VICON
MOTION SYSTEMS

VICON
MOTION SYSTEMS

What is it?

Eclipse is a flexible and user configurable data management tool which is found in both the Vicon Workstation and Polygon software. The aim is to provide the users of these software packages with an easy-to-use and intuitive, yet powerful and flexible, way of managing all the different data files that are used for motion capture.

Eclipse is essentially an advanced yet easy-to-use filing system that works across the Vicon Workstation and Polygon software packages.

What isn't it?

Eclipse does not change the output of either Workstation or Polygon – it simply makes inputting and organising data a lot easier, and a lot more flexible, than before.

Eclipse does not perform calculations, create models or change the data stored through it.

What's it used for?

Whenever you open Workstation you do so in order to study previously captured data or to capture new data. Eclipse is the tool that you use to find those saved data files, and it is what you'll use to create the 'databases' for new files.

Eclipse is an integral part of Workstation and Polygon – you use it to create new databases and access existing databases.

If you already have Workstation/Polygon installed on your computer you may want to install the new software version fitted with Eclipse in a separate folder. This will mean that if you want to quickly access an old folder you won't need to convert it to the new Eclipse format first. It also means that changed and improved functionality in future builds of Workstation/Polygon will not jeopardize your ability to access old files.

Launch Workstation – Your first Eclipse

When you launch Workstation you'll get the box below :
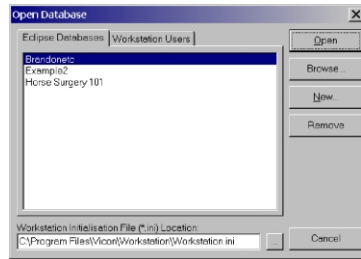
THE OPEN DATABASE BOX GIVES YOU THE CHOICE OF OPENING AN EXISTING DATABASE OR CREATING A NEW ONE – CLICK ON NEW TO GET THE BOX SHOWN BELOW:
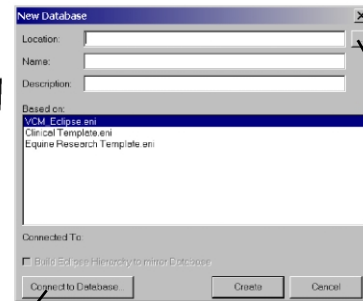
AS YOU CAN SEE THE NEW DATABASE BOX HAS A NUMBER OF EMPTY SPACES THAT YOU NEED TO FILL – DON'T WORRY, IT IS NOT AS COMPLICATED AS IT LOOKS:

IGNORE THIS BUTTON FOR NOW, IT IS EXPLAINED LATER.

HINT : THE LITTLE BOX AT THE SIDE WITH THREE DOTS IN IT MEANS YOU CAN CLICK IT TO BROWSE FOR THE FOLDER YOU WANT, YOU'LL SEE THIS QUITE OFTEN.

First: Location, Location, Location.

This is where you specify where you want your database folder to be positioned – for this walkthrough select the Vicon/Userdata folder

Second: Name

What do you want to call your new database? How about "Experimentation" for this example?

Third: Description

This is where you might put a note to supplement the database name, you can leave it blank if you want, but for this example put in a few words to see where they reappear later on.

OK, so now those empty boxes are filled and you're just about to click the Create button....STOP!

Before you create a database you must let Eclipse know what format you want the database to follow, if you're doing Gait Analysis for example you don't want a database format optimised for Equine Research! If you forget to specify this when creating a database Eclipse will use the template at the top of the list.
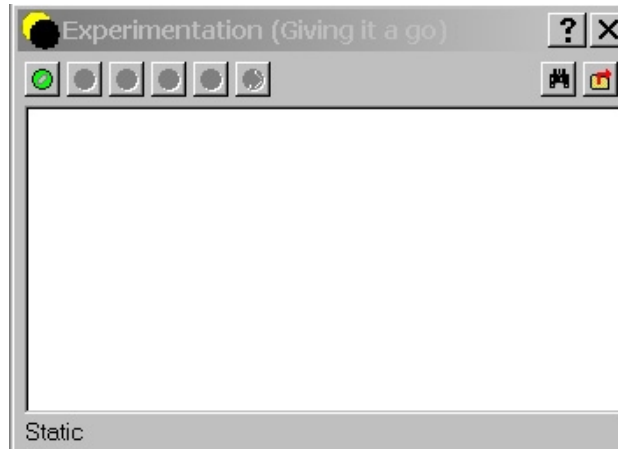
For now select "Clinical Template.eni". More information on templates is given later on.

NOW you can click Create....
Don't worry too much about templates at the moment – there is more about them later on!

The Node System

You should now have a box on screen that looks something like this....

To use the Eclipse database system you need to learn a bit about nodes, which, you'll be pleased to know, is a lot simpler than it sounds. We'll learn by experimenting.....

Click the 'Patient Classification' button....
You'll notice that two things happened – a line, highlighted in blue, appears in the database window, and a second button (looking a bit like Da Vinci's Vitruvius Man, in black and yellow) has become available. This line represents a top-level node, you can name the node differently to the default when you create it, and at a later date by right-clicking it and selecting 'rename'. Name this node "Learning about nodes". In a clinical environment you might name it according to the type of study/patient you're going to motion capture.

If you think of a node as a folder, and the nodes in it as sub-folders, you will be on the right track. The difference in Eclipse is that different nodes have different properties and contain different things.

The blue line right across the screen means that this 'node' is the active node, this will become more important later on.

It is the template file that you select upon creating a database that decides the default names for the nodes – it also defines what each node can contain. The Clinical Template calls the Top-level node 'Patient Classification'.

Click the 'Patient' button....
As before a new line, highlighted in blue, appears. The top-level node is no longer highlighted. Two more buttons (one looks like a stopwatch and the other shows a red arrow going round a sphere) have become available.
The new line represents a 2nd level node (a 'Patient' node for the Clinical Template), and for this example name it with your name. In a gait analysis study you might put the name of the person to be studied.

If you now double-click the top-level node it will become highlighted and the 'stopwatch' button will no longer be available. Re-select the patient node and...

Click the 'Session' button....

This brings up the 3rd level node – this is a 'session' node, and it is with this type of node selected that you can do data captures. Two more buttons have appeared – one looks like a camera on a blue background, , the other like a derivative of the session button.

Click the 'Sub-Session' button....

This is the 4th level node, it is for sub-sessions, like the session node you can select it to do data captures. This node is useful for organizing your captured trials clearly.

You have now used the four node buttons. Try highlighting different nodes, and creating new nodes where you want them.
You will have found that there is a strict Hierarchy to your database – a node can only contain a node from the next level down.

Re-Sizing the Database Columns

The distance between the columns can be changed by moving the mouse to the left hand side of a column. The mouse cursor should now change to a left-right double arrow, indicating that you can click and hold the left mouse button and move the column either left or right.

What about the last two buttons? Trial Capture & Polygon Report

Trial Capture

Pressing this button will bring up the Trial capture dialogue. This will be talked about in more detail later on. The capture will be shown in Eclipse as a trial node – these can be stored in session and subsession nodes.

Polygon Report

This button will create a Report Node. Double clicking the node will launch Polygon, creating a new Polygon file simultaneously that will be stored in the Eclipse database. Polygon Reports are discussed in more detail in another section.

Re-Organising your Database – Click & Drag

A very useful feature of Eclipse is the ability to Left-Click on a node and Drag it to a different node than that it is currently in. The standard Hierarchical rules still apply here – you will only be able to put Session nodes, for example, into Patient nodes.

Have a go to see for yourself – the pointer will change to a barred circle until you bring it to a suitable node – when it will change to a pointer with a box underneath it.

Active and selected node

Eclipse has two ways of highlighting nodes, active and selected. A node can be both active and selected. If a node is active, a background bar which covers a rectangle stretching from the left to the right border of the enclosing window is visible. The bar is grey unless the active node is selected as well, in which case it is blue.

The selected node has a blue background colour, but only where the name of the node appears (unless it is active too, see above).

So, what is the difference between these? The active node is the one that you are currently working with and the situation where this makes a difference is when capturing trials. The active node will be the session or subsession, and the new trials which you capture will be added as children to that particular active node. Also, if you create new nodes by using the buttons at the top of the browser, the new node will be a child of the currently active node.
The selected node, on the other hand, is the one you have most recently clicked using either the left or the right mouse button. Whatever user interaction you perform inside the Eclipse browser will affect the selected node. For example, if you right-click a node it will become selected, and the shortcut popup menu will contain relevant choices for that node.

The Right-Click Menu

As mentioned earlier you can rename a node by right-clicking on it and selecting "Rename", this is not all you can do with a right-click.....

- New

This gives you the option of creating new nodes – the types of node available depend upon that selected.

- Open

This will let you open different data in a trial if selected.

- Edit

Depending on the node selected this gives you the option of editing some or all of the following: descriptions, notes and subject measurements.

- Delete

Deletes the node selected – and all the nodes contained within. You are asked when you close the programme if you are sure about deleting the nodes.

- Restore

Restores to life previously deleted nodes (only until you close the programme, when you are asked to confirm deletion). But you can still restore confirmed deleted nodes by restoring them from the Windows Recycle Bin.

- Empty

Confirms aforementioned deletion of nodes before you close the programme i.e.

it empties the deleted files into the recycle bin.

- Rename

Funnily enough this allows you to rename the node selected.

- Select Font…

This allows you to select the font, font style, size and colour of your Eclipse database. This is applied across the whole Eclipse database system (not individual nodes).

- Open Database…

This brings up the Open Database dialogue box….

Don't forget to use F2!

Pressing F2 in Workstation or Polygon will call-up/hide the Eclipse window.

Tip: This can be handy to refresh the screen if needed.

Before carrying out any trial captures you will need to calibrate your Vicon system.

How does Eclipse assign calibrations to trials?

Camera calibrations are archived in a Vicon system sub-folder rather than only keeping the most recent calibration. When a trial is captured, the most recent calibration is assigned to it and copied into its parent session folder if it doesn't already exist there. In other words, it is copied at trial capture time and not session creation time. This allows sessions to hold multiple camera calibrations; a necessity to avoid certain restrictions on data organization.

As a consequence, the "System | Set Calibration..." command now applies to individual trials rather than whole sessions and is therefore only enabled when a trial is open.

In order to prevent the hard disk from filling up with camera calibration files over time, builds 078 and above automatically delete any archives beyond the most recent N (defaulted to 20). This value is currently a hidden preference and can be changed in the [User Preferences] section of the Workstation.ini file by setting the "CalibrationsToKeep" key value.
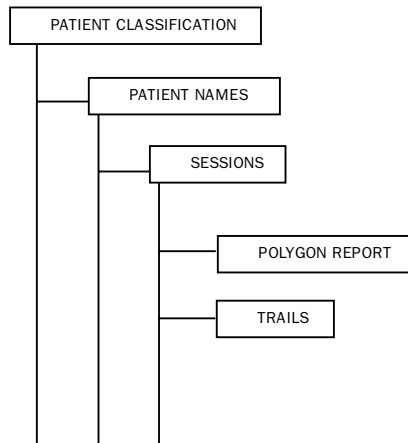
Since older calibration archives will now be deleted, the option to browse for any calibration has been added to the Set Calibration dialog so that a trial may have its calibration set to any other in existence if necessary.

Note that there is currently no way to set the calibration for a whole set of trials at the same time. Previously, setting the calibration for a session would affect every trial in that session. Now each trial must be set individually. The assumption is that in 99% of cases, the most recent calibration will be good for trials being captured.
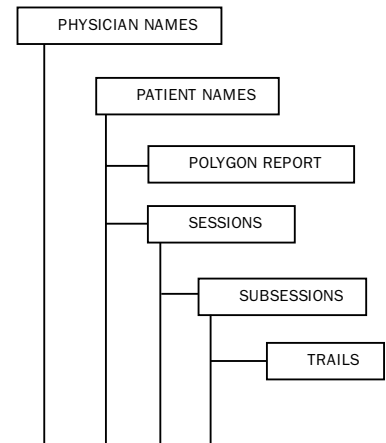
As for the dialog, the "System | Calibrate [Cameras]..." command does what it always has done and shows the most recent calibration information. There is currently no way to view the calibration for a given trial.

Earlier, when you created your first database you had to specify a template upon which it would be based. Templates control the way that your database hierarchy functions:

| You may want a database structure like this... | or this..... |

PATIENT CLASSIFICATION

PATIENT NAMES

SESSIONS

POLYGON REPORT

TRAILS

PHYSICIAN NAMES

PATIENT NAMES

POLYGON REPORT

SESSIONS

SUBSESSIONS

TRAILS

What Nodes?
A database can have up to 5 node types, i.e. A hierarchy with up to 5 levels. The template controls this.

Node Names?
The template specifies the default name for each node.

Node Characteristics?
The template controls the characteristics of each node type – which sub-nodes it can contain and what additional information can be supplied in the database columns (in the form of 'Notes' and 'Description').

VICON
MOTION SYSTEMS

Eclipse organizes databases using three file types, below is a brief summary of each file type for information purposes only.

IT IS STRONGLY RECOMMENDED THAT YOU DO NOT ATTEMPT TO CUSTOMIZE ANY OF THESE FILES – DOING SO WITHOUT PROPER TRAINING MAY RENDER YOUR SYSTEM INOPERABLE!

.eni

.eni (Eclipse Node Initialisation) files are the template files specifying database characteristics. When creating a new database the user will need to specify what template Eclipse should use - upon creation of this database a copy of the template file is placed in the new database folder. If the original template file is changed (or deleted) at a later date the individual databases will remain unaffected. If the database copy of the template is modified it will affect only that database.

.enf

The link between the folders and files on your hard disk and nodes in the browser is a little file called ENF (Eclipse Node File) files. Every node in your browser has a corresponding file like this stored somewhere on the hard disk. It is a simple text file and if you open it using Notepad you will see that it contains information about the node - the parent node, the name of the node etc. YOU MUST NEVER MANUALLY EDIT THESE FILES, AS THAT MAY PREVENT ECLIPSE FROM BUILDING THE HIERARCHY

.end

If you should decide to delete a node in a database Eclipse will change that nodes file type from .enf to .end – this tells it that a) that node is unavailable for the rest of the session, and b) that when the Workstation or Polygon software is closed the user is to be prompted to confirm the deletion of those files. If deletion is confirmed the files are changed back to .enf files and then sent to the recycle bin (allowing a change of heart later!), if deletion is cancelled then the files are restored to their original status.

VICON
MOTION SYSTEMS

Accessing Data from the old Workstation Hierarchy

The first step is to locate the "Workstation.ini" file. This file specifies where the old Workstation users can be located, and Eclipse needs this information. Please specify the path to this file in the appropriate field in the lower part of the "Open Database" dialog (as shown on page 5), either by typing it in or by browsing via the button labelled "..." beside the Cancel button.

Once you have specified the location of the Workstation.ini file you can select the "Workstation Users" tab and you should get a list of every Workstation user of the old Workstation data hierarchy. Select the one you want by double-clicking or using the "Open" button. This will bring up the following dialog box:
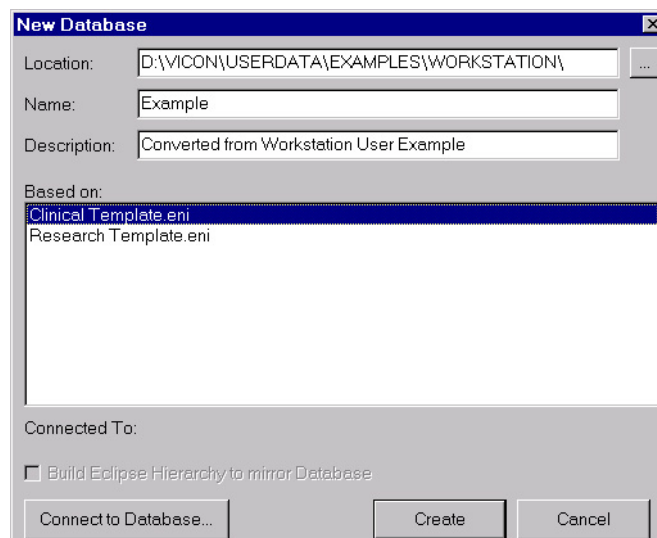
You will now need to select an Eclipse Node Initialisation (ENI) template file. This may sound like a mouthful, but this file is the one that will determine the properties of your new Eclipse hierarchy.

Vicon Motion Systems have supplied some default ENI files which will ensure that your new Workstation with Eclipse will work nicely. Please select the appropriate ENI file in the "New Database" dialog and type in a name and

description for the data hierarchy that we are about to convert from the old Workstation hierarchy.

NB! This operation is completely safe. The only thing Eclipse will do is to add a number of tiny text files which will enable Eclipse to build the hierarchy exactly equivalent to the old Workstation hierarchy. No data will be moved or removed and the hierarchy can still be read by older versions of the Workstation Software should you choose to reinstall it.

Once you have filled out the Name and Description and selected an appropriate ENI template, please click on "Create".

At this stage Eclipse will do the conversion, which as mentioned above consists of adding a number of small files to the existing file structure on your hard disk or network drive. This is a one-off operation and it may take some time. A little dialog box will appear showing how many sessions have been processed.

At the end of this operation, you will see the Eclipse browser appear inside either Polygon or Workstation containing all the sessions and trials that were associated with the same user in the old Workstation hierarchy.