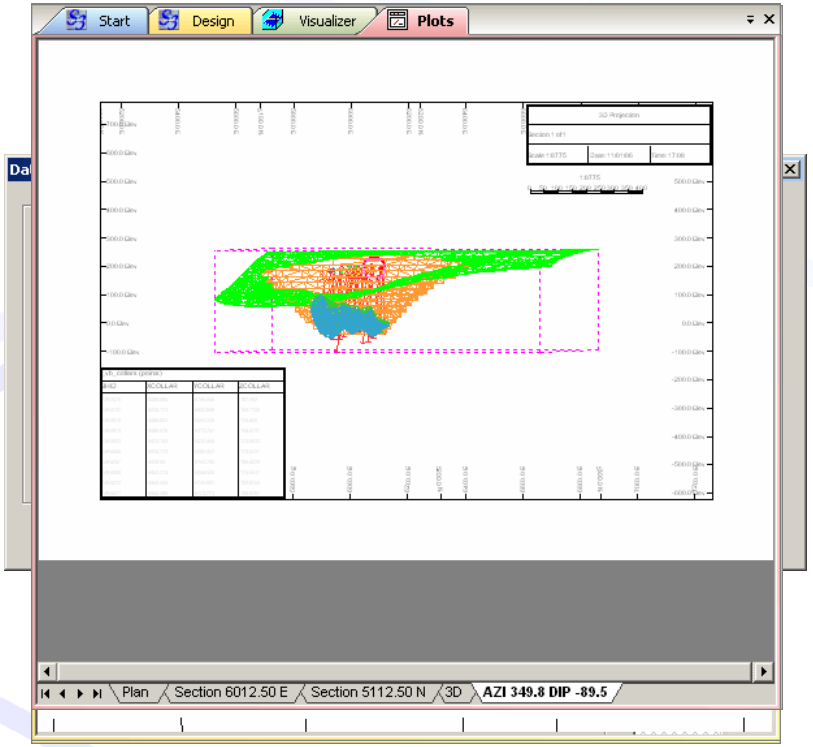
  to enhance and add meaning to a plot.

Plots Window – How it Fits in

- Data loaded into memory is available to all windows, including the Plots window.
- All the features of a design in the Design window can be displayed and formatted in the Plots window.
- Uses same controls for formatting and uses same legends as other windows. Formats can be applied universally.
- Section tables created in the Design window can be used to set the plot up exactly as the Design view.

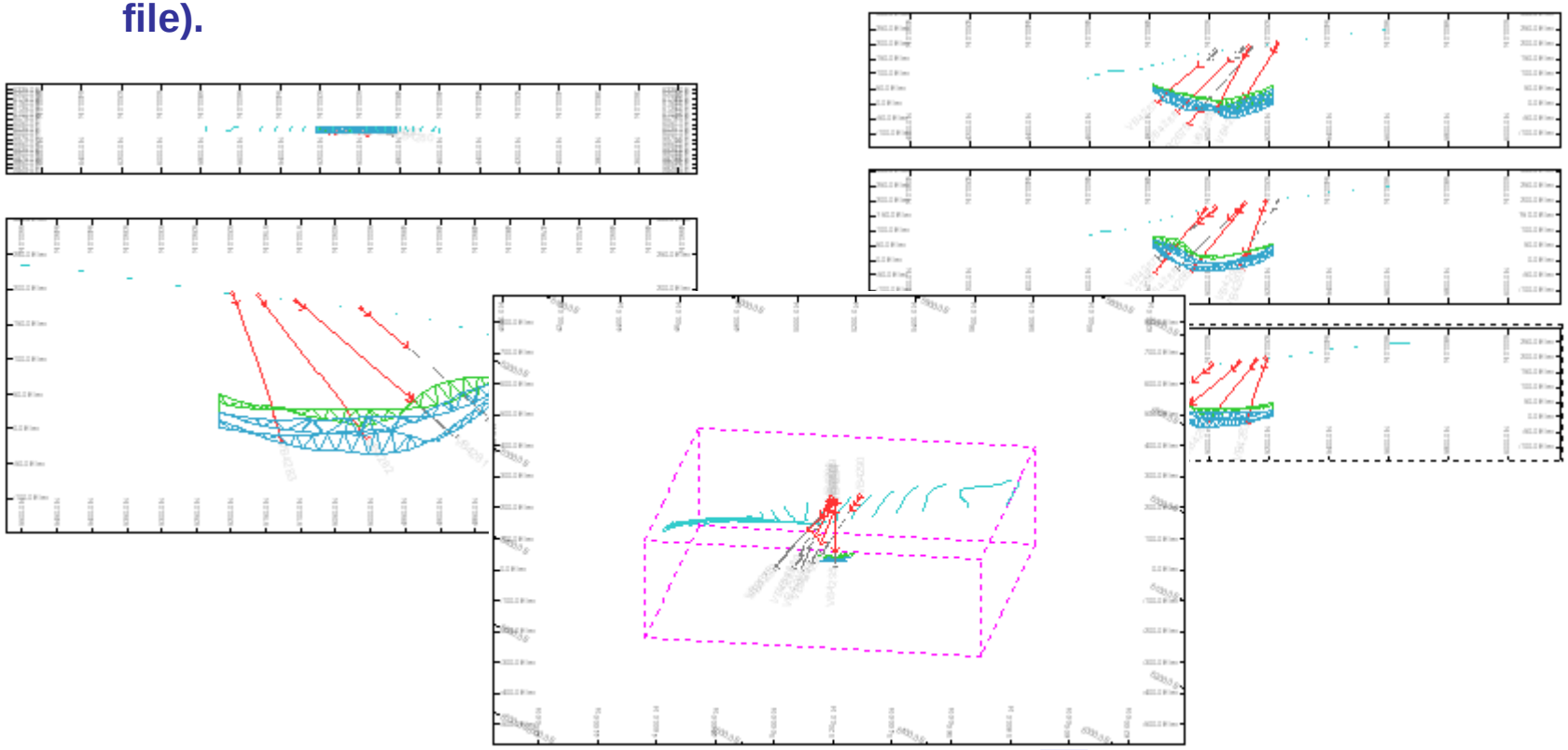
Plots Window – From Design to Plot

- Load your data into memory and/or do your design work in the Design window.
- Save any section definitions that you wish to plot if not standard plan, N-S or E-W projections (Use save-view, svi).
- Open the Plots window
- Choose to use a section table – The section table you saved to will be loaded and will be used.
- Add Plot Items to give meaning and context to the plot.



Plots Window – A Family of Plots

- **Plots creates customized families of plots: Plan, N-S, E-W or custom sections.**
- **Moving between sections is easy:**
  - **Parallel sections.**
  - **Defined sections from Design window or elsewhere (section definition file).**



Plots Window – Other Functions

The Plots window is for producing and formatting sheets for printing or plotting. It does, however, have many other strengths and uses:

- It can desurvey loaded drillhole data dynamically, producing representations of the hole, and graphical columns to facilitate geological interpretation.
- It can provide instant, dynamic composites of drillhole data.
- It has a set of intelligent geological interpretation tools which produce outlines and apply a selected legend to reflect a dominant property such as lithology.

Logs Window – Introduction

The Logs window displays a scaled representation of logged drill core.

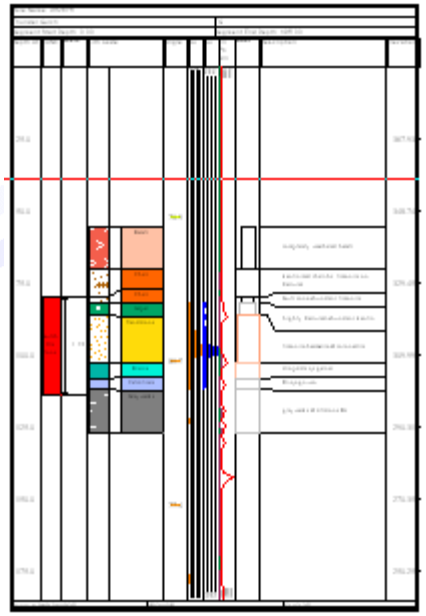
The data used comes from the dynamic desurvey process which uses:

- Collars
- Surveys
- Lithology log
- Assay samples

Data columns are plotted against depth intervals.

- Lithology
- Grades
- Zones
- Text descriptions etc.

A log plot can be inserted into a Plot sheet.



Displaying and Formatting a Log

- Open the Logs window.
- If no sheet is displayed, right-click in the window and select “New Log sheet…”
- A default log will be added based on any loaded dynamic drillhole data. It will be an empty frame if no data is loaded.
- To add another column or modify an existing one, right-click the log and choose “Format Display…”
  - Select the columns tab and choose “Add” to insert a column. The wizard will lead you through the process and insert a default column.
  - Select one of the “Columns in view” then use the controls on the right side of the dialog to change the display type, change legend, alter the column width etc.
  - Choose the Header and Footer tabs to modify the general content of the log sheet such as: title, company name, hole number etc.
- To configure for printing, select “Log | Setup Printing”.

Tables Window

The Tables window provides a tabular view of any data in memory.

- Primarily for dynamically desurveyed drillhole data but any data can be viewed
- Data can be edited in the table view – Any changes will be reflected in other windows.
- It is not a file editor. To save changes to file, the edited table should be saved or exported.
- Data columns can be formatted as line graphs, histograms, text etc.
- Columns can be added or deleted.

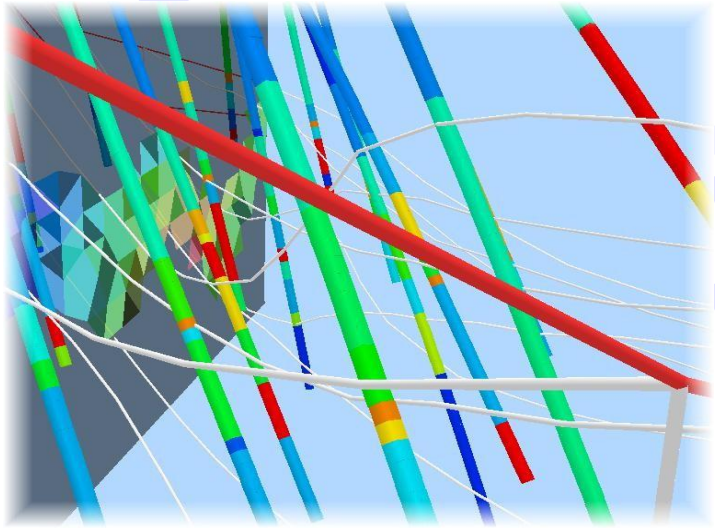
Exercise – Plots and Logs

Try the following:

Session 11 – VR Window

VR Window – Introduction

- Provides a virtual view of design and geological data
  - Navigate around and get inside the models
  - Interrogate data (drillholes and linked objects)
- Import data from many sources
  - Terrain models, orebody wireframes, fault surface models, pit and stope designs, underground development
  - Drillhole traces and samples
  - Design strings and polygons
- Add realistic models to build virtual worlds
  - Buildings, furniture, office equipment, vehicles, mining equipment, landscape features

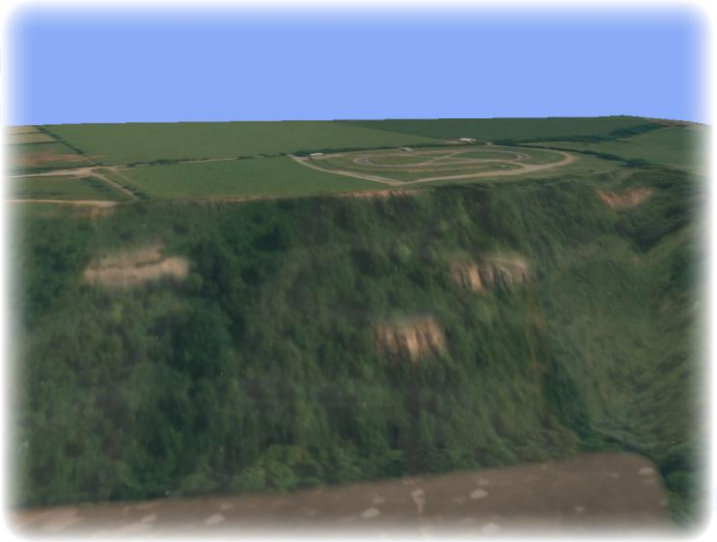


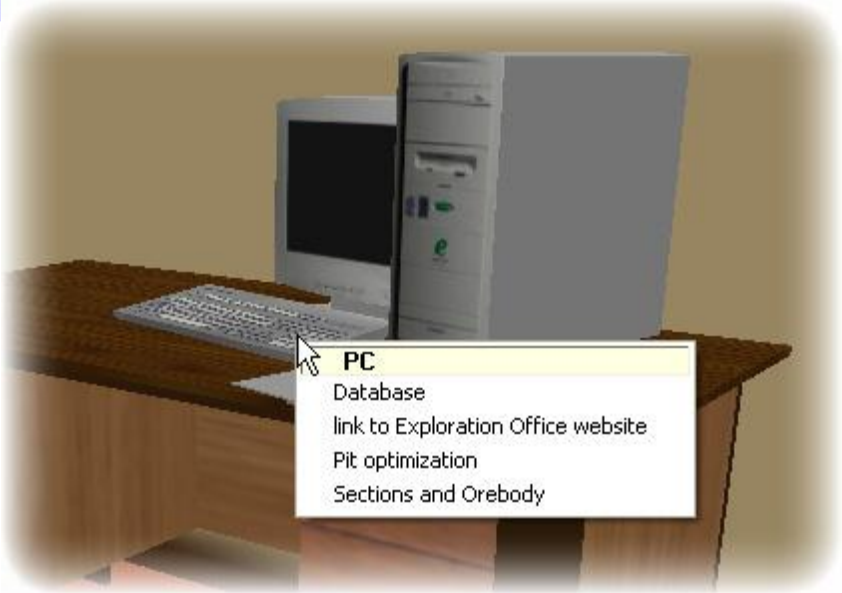
- Render surfaces, drillholes and strings
  - Texture, colour, transparency
  - Drape aerial photo on terrain surface
  - Render other surfaces with color and/or texture
  - Change surface and trace rendering to highlight different properties

VR Window

Presents a virtual world view of Studio 3 data. Can show:

- Phased mine plans – multiple projects
- Rehabilitation schemes – multiple projects

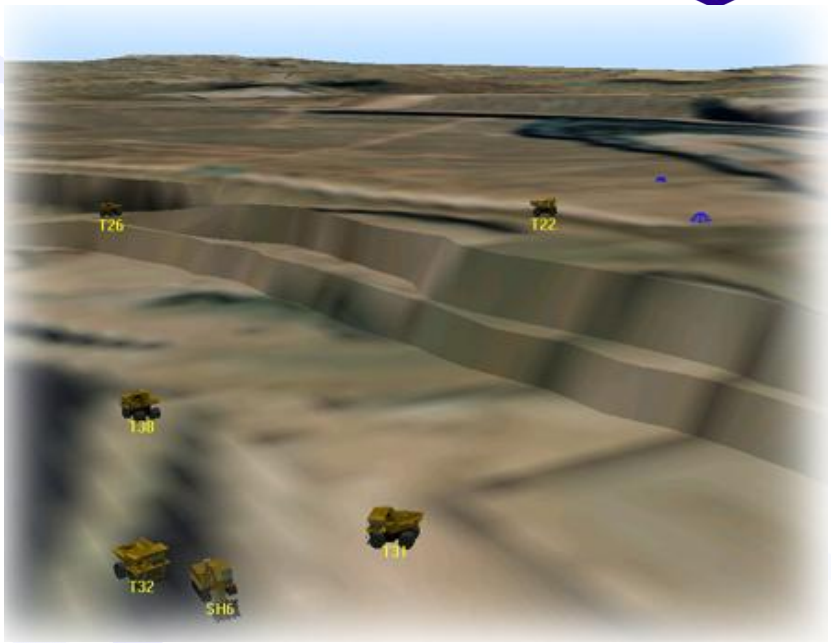




- Objects, surfaces and traces can be linked to programs, documents or addresses
  - Links can be local, network, intranet or internet.
  - Faces can be linked to extraction schedules, and
  - Equipment to servicing records, etc.
- Mobile object and vehicle properties can be defined.
  - Vehicles can be attached to traces to build simulations
  - They can move and navigate over surface
  - Demonstration drive/fly-throughs can be created.

VR Window - Capabilities

- Can build virtual world models of operating pits by:
  - Draping aerial photo on terrain model
  - Linking objects to external data (blast models, stockpile data, telemetry, assays, maps, sections, schedules…)
  - Adding photorealistic objects to emulate reality.
  - Creating moving objects like trucks to operate on real world routes.



VR Window - Applications

- Desktop data immersion
  - Can navigate and interrogate data for:
    - Geochemistry, geophysics, topography, structure, geotechnics
- Mine information
  - Can display and link to information relating to:
    - Geology, planning, grade control, haulage, stockpiles, plant
    - In-pit, mine office, head office, mobile, field based, worldwide
- Corporate PR
  - Provides a comprehensible view of the mine for:
    - Public, shareholders, banks, agencies, investors
  - Web based, high impact presentation
- Solids modelling
  - Immersion
  - Advanced modelling techniques

VR Window – Benefits

- Provides an Intuitive data interface which makes it:
  - People-friendly; making technical data accessible to non-technical people.
  - Encourage information sharing.
- Adds value to the data
  - Connects to many types of data in an organization.
  - Provides intuitive navigation to relevant data.
- Minimizes errors
  - Immersion aids recognition of trends and interpretative features.
  - Realism aids recognition of errors in raw data, analyses and interpretations.

Exercise – VR Window

Try the following:

- Use the VR tutorials 1 and 3.

Session 12 – Scripting

Scripting – Aims of Session

This is not a scripting course.

Scripting is one of the areas of greatest change in Studio 3.

This session will:

- Review the existing scripting functionality of Studio 2.
- Review the terminology used in scripting and its current usage.
- Present the concept of the “Studio Application Object Model” (SAOM) for scripting.

Script Migration Matrix

Script Type	*Studio 2.1 Support*	*Studio 3 Support*	*Restrictions*
Macros/Menus	Yes	Yes	Some restrictions to SCREEN based MENUS
CL	Yes	No	N/A
Scripting	Yes	Yes	NONE
Scripting using the Datamine Scripting Library	Yes	No	Some functionality replaced by the Studio Application Object Model

Scripting – Graphical Classification

Studio Application Scripting

Enterprise Framework

Record/Replay **MACROS/MENU**	**Custom Functions**	**Customized Solutions**

End Users

Datamine Enterprise Implementers

Scripting – Record and Replay in Studio 3

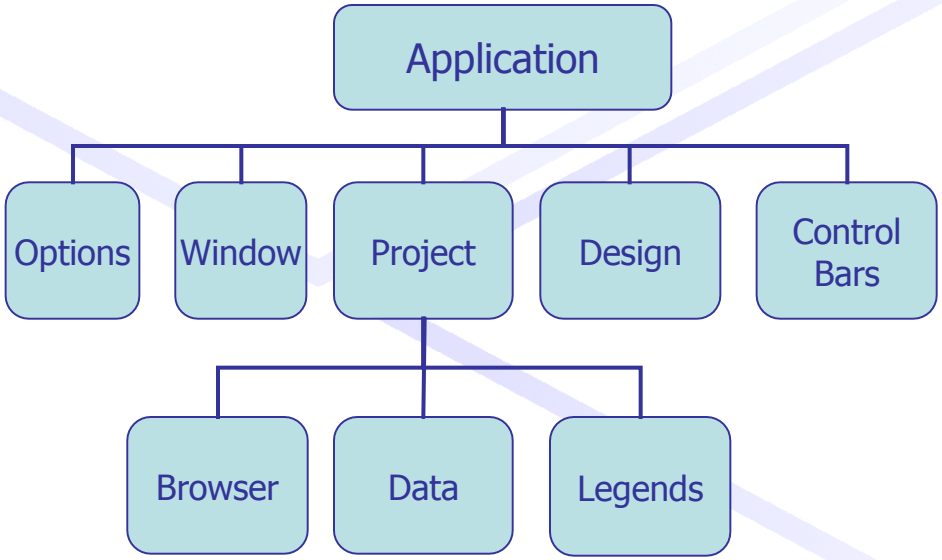
Designed for use by end users, there is:

- A simple user Interface with intuitive buttons:
  - Record
  - Play
  - Pause – (Record pause) new to Studio 3
- A choice of output file:
  - XML
  - HTML (default)
- A customisable style sheet (XSLT)

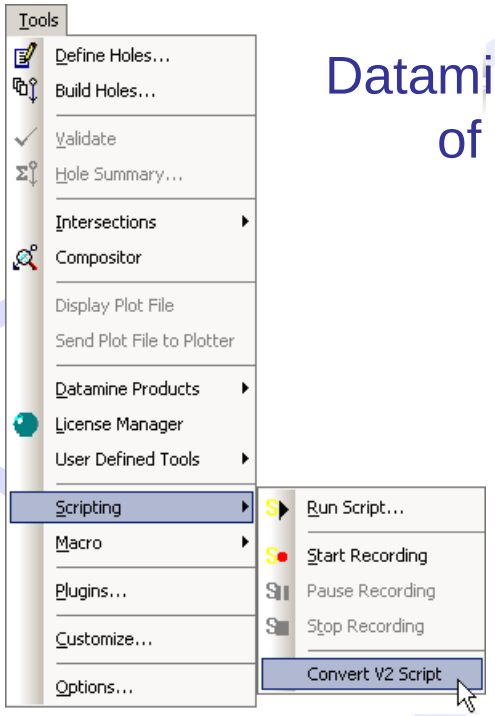
From Library to Object Model

Scripting in Studio 2 was based on a Script Library:

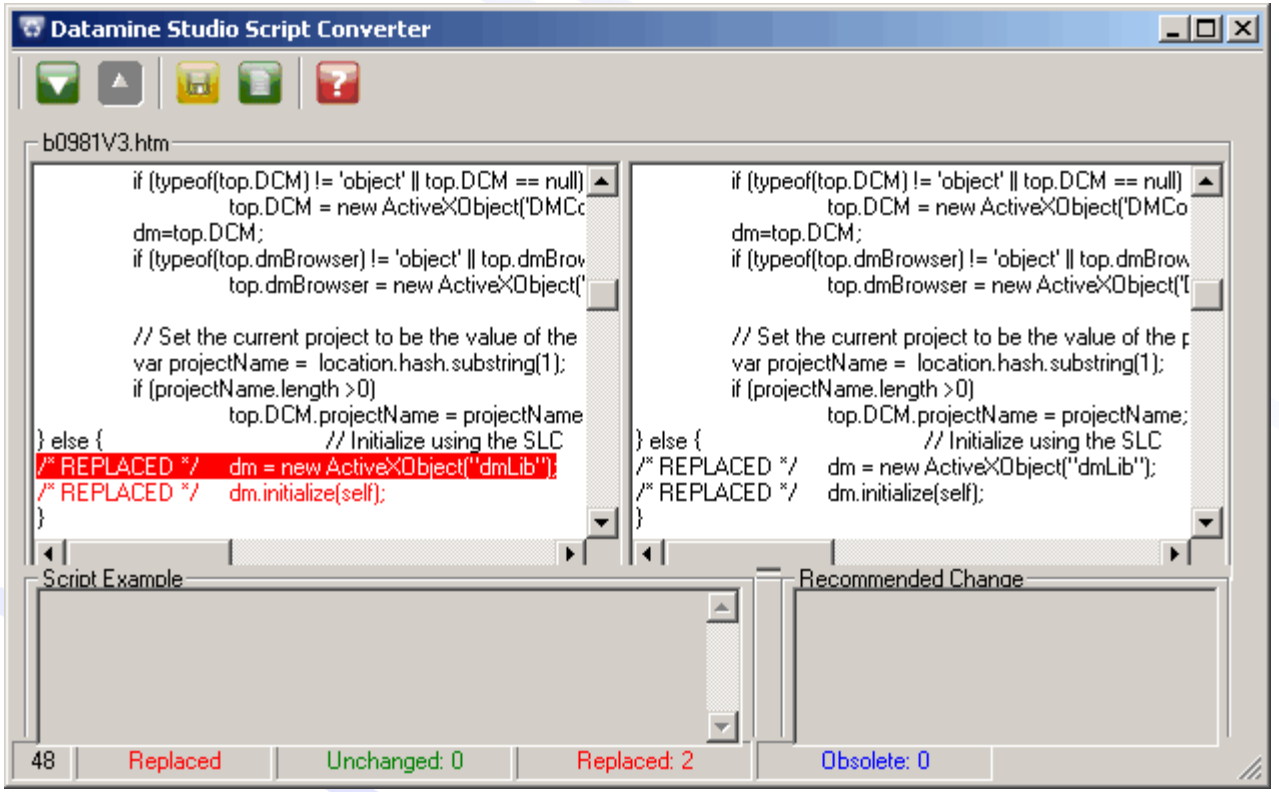
- A collection of script functions organised by functionality to enable users to access:
  - Data handling functionality (e.g. field values)
  - General command functions (e.g. browse for file)
  - Utilities
- The library is supported in Studio 3 (but not the preferred working practice)
- Many library functions have been replaced by the Studio Application Object Model…



Converting Scripts to Studio 3



Datamine has written a Script Converter which does much of the work.



Converter identifies:

- Unchanged commands,
- Obsolete commands,
- Replaced commands.

Unchanged commands are converted automatically, but replaced and obsolete commands require intervention.

The Converter Report

The Script Converter produces a report which lists all commands and their status.

- In the example below, the command “get-wf-data” is flagged as “Replaced”.

Where possible, the report provides example snippets to help the conversion process.

Script Examples – Old and New

Initialization in JSCRIPT:

Old

```
dm = new ActiveXObject("dmLib");    //scripting library
dm.initialize(self);

dm.command(“get-all-strings &topost");

dm.command(“zoom-all-graphics”);
```

New

```
oDmApp = new ActiveXObject(“DatamineStudio.Application"); //SAOM

oDmApp.ActiveProject.Data.LoadFileWithOptions(”c:/database/tutorial/_contours.dm”,”LEVEL”,”COLOR=2”);

oDmApp.ParseCommand(“zoom-all-graphics”);
```

Browsing and loading data:

```
oDmBrowser = oDmApp.ActiveProject.Browser;

oDmBrowser.TypeFilter = dmString;

oDmBrowser.Show(true);                          // allow user to select any file

var pathname = oDmBrowser.FilePath;             // fetch the pathname to the file

var pObject =
oDmApp.ActiveProject.Data.LoadFileWithOptions(pathname,"","COLOUR=2");
                                                // load using filter
```

Practical – Using Save and Replay

- In Datamine Studio, select **Tools | Scripting | Start Recording**
  - Enter the name of the HTML file where the commands are to be saved
- Run the following commands:

```
SORT   &IN=dhcollars &OUT=tempcollars *KEY1=BHID
SORT   &IN=dhassays  &OUT=tempassays  *KEY1=BHID *KEY2=FROM
SORT   &IN=dhlith &OUT=templith *KEY1=BHID *KEY2=FROM
SORT   &IN=dhsurvey &OUT=tempsurvey *KEY1=BHID *KEY2=AT
JOIN   &IN1=tempcollars &IN2=tempassays &OUT=temp1 *KEY1=BHID @SUBSETR=1
HOLMER &IN1=temp1 &IN2=templith &OUT=temp2 *BHID=BHID *FROM=FROM *TO=TO
DESURV &IN1=temp2 &IN2=tempsurvey &OUT=dholes
DDLIST &IN=dholes
```

- Select **Tools | Scripting | Stop Recording**
- Now run the script by selecting, **Tools | Scripting | Run Script…**

Exercise - Scripting

Try the following:

- Convert one, or more, of your scripts.

The End

We hope you found this training presentation useful.

It may take a bit of getting used to, but we are sure you will find Studio 3 offers you lots of new opportunities to improve and enhance your work practices.

Don’t forget to consult the Help file before calling support!

Thank You