



# *everest*<sup>TM</sup>

Thank you for choosing Everest. At PEAK we are committed to continuous enhancement to our products. We encourage your suggestions and feedback regarding the product and this documentation.

Our support email addresses is [support@peak.cc](mailto:support@peak.cc) - You are also welcome to use the web-based support at [www.peak.cc](http://www.peak.cc) - You also have telephone support available from your local Peak contact.

Everest is a multipurpose content authoring and real-time rendering system designed for on-air graphics production and virtual sets. It can output at any required resolution, and is available with nearly identical functionality and appearance on all current Silicon Graphics systems. Differences in functionality are

due to differing hardware capabilities in the various SGI systems. As system performance increases so does the possible scene complexity.

The authoring environment (GUI) enables graphics and sets to be designed, built and tested. Connections can be established to camera systems and other external devices. The GUI includes multiple live rendering windows for realtime feedback on the to-air image, other camera views and orthogonal representations of the scene. The GUI uses a drag and drop metaphor throughout. The rendering environment can be controlled from external devices or software that can supply dynamically changing data to the render template.

## SOFTWARE OVERVIEW

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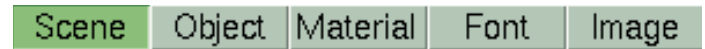
### Installing Application Software

1. Insert the CD in the CD drive.
2. Double-click the CD drive icon to open the Software Manager.
3. To install all upgrades and new products, proceed to step 4; otherwise, press *Customize Installation* and mark the desired products.
  - *Select the product to install*
4. Click the start button.
5. When the installation is complete, choose „Quit“ from the File menu.
6. Eject the CD from the drive
  - # With the CD drive icon selected, hold down the right mouse button and select „Eject CDROM“ from the desktop menu.

### Start-up

After starting up Everest the Screen shows the contents of the Scene database.

At the top of the screen at the left side the buttons let you view the different databases (Scene, Object, Material, Font and Image). You may switch between databases at any time.



On the right side the buttons let you change basic configurations for Everest.



The „Log“ button will assist you in situations where warnings or errors occur.

The „On Air“ button switches control from the GUI to external on port 6100.

The black down arrow on the upper right side lets you minimize Everest.

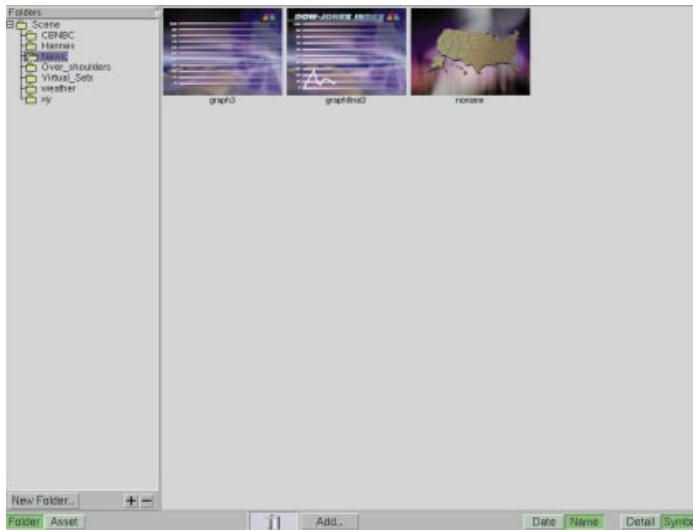
The black „X“ button exit's EVEREST.

The black „i“ button opens the license information editor, use it to enter additional licenses for everest.

## Scene Database

This database holds all the scenes you have created so far. Each Scene is represented by an icon that was automatically generated when the scene was last saved. Editing a scene (double mouse click) brings you into the scene builder. Clicking 'Add' creates a new scene.

By clicking the button labelled 'Archive' you can store complete scenes in a file. To create and archive drag the icon of a scene into the archive window. Every 3D object, font and image used by the scenes is copied to the file. You provide the filename at the bottom of the window and click 'Save'. You can look at the objects, fonts and images that go to the archive by clicking the buttons on top of the window. A scene is deleting by dragging it to the trashcan.

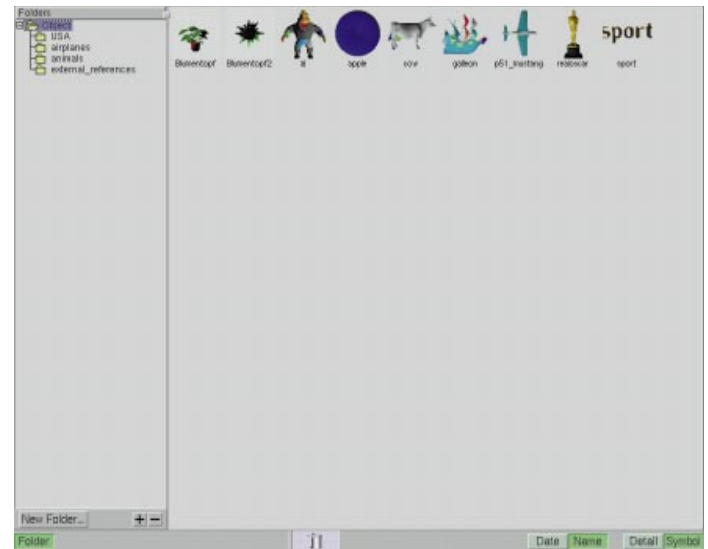


You can empty the archive by clicking 'Remove All'. If you click 'Remove Scenes' the scenes are removed but the objects, fonts and images remain. You can select a location where the archive is stored by selecting a path alias. (see Config section).

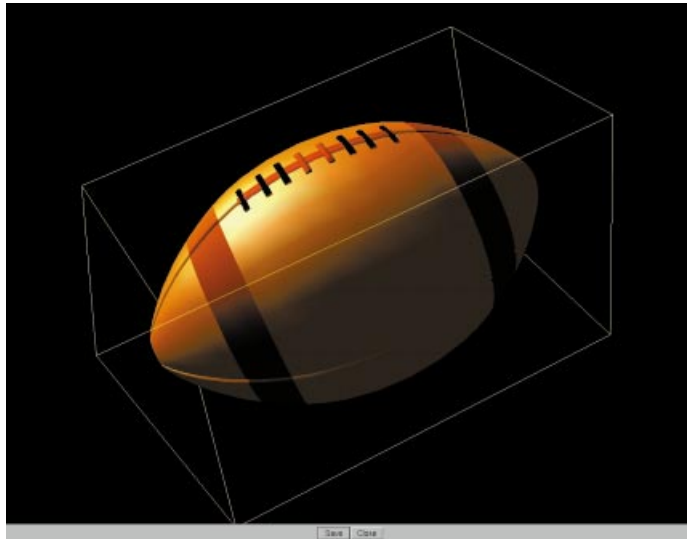


## Geometry Database

This database holds imported objects.



If you double click on an object, the object viewer opens.



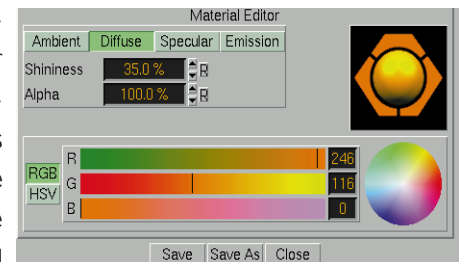
A bounding box is shown. Use the left mouse to pan the object, rotate it with the middle mouse and move it in Z with the right mouse button. By import, the grouping of an object is read and each group is assigned a different colour for better viewing. However, if the original file has colours stored in it the program reads and assigns these original colours.

## Material Database

This database holds different colours. You can add a new one by clicking 'Add'. Double clicking a material invokes the material editor. Change the colour properties for a lit object by clicking 'Ambient', 'Diffuse', 'Specular' and 'Emission'. You can



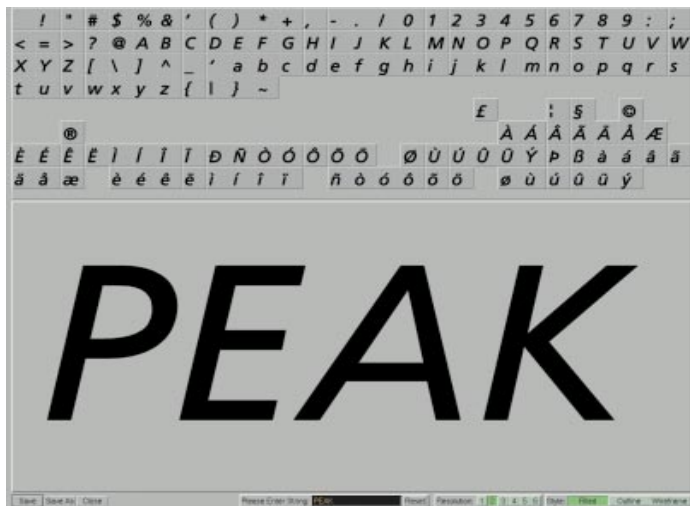
choose between editing in RGB mode or HSV mode. The colour for a lit object is shown on the sphere within the icon. The three parts around



the sphere show the plain colour for an object that is not lit. You can save the material by clicking 'Save' and you can save it using a different name by clicking 'Save As'.

## Font Database

This editor lets you view a font and change kerning. The upper



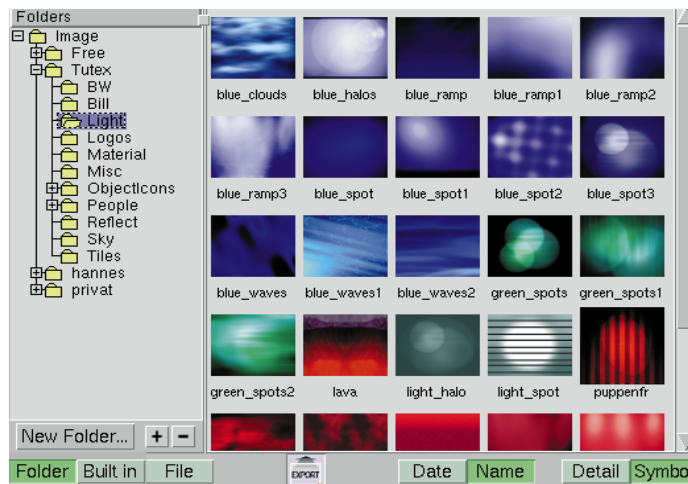
third of the screen shows the whole character set of the font: Clicking on a character displays it in the lower part of the window. You can also enter characters by keyboard at the bottom.

To enter characters by keyboard move the mouse into the editing window to the right of 'Please Enter String:'. Clicking reset will blank the screen. The display will scale as you enter more characters. You can view the different resolutions that were generated at import time. These will be used to render text with automatic level of detail. The 'Style' option lets you view the characters either filled, outlined or in wireframe mode. Viewing wireframe you see how Everest meshed the characters at import time. With the left mouse you can click on a character in the display window and drag to the left and to the right. This will change the kerning between this character pair. When you save the changes the specific kerning

will then be used when rendering text with this font. This enables on-time modification to the kerning of character pairs, saving time and encouraging consistency in use

## Image Database

At the bottom of the image database window there are two additional buttons, 'Built in' and the 'Export' icon. Clicking the 'Built in' button brings you to the live video sources. You can double click an icon and grab a still from the live video input. By dragging an image (in the folder view) to the Export icon you can export an image in SGI format to disk. Double clicking an icon of an image in

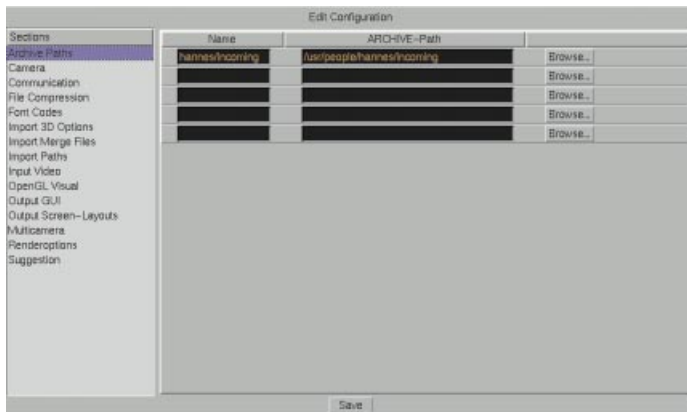




## CONFIGURATION

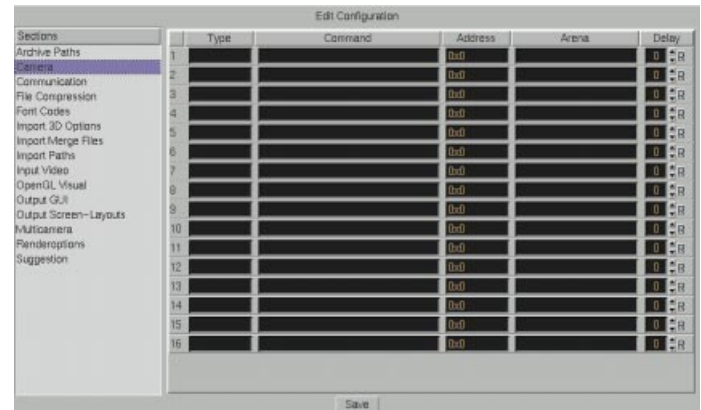
### Archive Path Aliases

Here you can set five different aliases for use with the archive function (see scene database). You type in a name that you want to use and apply a path. For selecting the path you can click the 'Browse' button.



### Camera Set-up Configuration

This section is only applicable if you have purchased EVEREST Virtual Set. Here you define the configuration of the connected real cameras. The necessary values are normally defined and entered at installation time by a qualified systems



engineer and therefore not intended to be changed by the user. For each of the 16 cameras there is one line consisting of five entries:

**Type:** label to identify the camera in the everest authoring environment

**Command:** name and command line parameters of the daemon program which connects the everest rendering systems with the physical camera

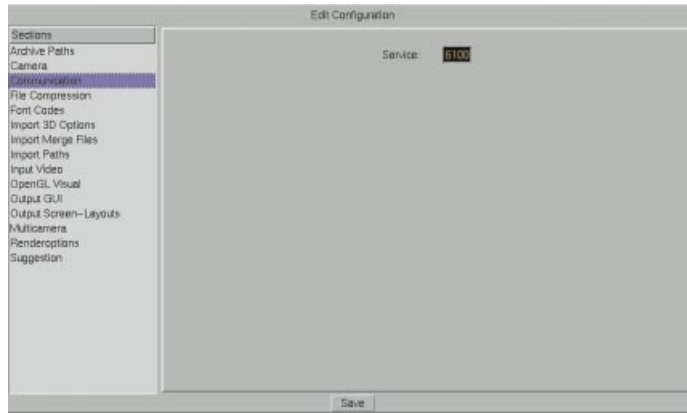
**Address :** hexadecimal shared memory address used for camera communication purposes (must be unique amongst all cameras)

**Arena:** name of the shared memory (e.g. /tmp/.everest\_camera1) (must be unique amongst all cameras)

**Delay:** additional delay for compensating camera communication problems resulting from slow network connections.



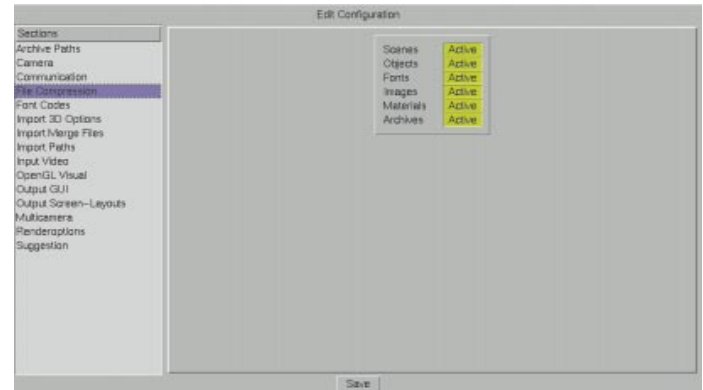
## Communication Port



Any external control software (e.g. SHERPA) uses TCP/IP network connections to send its commands to the everest rendering engine. Everest expects its command at a certain port which has to be defined here. For any single pipe (one display) system, the default value (6100) is fine and should not be changed.

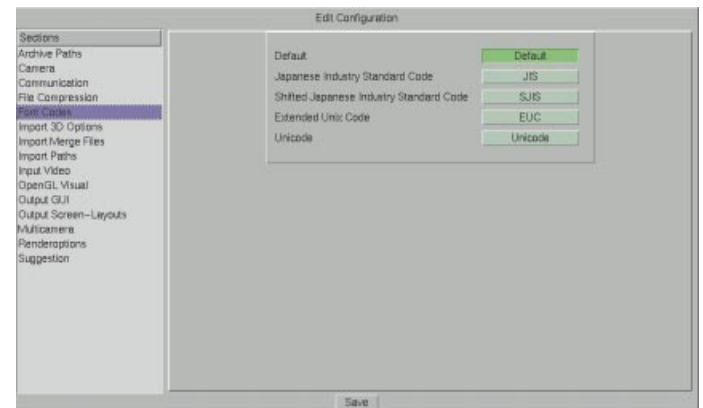
## File Compression

To save disk space and to speed up scene loading, everest stores its data in a compressed form (similar to tools like compress or gzip). On remote (nfs) mounted filesystems this also reduces network load dramatically during a scene load. Here you can switch off this behaviour for certain object types.



## Font Codes

This section is only applicable if you need to use two-byte fonts together with the everest system. The most common settings in this case are:



*SJIS* (Shifted Japanese Industry Standard Code) and *EUC* (Extended Unix Code).

Please refer to your systems documentation and to the documentation of your external control software to determine the font code type to use.

### Import 3D Options

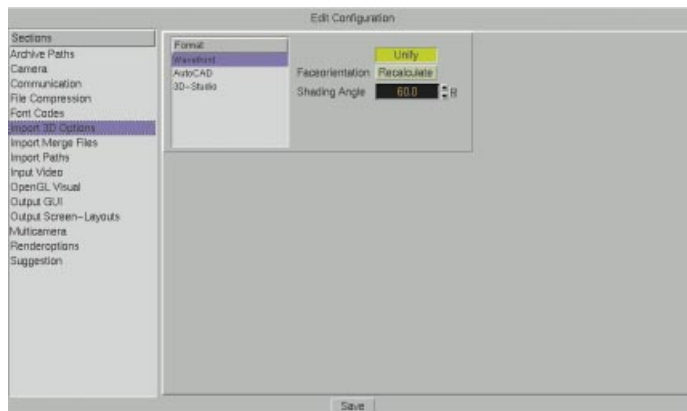
Here you can define certain parameters influencing the import of 3D objects (seperately for all available formats). For each format you have three controls available:

*Unify*: if activated, all vertices are recalculated during import in a way, that the object center is moved to the origin (0/0/0) and the size of the object is 100cm in its largest extend. If deactivated, all vertices maintain their values as defined in the original file. Therefore it may happen that an object is not

visible after putting it to a scene because the object is translated a lot from the origin or is scaled up or down very much. You may need to deactivate the unification to be able to recombine several seperately imported objects which have to keep their size and relative position.

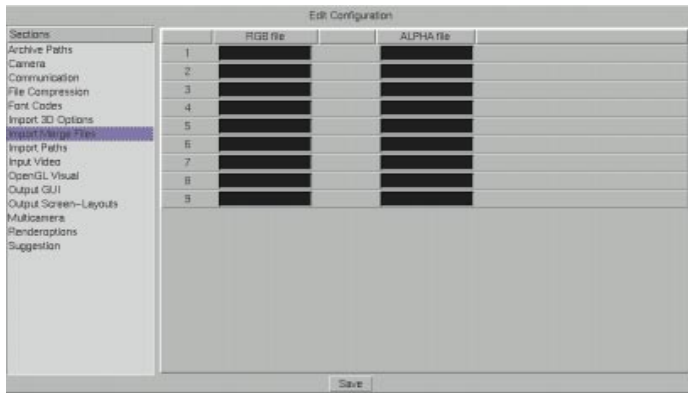
*Faceorientation*: Polygonal 3D models often do not have a consistent face orientation, but for performance reasons the everest renderer expects that all faces of an object point to the same direction. If you activate this function, everest tries to rearrange the orientation of the object faces during import. This may not always be correct, but in most cases the result is quite ok.

*Shading Angle*: If you have a 3D object with no normal vector information, everest automatically recalculates the normals from the geometry to make lightning possible. This recalculation is influenced by this angle which acts as a threshold between sharp and soft edges. A value of 60 for example means that an edge between two faces is considered to be a soft edge for angles below 60 and a sharp edge above this level. 60 is also the default.



### Import Merge Files

Everest can automatically import and combine image and alpha information stored in different files. Here you can specify this naming convention and Everest at import time will read both files and construct one RGBA image.



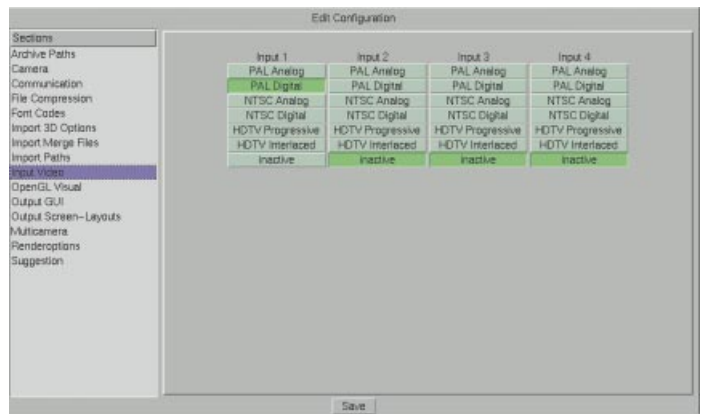
### Import Path Aliases

Here you can set five different aliases for use with the import path function. You type in a name that you want to use and apply a path. For selecting the path you can click the 'Browse' button.



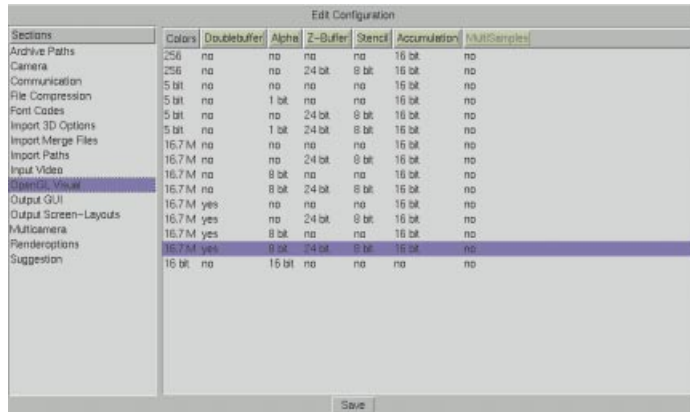
### Video Input and Output

This editor configures the video input and output format. On an O2, Indigo, Octane and an Onyx using the Sirius board you can only have one input. On an Onyx2 you can use up to four video inputs in parallel if you have four DIVO boards installed. You can choose between six different formats. The output configuration is used to size the renderer window correctly.



### Open GL Visual

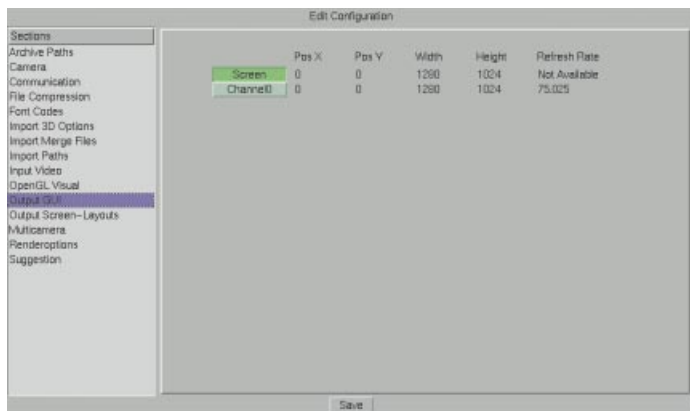
This editor enables you to view and change the hardware configuration of bitplanes. The display of hardware bitplanes is done with the following window. Be careful with changes you make to this editor unless you know exactly how it works. You can see here if, for example, the hardware can do screen



antialiasing by multisampling or how many Z-buffer bitplanes are available.

## Output GUI

This section is only applicable if you have a multichannel



capable computer (like the SGI ONYX2). It basically defines on which channel the everest authoring environment will appear after startup or if it should cover the whole screen (all channels).

## Output Screen Layouts

Here you define the output format of the everest rendering engine.

PAL ANALOG: 768x576 @ 50Hz

PAL DIGITAL: 720x576 @ 50Hz

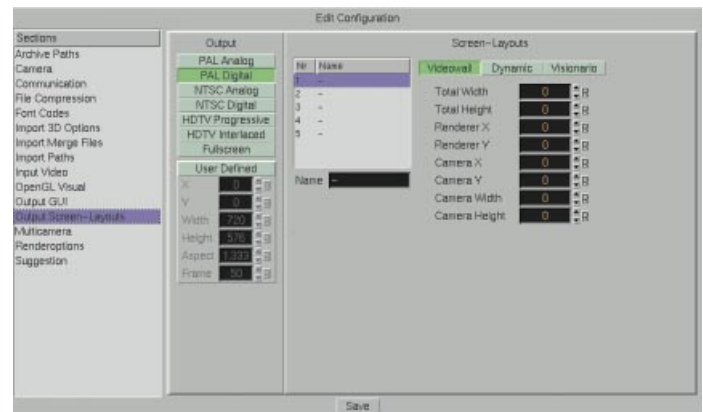
NTSC ANALOG: 640x486 @ 60Hz

NTSC DIGITAL: 720x486 @ 60Hz

HDTV PROGRESSIVE (720P) : 1280x720 @ 60Hz

HDTV INTERLACED (1080I) : 1920x1080 @ 60Hz

USER DEFINED: variable



With the user defined selection you can define your own format and frequency as well as the position of the output window in respect to the upper left corner of the screen. After making a selection please make sure that the physical refresh rate of the graphics hardware and the video hardware is configured correspondingly. If user defined is selected, you also have the possibility to set up the viewing frustums in a special way fitting the requirements of multipipe systems (used for videowalls or visionarium). The setup for these systems has to be done by experienced system engineers and therefore these parameters are not explained here in detail. For more information please contact your local support or PEAK directly.

### Multicamera

This section is only applicable if you have purchased EVEREST Virtual Set together with the VCS hardware (virtual camera switcher). There are several entries available:

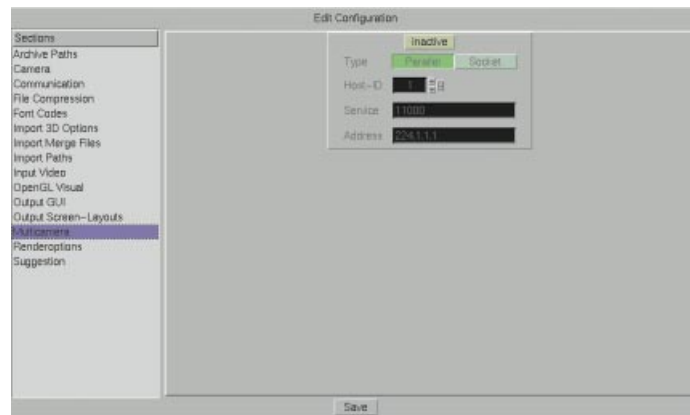
*Parallel ...* if the VCS is connected via the parallel interface.

*Socket:* ...if the VCS sends its data over the network

*Host-Id:* as defined in the VCS

*Service:* port number or service name for the socket connection

*Address:* multicast address for the socket connection



### Renderoptions

This section defines the capabilities of the render window. In the bottom line you can see if your current selection is valid for the hardware you are running on. You may find that not all capabilities can be selected at the same time on certain platforms.

**Anti-Aliasing HARDWARE:** if your computer has hardware antialiasing available (currently only SGI ONYX computers). This gives you the maximum render quality with high performance.

**SOFTWARE** can be used for computers without hardware antialiasing. A rendered image will be antialiased (in EDIT and/or ONAIR mode - depending on the setting) if no animation is running or during post rendering. You can improve



quality by selecting a higher sample rate which will on the other hand decrease performance quite a lot.

Alpha: enables external key/matte capabilities

Mask: enables the mask feature

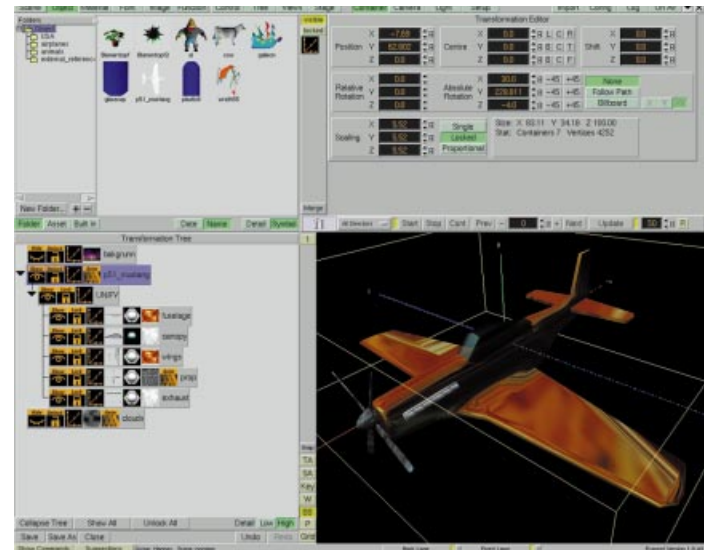
## Scene Building

### General Description

Enter the scene building window by double clicking a scene in the scene database. This window consists of four areas:

The rendering window is in the lower right part of the screen. It shows what will go on air.

The transformation tree is shown in the lower left. Databases are in the upper left and object editors are in the upper right



windows. Interaction with the scene builder is mostly based on drag and drop actions. To add a container you drag an object from the database into the tree or into the rendering window. If you drag it into the tree you will see an arrow in the already existing containers that shows you where the new container is added.

The following buttons are found at the very top left of the scene builder screen:



Clicking 'Scene', 'Object', 'Material', 'Image', 'Font' or 'Function' switches databases as explained above.

'Setup' adjusts some global properties.

## GENERAL DESCRIPTION

'Control' lets you create channels for external control.

'Tree' lets you display the tree using the space of the database area in addition.

'Views' brings up different views of the scene.

'Stage' enters the animation director.



Using 'Container', 'Camera' or 'Light' let you switch between the container editor, the camera editor and the light editor.

### The Tree

The tree consists of containers that hold objects. Objects can be geometry, image, material, text, transparency, key and many more.



The container representation consists of the following icons:


▼ A black arrow that indicates that the container has sub-containers in it. If the black arrow points to the right the sub-containers are not displayed. If it points down you can see the sub-containers. Click on it to change its state.

  An eye icon that indicates if the container and all its sub-containers are visible in the rendering



window. Click on it to change.

  An icon showing if the container is locked or unlocked. If the container is locked you cannot drag it around in the rendering area.

 An axis icon that is always present.

 An icon showing the geometry held by the container.

## GENERAL DESCRIPTION

This is either an icon of the imported object or the symbol of the primitive.



A material icon indicating that the container is drawn using a specific material. If there is no material icon this means that a standard white material is used.



An image icon indicating that the container holds an image. There are two ways an image can apply to a container. If the container holds geometry, the image is used for texturing the geometry. If there is no geometry, the image is displayed as it is.



An icon saying Alpha. If it is there the container is drawn transparent.



A Key icon indicates that the container is also used to generate key information.



An icon showing if any object in the container has animation.



An icon showing if the container has mask operations applied to it.



An icon showing that you can invoke the expert editor for this container.



Clicking on an icon within a container has the following effect: The container is marked in the tree. Within the rendering window a bounding box is shown for this container. In the upper right part of the screen an editor is shown. So if you click on the material icon of the container the container will be marked and the material editor is opened. If you now click on the name icon of another container, this container is marked and the material editor is opened if it holds material. If not, the transformation editor is shown.

To unmark a container click on the black background of the rendering window or press the space bar while the cursor is placed in the rendering window.

Double click on the name icon of a container already marked to edit its name. Press return when you are done or Escape if you don't want to change. While editing the name you can traverse through the tree with Cursor down and Cursor up.

To move a container to another position in the tree just drag it.

To copy a container hold down the Ctrl-key while dragging. To change an object within a container drag an object out of the database onto the container. This will change to the new object.

To drag the same object into more than one container drag it onto the first container and press the right mouse button without releasing the left one. Then go on to the next con-



## RENDERING AREA

tainer, press right mouse and so on. You can also drag objects out of the database directly into the rendering window. This will add a new container if you drop onto the background or change an existing container if you drop into this container. To show that your drop action will change a container its bounding box will change colour.

To delete a container click its name icon and drag it into the trashcan at lower left. To delete an image out of a container drag it into the trashcan.

### Display Options

The 'eye icons' hide or unhide each container in the tree.

The 'lock icons' lock or unlock each container.

Clicking the minus or plus icon will show only the uppermost containers or all containers in the tree.



You can switch the tree display to low detail at the lower right of this window.

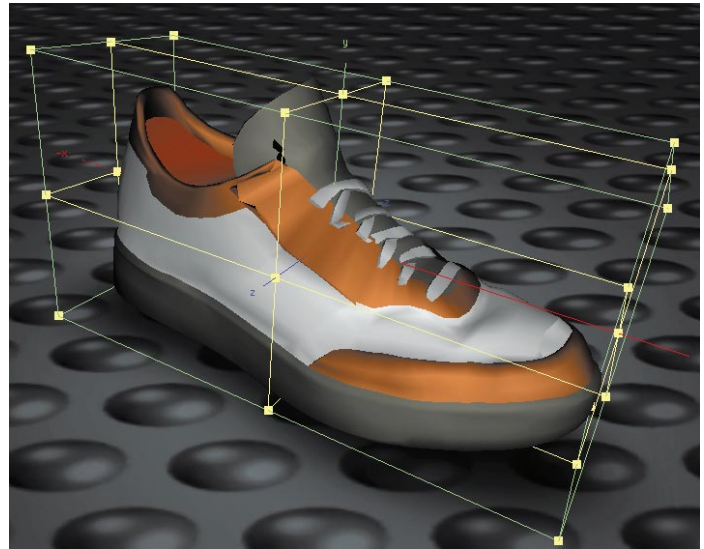
### The Rendering Area

The rendering window includes edit functions:

You can pick a container by using left mouse. This is done on a per pixel basis. You then can move it using left mouse. The object exactly stays under the mouse cursor.

You can rotate a marked container using middle mouse.

You can translate a container in Z by using left+middle mouse.



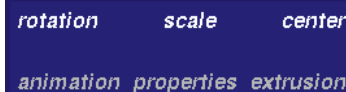
While doing this a small status window is displayed monitoring the properties you are changing.

Holding down the Shift key locks direction.

Hold down the Ctrl key before clicking on a container and dragging it to copy the container.

Traverse the tree with Cursor Up/Down and Cursor Left/Right. Cursor Left brings you to the group above. Cursor Right brings you to the first sub-container in a group. Cursor Up Down goes from one container to the next on the same level.

The right mouse gives you a menu:



Press right mouse and then move to 'scale', 'rotation', 'center' or 'animation'. If you

## RENDERING AREA

choose scale you get scaling handles at the bounding box:  
Pick any of the yellow handles and drag the mouse to scale the object.

For rotation you get rotation handles on the axis:  
Pick it and drag the mouse left or right to rotate the object around an axis.

'Center' gives you handles to move the object centre (these handles look the same as the rotation handles). Dragging the centre handles lets you shift the axis centre of the object e.g. to have it rotate around another centre.

'Animation' shows the key frames of this container (explained in section 'Animation').

Additional functions in the output window:

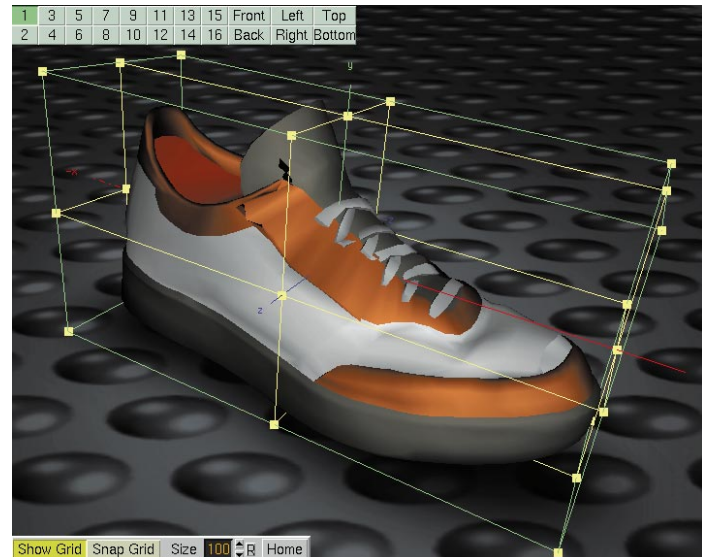
On top of the window the Animation timeline is shown.

On the left side of the window there are several buttons:

'1' is the standard camera view. If you click it you get a menu: '2', '3', and '4' are the different cameras. 'Multi' switches cameras automatically if you are using more than one camera on one Onyx.

'Front' is the front camera view and is shown in parallel projection. Same with 'Back' for back view, 'Left' for left view, 'Right' for right view, 'Top' for top view and 'Bottom' for bottom view.

'Key' gives you a view of what the Key output will look like. You cannot do editing (picking...) in Key view.



'W' renders the scene in wire frame mode.

'BB' switches on and off the bounding box of a marked container.

'P' gives you an idea of the performance (frames per second) this scene is rendering with:



If you switch it on you will see a bar with different colours and two numbers on the left side of the bar. The upper number tells you how many frames this scene will render at in on air mode. It should be 50 (PAL) or 60 (NTSC) according to which rate has been specified in the configuration editor. The lower number tells you how many frames per second the scene can render at without waiting for vertical retrace. The higher the second number the more performance is left. If the second number goes down below 50 or 60 the scene is not rendering in real-time.

'Grid' is the editor for the grid that is shown in all orthographic views. You may switch it on or off and change its size. 100 means 100 centimetres. The perspective camera is 5 meters away from the zero point. If you press 'Snap Grid' moving an object in the render area will snap it to the grid.

## THE EDITOR SECTION

### Container Editor

The top right part of the screen gives you all the editors needed to change a container:

The 'visible' and 'locked' buttons do the same as the corresponding eye icons in the tree view. They hide or show an object. By clicking on the icon you get the appropriate editor. The yellow bars to the right of an icon indicate if this property is active in this container, you can activate or deactivate it in this window. To delete properties from the container drag their icons into the trashcan.

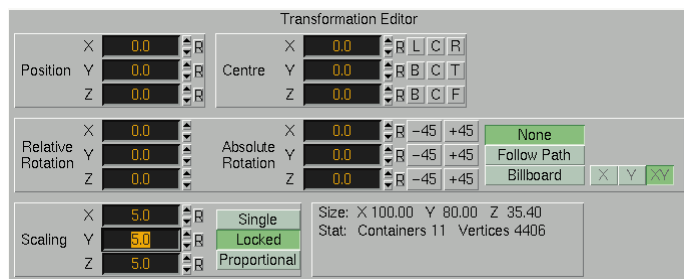
The 'Split' button splits an imported geometry or a text container into its sub-



containers. If the marked container already is split there is a 'Merge' button instead. By clicking this button you can group all sub-containers into a single container.

### Transformation Editor

Common to all editors of this type is the reset button 'R'. Single clicking on, for example, 'R' of X-position resets X translation to zero. Double clicking on any 'R' of Position resets X, Y and Z position to zero. Clicking into a text field marks the contents to be changed by using the keyboard. Dragging inside the text field changes the value up and down by 1,0. Dragging while holding the Alt-Key changes the value by 10,0. Dragging while holding the Ctrl-Key changes the value by 0,1. Holding Ctrl and Shift-Key simultaneously changes by 0,01 and Alt + Shift changes by 100,0.



Scaling can be 'Single' by each axis or 'Locked' so X, Y and Z scaling will have the same value. 'Proportional' adds a value to each axis.

Relative Rotation rotates the object around one of its axis. Absolute Rotation rotates the object around the absolute axis. Center will move the axis origin of the object. You can put it to the left or centre or the right of the objects X-axis by clicking 'L' or 'C' or 'R'. Or put it to the bottom centre or top on the Y-axis by clicking 'B' or 'C' or 'T' or to the back, centre or front on the Z-axis by clicking 'B' or 'C' or 'F'. 'Follow Path' is used in animations. The object size at the bottom right tells you about the real size of the object in centimetres. Stat shows the number of containers that are selected. If a group is selected, all sub-containers are counted. Vertices shows the number of vertices that are rendered within the selected container (including all sub-containers).

### Geometry Editor

This editor gives you information about object references. When you drag an object out of the object pool into the scene a reference is build. This means that if you change the object in the pool also the object in your scene is changed including in any scene where this object is used as a reference. If you want to have your own copy of the object in your scene you can deactivate the reference by clicking 'Deactivate'. The reference is automatically deactivated if you



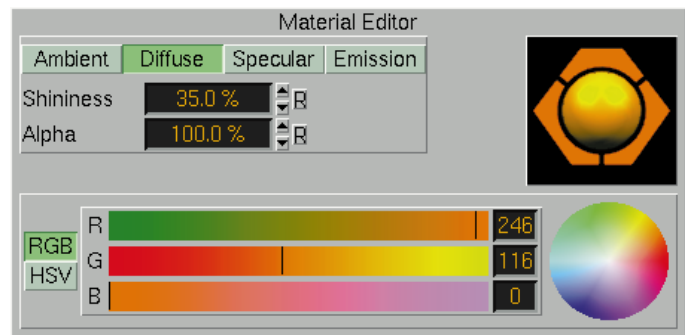
split the object. With an inactive reference there are two different ways to make it a reference again: Clicking 'Re-establish' will change the object in the scene to the object in the pool. Clicking 'Update' will overwrite the object in the pool with the object in the scene.

You can click the icon and the object will be selected in the object database.

### Material Editor

This is the same as in the material database.

Change the colour properties for a lit object by clicking 'Ambient', 'Diffuse', 'Specular', 'Emission'. You can choose between editing in RGB mode or HSV mode. The colour for a lit object is shown on the sphere within the icon. The three parts around the sphere show the plain colour for an object that is not lit.



## Texture Editor

The editor associated with the image is used for editing texture parameters.

At the top you see an icon of the image. Clicking this icon will select the image in the image database.

'Mapping' adjusts the way texture mapping is done. 'Vertex' means that the geometry applies texture co-ordinates. 'reflect' is reflection mapping. 'Linear' lets you change some texture parameters: You can edit the position, rotation, scaling and centre of a texture. You also can specify if the texture is repeated or clamped ('Wrap').

'Environment' specifies the way the texture's RGBA information is combined with the object's RGBA information. 'Decal' only uses the texture's RGBA information. Using 'Modulate' you can have lighting on a textured object.

'Quality' specifies a trade between speed and texture quality.

'Pixel' is fast but ugly.

'Linear' does linear interpolation for magnification and shrinking.

'Mipmap' in addition does linear mipmapping for shrinking.

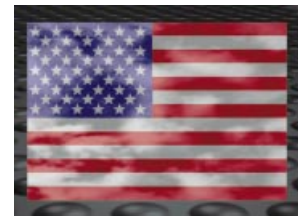
'Sharpen' invoke's a sharpening filter for magnification in addition to mipmap.

You can use two images on one container. The left icon in the editor shows the first and default image. If you drag a second image to the icon space near the 'Reset' button you are provided with additional features. A second image can act as the

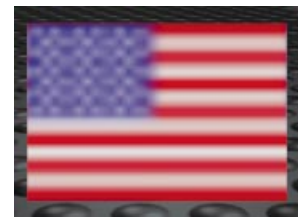
alpha channel for the first image. Using the flag as the first image and the clouds as the alpha channel and clicking the 'Alpha' button in the editor will produce the following effect:

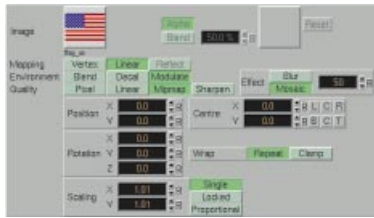


Clicking the 'Blend' button you can blend between the two images using the input field right to the 'Blend' button. This only works on SGI's Infinite Reality.



The 'Reset' button clears the second image. You can blur or do a mosaic effect if you are using only one image on a container. Click on 'Blur' or 'Mosaic' and change the value in the input field to the right. This only works on SGI's Infinite Reality.

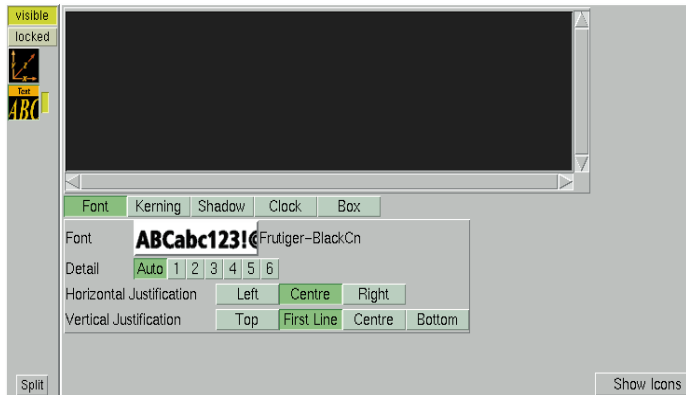




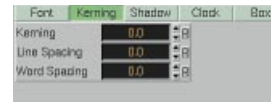
## Text Editor

At the top you can type in the required text.

The buttons 'Font', 'Kerning' and 'Shadow' let you edit the text. 'Font' edits the used font. You can change it by dragging another font out of the font database onto the font icon. Detail shows the font in a specific resolution and overrides the automatic level of detail ('Auto').



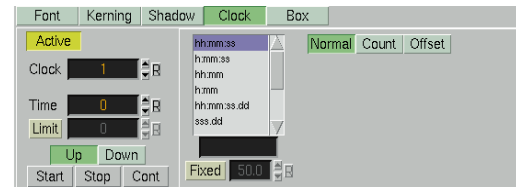
'Kerning' changes the kerning between all characters by the same amount. This is in addition to the character pair kerning



selected in the Font Database. Line spacing modifies the distance between the lines. Word spacing changes the size of the blanks in the text.



'Shadow' adds a drop shadow to the font. You can change the direction, distance and z-offset of the shadow, its colour and transparency. 'Soft Shadow' lets you generate smooth shadows in four different smoothness stages:

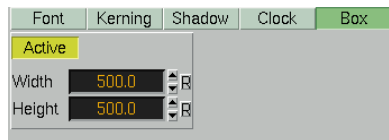


After activating a clock in the text editor, next part is to

define the number of your clock. You can adjust the kerning and the justification of the digits. With 'Format' you can tell Everest what to show in the clock, 'h' stands for hours, 'm' stands for minutes, 's' for seconds and 'd' for digits of a second. One 'd' will show tenth, two hundredths and three thousands of a second. You can arrange it as you like and you can put in any separation character. Then you can define if the clock count's up or down. If your clock changes the ker-



ning while counting, you have to activate the 'Fixed' button to use fixed Kerning for each letter - This problem can appear if you use a proportional Font.



Activate this option to use a fixed text-box for your text. You can define the height and the width for

your box. The textbox can be seen if you turn on the Bounding Box 'BB' option left to the output window. The textbox appears as a brown outline. If there is text growing over the box, the next word will be set to the next line - attention there is no text-seperating function.

### Alpha Editor



You can change transparency here. If a group has Alpha, all sub-containers will inherit it. This gives the possibility to very easily fade in or out a complete part of the tree.

### Key Editor

You can change the Key-options here, like draw in RGB, draw Key, use automatic alpha, or use a self defined alpha value for



the Key drawing. If you want to look at the key, switch left to the output-window to the 'K' option, which shows the key.

### Expert Editor



You can toggle to wireframe mode, back-face drawing and two-sided lighting for a single container. You can also mirror over the „x“ „y“ and „z“ axis.

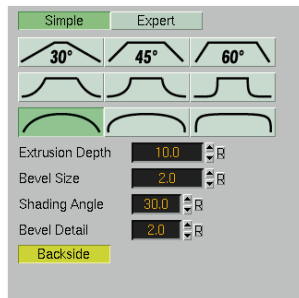
### Mask Editor



There is an editor for the source mask and for the target mask, where you can define by which layer the object is affected. You can use up to 8 different targets and sources for one object. In the setup menu you can define if the mask is drawn inverted or not.

## Extrusion Editor

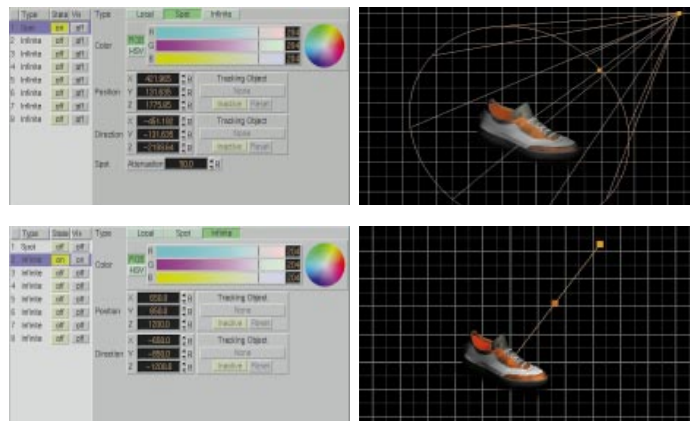
If you drag from the function menu the extrusion function onto a 2-D primitive or a font, you get a new editor where you can define a bevel or extrusion type. You can change the extrusion depth, the bevel size, the shading angle and the bevel detail.



## Light Editor

Click 'Light' on the top button line. Upon clicking this button the light editor will be displayed. You can activate or deactivate different light sources ('State') and adjust the light colour.

Using 'Vis' you can switch on light handles. The handles of the marked light will always be on as long as you have the light editor open. By default when a new scene is created all lights are infinite. Infinite lights have adjustable light direction. You can change to local-, infinite-, or spotlights. 'Local' and 'Infinite' light lets you change the position of the light, 'Spot' will allow you to set the spot direction and the intensity distribution of the light ('attenuation'). If you drag an object out of the Transformation Tree into the 'Tracking Object' areas the



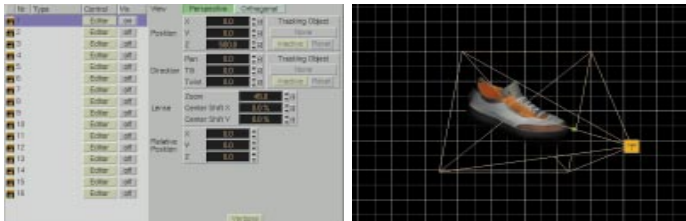
position/direction will follow this object. This is very handy when you animate the object. If the light position or direction is tracked you can deactivate tracking using 'inactive' or remove the tracking object by clicking 'Reset'. You can also animate the light in the same way as objects, by creating keyframes. Select the lightsource - move to the new position - add a new keyframe. Above you can see the differences between the editor from a spot-light and an infinite light.

The light source, position and direction can also be changed in the render area. This is best done in the modelling view. If the light is type local the handle is a yellow circle with the light number written into it. If you drag it the light position is changed. Infinite lights and spotlights have three circles that are connected by a line. The one with the number in it is the light source, the middle one is the light position and the small one is the direction. Dragging the middle one changes the position of the light, the source and direction will move accordingly. You also can drag the source or the direction only.



## Camera Editor

You can change between perspective and parallel projection. You can change position, pan, tilt, zoom and focus. You also can drag position and direction in the parallel view as you do with lights. The left part of the camera editor lets you connect to a real camera by just clicking on the 'Control' button. Tracking of cameras by objects works in the same way as it does with lights. You can also animate the camera in the same way as objects and lights by creating keyframes.

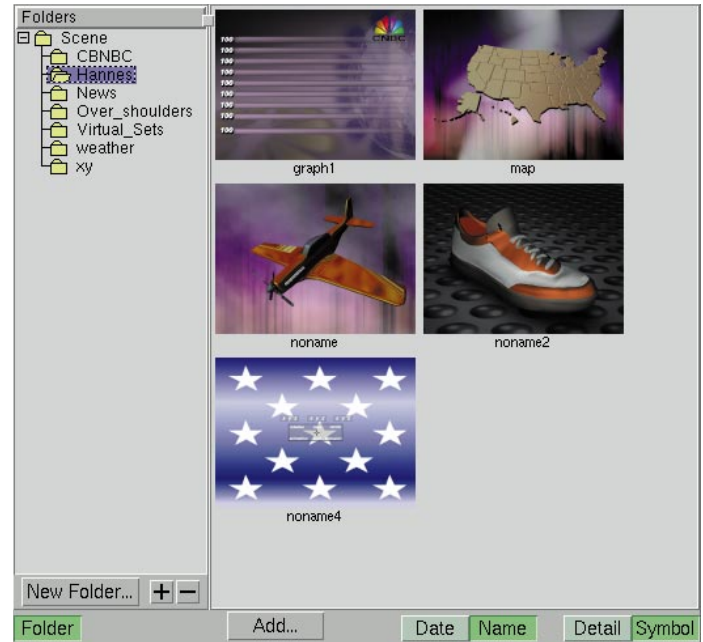


## The Database Section

This section is at the upper left part of the screen.

### Scene database

Here you can see all the scenes you have created. Saving a scene will immediately change the icon for this scene. You



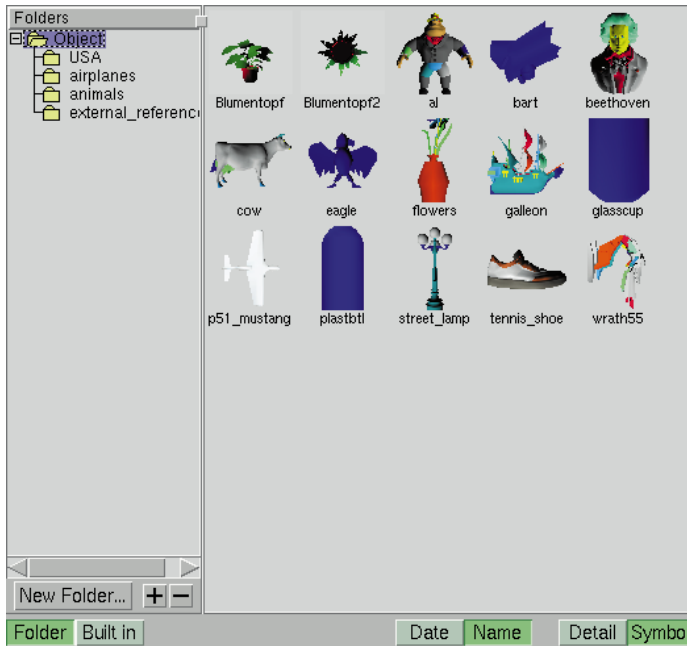
can change the view with by 'detail' or 'symbol', by 'date' or by 'name'.

### Object database

Double clicking an icon opens the object viewer.

'Folder' lets you browse the database.

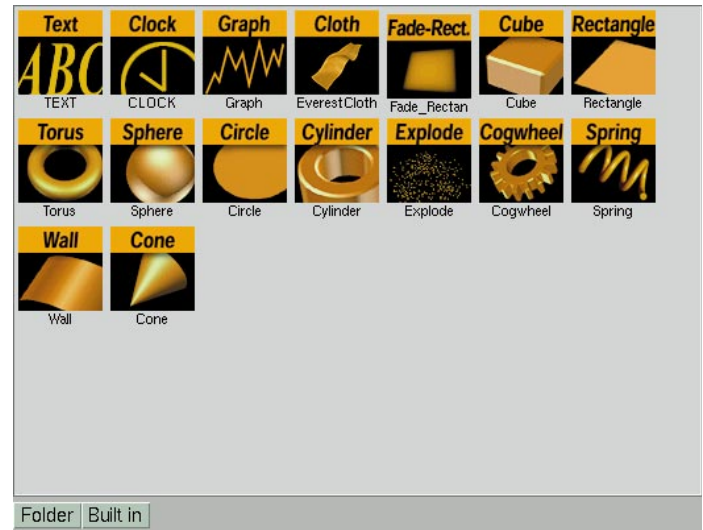
'Built In' lets you access different geometry programmed by using the plug-in interface. Just drag one of the objects to the tree or the render area. If you import an object and it disappears coloured on different parts, that means that there exist different groups in this object which you can handle



separate if you split this object with the split function from the container menu.

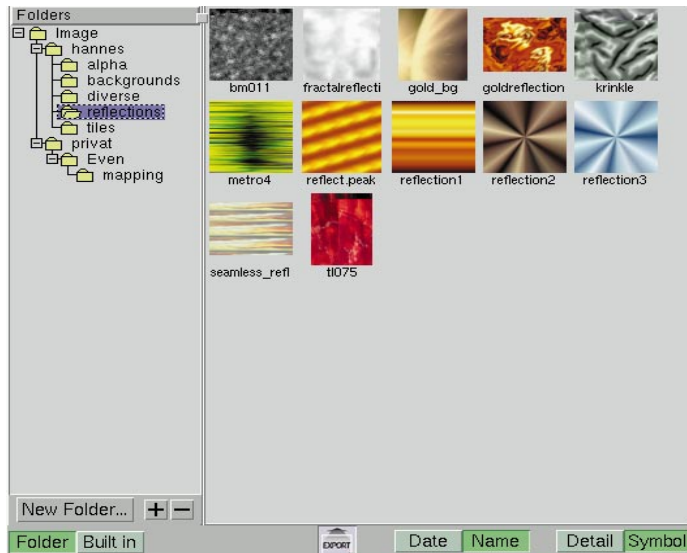
### Built in Objects

In this section you can find different primitives to construct different types of graphics or Virtual Set's. Each of this objects has its own editor where you can define different parameters, for example: tessellation, axis, bevel, level of detail, vertexcolors, angle, width, height, corners, cross sections...All objects have different options to define.



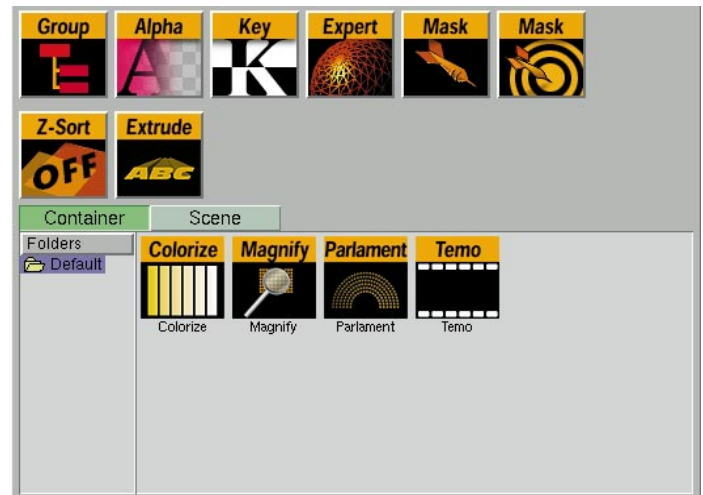
### Image database

You can use images that are not in the database by clicking 'File' and then selecting an image from the directory view. Dragging an image to the 'Export' will export these images in SGI .rgb, jpeg (jif) or alias format. Clicking 'Built In' brings up icons for live video feeds. You can use them in the same way as you use images. There are 4 live Video Inputs available depends on the Hardware you use, to configure the input video formats change to the config menu - video input settings.



### Function Database

The function database holds the alpha, key and mask properties and the group function that you need to group containers. To add alpha, key or the mask property to a container you just click the icon here and drag it onto the container in the tree or render area. The key property generates a key signal on the key output for the container and all sub-containers. You also can watch the key pressing the 'Key' button to the left of the output window. The mask property is divided into source and target. To work properly you need to apply the source to one object and the target to another.



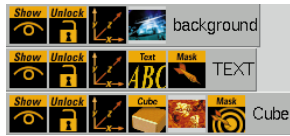
This is the source:



This is the target:

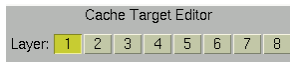


As an example we will use a text to cutout holes from the cube. We then will be able to look through the cube onto another object (Backgroundimage): Source is applied to the text. Target is applied to the cube.



Backgroundimage is placed behind the cube:

There are eight different layers that you can use for masks. A mask can be affected by (up to 8) different layers. You can invert each layer separately - to define this go to the setup-menu.



A mask source with layer 1 switched on will cut all objects that have target layer 1 applied. You can switch on more than one layer. The same editor is available for the target.

## Scene Views

'Views' gives you three additional views of the scene:



This makes it easy to position objects in the scene (e.g. ranking tables) and determines the object's position relative to the camera.

You can pan by clicking the left mouse into the background. If the background is obscured use the c-key to pan. Holding down the z-key lets you zoom in by drawing a rectangle. Holding the x-key lets you zoom out by drawing a rectangle.

## Control Channels

Drag a container or container property on the control channel window. You can access this property within this container from an external source by specifying the name of the channel with a '@' in front.

Name	Object
shoe	SCENE*Hannes/noname2*TREE*#6548
shoe_key	SCENE*Hannes/noname2*TREE*#6568*KEY
shoe_material	SCENE*Hannes/noname2*TREE*#6555*MATERIAL

### *Undo / Redo*

Everest records 100 events for recall by clicking '*Undo*'. Every change of a property within a container is recorded (colour, position, textures, transparency, rotation). Everest does not record changes to the databases and to the scene tree. If you move, copy or delete a container it cannot be restored by using undo.

## ANIMATION

### *Creation*

Animations are created and controlled using the buttons above the render window:

From left to right the controls are:

'*Start*': starts an animation from beginning

'*Stop*': stops a running animation

'*Cont*': continues an animation that was stopped

'*Prev*': jumps to the previous keyframe of the selected container

'*-*': goes back 10 fields

the next field shows the current timeline position in fields

the up/down arrows jump forward and backward by one field

'*+*': jumps forward by 10 fields

'*Next*': jumps to the next keyframe of the selected container

'*Update*': creates a keyframe

The input field right to the '*Update*' button lets you choose the number of fields the timeline will jump ahead when creating a new keyframe.

Let's create a simple position animation;

Go to the Object pool and click '*Built in*'.

Drag the Cube into the scene and give it a material.

We want the cube to animate its position from left to right.

Position the cube to the left side of the render window.

Make sure that it is selected for editing (it should have a bounding box). If you don't see the green bounding box around the cube, just click it once with the left mouse button and make sure that the bounding box button ('*BB*') to the left of the render window is switched on (has yellow colour).

Make sure that the current timeline value is zero.

Now press the '*Update*' button. This tells Everest to remember the values of each property of the currently selected container, which is the cube. The timeline value increased by 50 fields.

Position the cube to the right of the render window and press '*Update*' again. At this time Everest has created two keyframes. By pressing '*Start*' you can show the animation. The cube animates from left to right. The container now shows an animation icon. There is a keyframe at timeline value zero and another one at timeline value 50.

Now we want to create an additional keyframe.

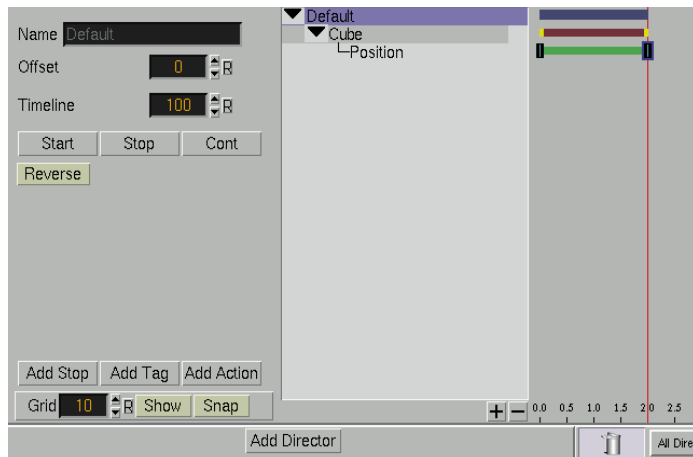
Enter 100 into the input field of the timeline value.

Position the cube in the lower right corner of the render window and press *'Update'*. Everest creates a new keyframe. Pressing *'Start'* you will see the cube animate on a curve. You can display the animation path by using the right mouse menu and selecting *'animation'*.

## EDITING

### Directors

Animation editing is done by the stage editor. Click the *'Stage'* button on top of the screen.



Animation in Everest is organised by *'directors'*. There is always one director present named *'Default'*. A director can contain one or more objects. By default an object you animate is put into the *'Default'* director. The picture above shows our cube in the default director. You can open and close the director display by clicking on the black arrow.

In the right part of the stage editor the timeline is displayed. The bar in dark blue colour to the right of the director name shows the length of the director animation. The red bar shows the animation length of an object. It has yellow handles on each end that you can drag to scale the animation of the object. The blue bar represents an animation channel that can be a position animation or a rotation animation. The black rectangles on the blue bar represent the keyframes.

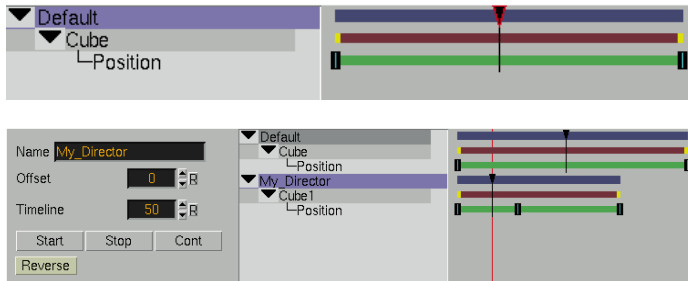
The red vertical line shows the current timeline position. You can drag it left and right. There is a grid that can be shown by clicking *'Show'*. Activating *'Snap'* will snap the red line to the grid. You can change the grid size by entering a number of fields. The numbers at the bottom of the right part represent seconds on the timeline.

The picture beside shows the edit possibilities for the director. *'Offset'* is a value that is used to offset the start of the animation from zero for all objects in the director.

*'Timeline'* changes the current timeline position. It has the same effect as dragging the red line.

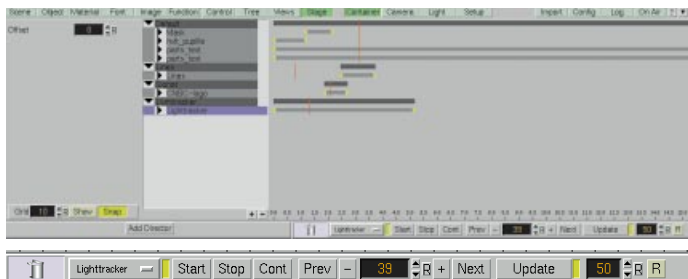
'Start', 'Stop' and 'Cont' trigger the animation of all objects contained in the selected director.

'Add' adds a stop to the director:



After clicking 'Start' the animation will stop at the stop point you created by 'Add'. Clicking 'Cont' goes on with the animation. You can click the stop and drag it left or right.

'Add Director' creates a new director. Each director has his own timeline, if you want to play a single director, activate the little yellow bar beside the start button, and then define in the box beside the yellow bar which director should be played. To put animated objects into another director you just drag them from one director into the other. You also can drag them from the tree view into a specific director:



Now you can animate the objects contained in a specific director by clicking 'Start'. You also can add stops to a single director.

## Channels

An Object can have different animation channels:

'Swing': If activated the animation goes back to the beginning when it reaches the end.

'Loop': You can input a loop count. With the 'Loop' button activated the animation loops several times.

'Interpolate Smooth': The path between the keyframes is interpolated using splines.

'Interpolate Linear': The path between the keyframes is interpolated linearly so for a position animation the object will move in a straight line.

'Linear Speed' and 'Manual Speed' control the speed of the object along the path. The following picture shows the path after we have created the animation for the cube. As you have noticed the cube is moving fast from the first keyframe to the second one. Between the second and the third keyframe the speed is slower. You can bring up the path display in the render window by using the menu option 'animation' in the right mouse menu. The stippled line shows one field per segment. By default at animation creation the speed is calculated separately between each keyframe. Clicking 'Linear Speed' calculates a constant speed between the first and the last keyframe. This is



## ANIMATION

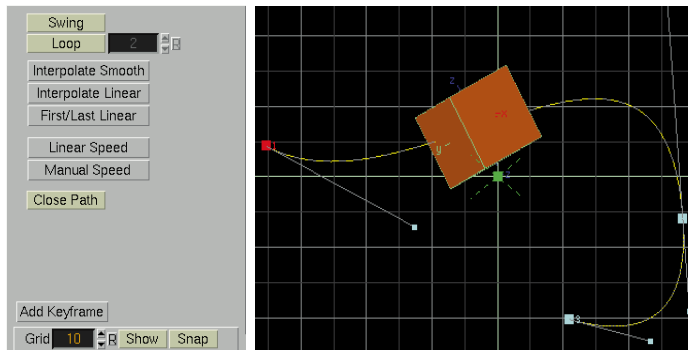
shown in the next picture:

You can click keyframe number 2 and drag it. The speed (line stipple) will stay constant.

'Close Path' connects the last keyframe to the first one as shown in the next picture:

In fact it adds an additional keyframe at the end that has the same values as the first keyframe.

'Add' adds a new keyframe at the current timeline position.

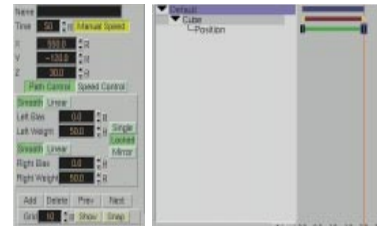


## Keyframes

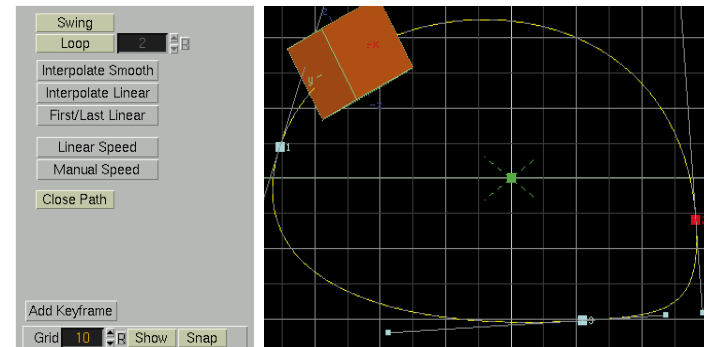
This editor lets you change keyframe properties.

'Name': A name for the keyframe can be input here. This name can be used by external control to address the keyframe.

'Manual Speed': Here you can give the manual speed property to a single keyframe. This means that the path from the keyfra-



me before this one to the keyframe after this one will not have constant speed. Clicking 'Manual Speed' in the channel editor will set all keyframes to manual speed. The three input fields 'X', 'Y' and 'Z' show the actual value of the keyframe. You can change it here. The buttons 'Path Control' and 'Speed Control' let you change the calcula-



tion of the path spline and of the speed spline. Think of the keyframes as being the actual spline points on the path. Each spline point has handles that you can change by using 'Smooth'. You can split them with 'Single', lock them with 'Locked' and mirror them with 'Mirror'. If 'Speed Control' is 'active' you can adjust a slow in and slow out for each keyframe.



### Shortcuts

#### Editing the camera

##### *POSITION: (P)*

X	P + left mouse button
Y	P + middle mouse button
Z	P + right mouse button
X/Y	P + left mouse button + middle mouse button
X/Z	P + left mouse button + right mouse button

##### *DIRECTION: (I)*

Pan	I + left mouse button
Tilt	I + middle mouse button
Twist	I + right mouse button
Pan/Tilt	I + left mouse button + middle mouse button

##### *ZOOM: (U)*

Zoom	U + left mouse button
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##### *ORBIT: (O)*

X	O + middle mouse button
Y	O + left mouse button
close in/out	O + right mouse button

Press T and the camera points at the current selected object.

Key 1 to 0 switches from Camera 1 to 10.

##### *keypad switches to sideviews:*

4	- left
6	- right
5	- front
0	- back
8	- top
2	- bottom

When you press space no object is selected for editing (removes the bounding box).

##### *sideview:*

x	- zooms out
z	- zooms in

hold x/z and drag the mouse to define an area you want to zoom in/out.

hold alt and move an object to snap it to the grid.

hold c and drag the mouse to pan the side view window even if an object is under the mouse.

##### *any view:*

hold shift and move an object: The object is confined to the x or y axis relative to the camera.

hold control and move an object to copy it.

## *SHORTCUTS*

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Press Enter to update the animation (like pressing the update button).

Use the cursor keys to navigate the scene tree:

- left - move to the parent group of a container
- right - move down to the first container of the children of a group
- up - move to the previous container
- down - move the the next container