Tutorial

Cult3D Stereo for Objects

This tutorial will show step-by-step how to create a 3D stereo object using the Cult3D Stereo for Objects tool. The goal is to visualize an object in the 3D Stereo Space (3DSS), which makes it possible to move around the object in a space both in front and behind of the screen plane.

A detailed description of Cult3D Stereo can be found in the User Guide Supplement.

Please Note:

Cult3D Stereo for Objects is especially developed to visualize objects and it is not recommended for "walkthroughs".

Stereo terms used in this tutorial are explained at the end of this document.

The basic steps covered in this tutorial are:

- Viewing Configuration parameters set-up.

- Cult3D Designer project creation.
  How to create a Cult3D Stereo project with Cult3D Designer and how to add basic functionalities to the Event Map.

- Visualization window size.
  The desired size (in terms of pixels) of the final visualization window must be set.

- Scale and position the 3D Stereo object.
  The 3D Stereo object must fit the Stereo Safe Frame (Stereo Window).

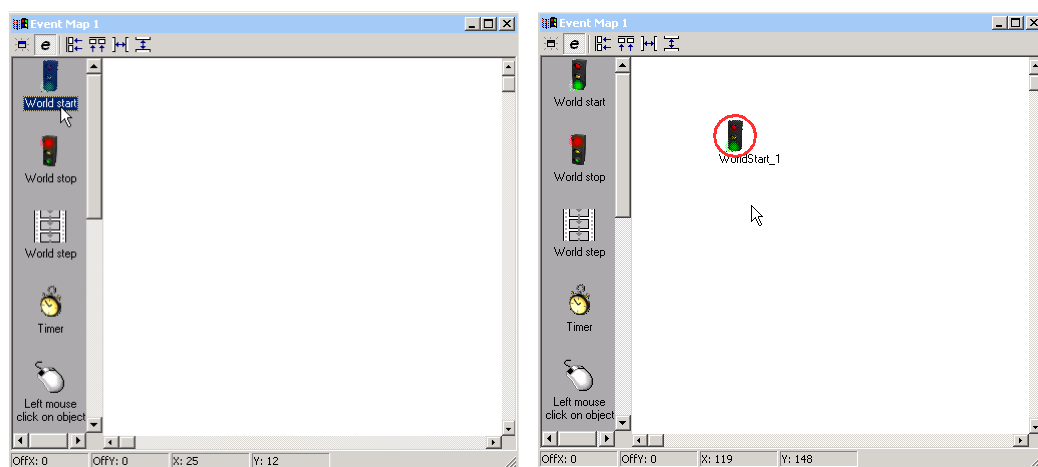## Viewing Configuration parameters set-up

In this tutorial we are going to create a 3D Stereo object for online visualization on a PC monitor. The default settings of the Viewing Configuration parameters are designed to work with standard PC monitors and digital projectors with a screen width up to 1.5 meter.
This means that no parameter needs to be changed for this project.

Cult3D Designer Project creation

The "Valve.c3d" file has been provided for this tutorial.
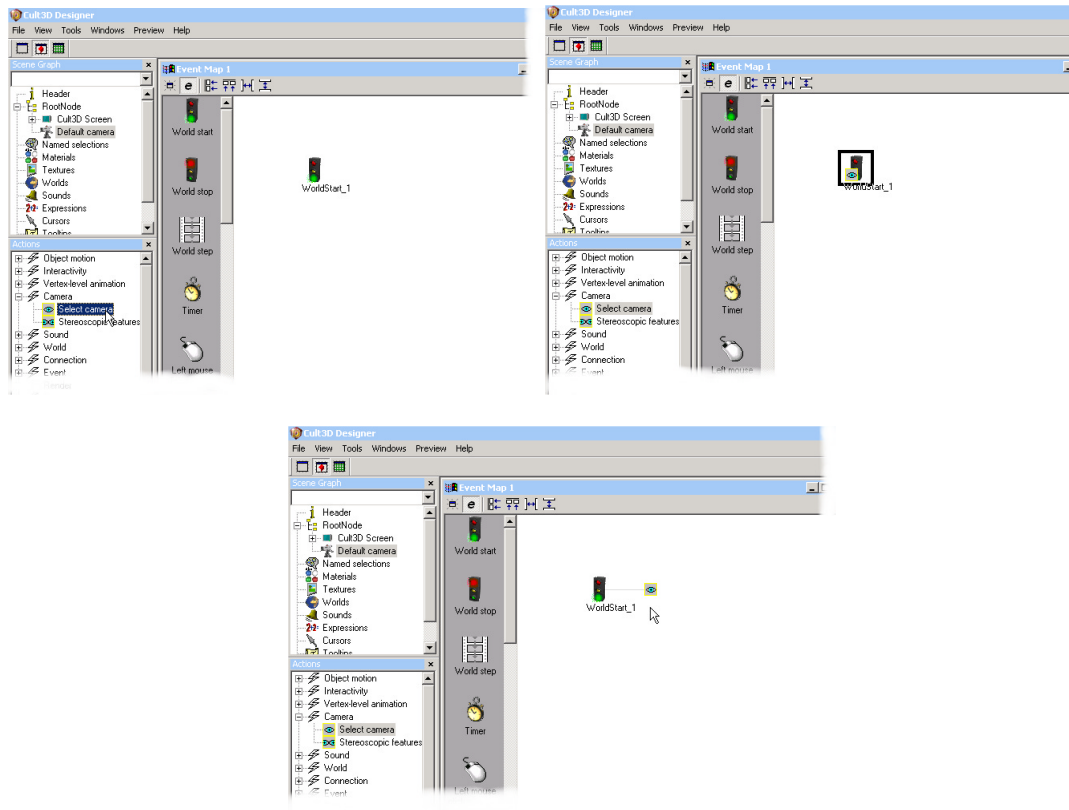
1.   Open your Cult3D Designer.

2.   Exit the Wizard.
        In this tutorial we will go through all the manual steps.

3.   Drag and drop the World Start event in the Event Map.
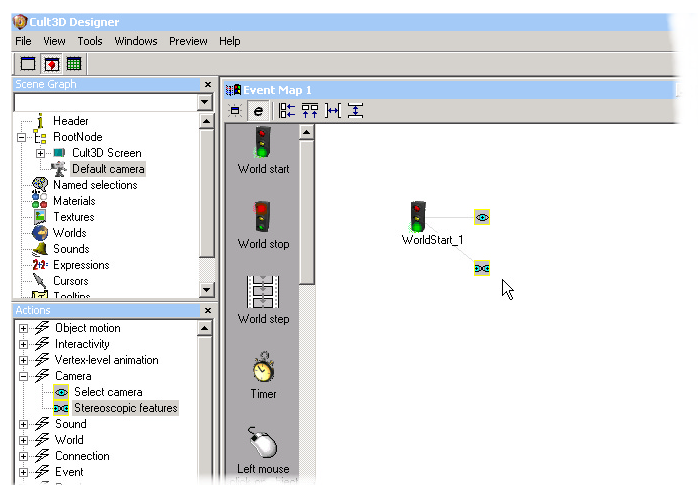

Drag and Drop of World Start event

4.   Go to the Actions menu and choose Camera/ Select Camera and drag and drop it in the World Start event in the Event Map.

Drag and Drop of Select Camera action in the World Start event
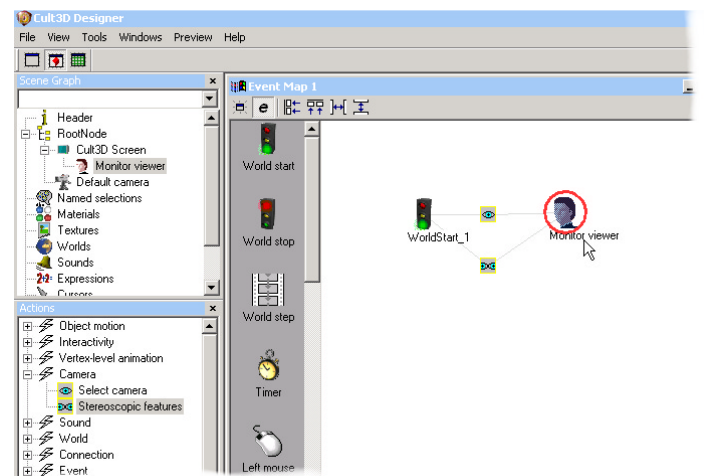
5.   Go to the Actions menu and choose Camera/3D Stereo Features and drag and drop it in the World Start event in the Event Map.

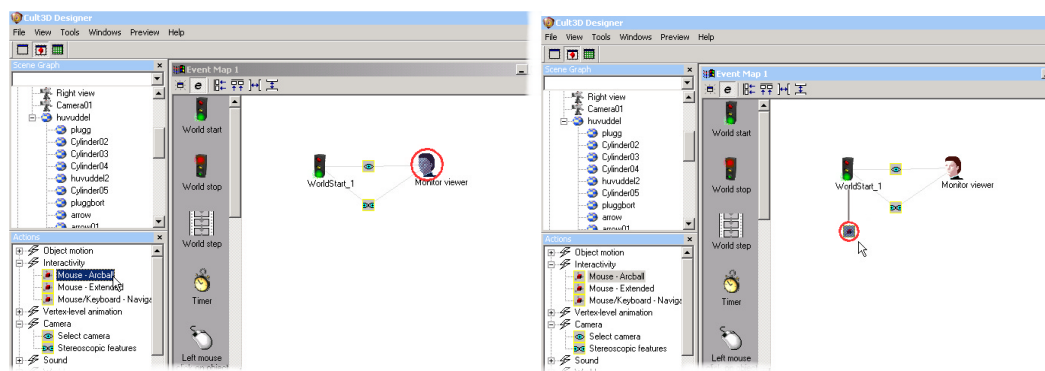*Drag and Drop of Select Camera event and the 3D Stereo Features*

6.   Go to the Scene Graph menu/Cult3D/Monitor Viewer and drag and drop it
        in both the Select Camera and the 3D Stereo Features actions in the Event
        Map.

*Monitor Viewer dragged and dropped in the Select Camera action and the 3D
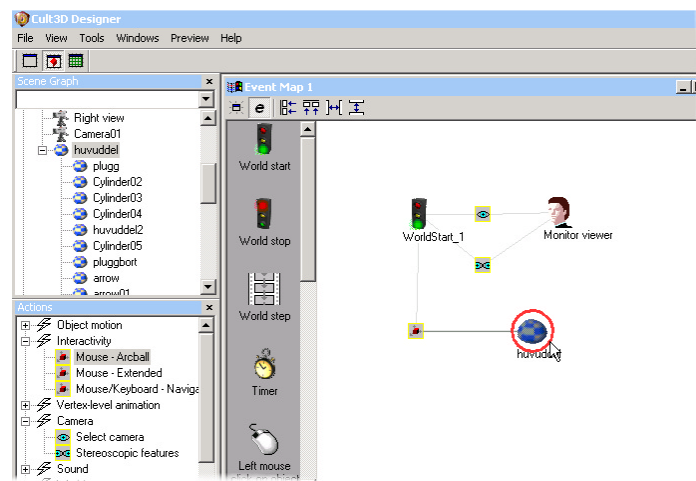Stereo Features in the Event Map*

7.   Go to File/Add Cult3D Designer file and select the "Valve.c3d" file from the
        file dialog box. It will appear in the Scene Graph menu with the name
        "huvuddel".

8.   Go to the Actions menu/Interactivity/Mouse - Arcball and drag and drop it
        in the World Start event in the Event Map.

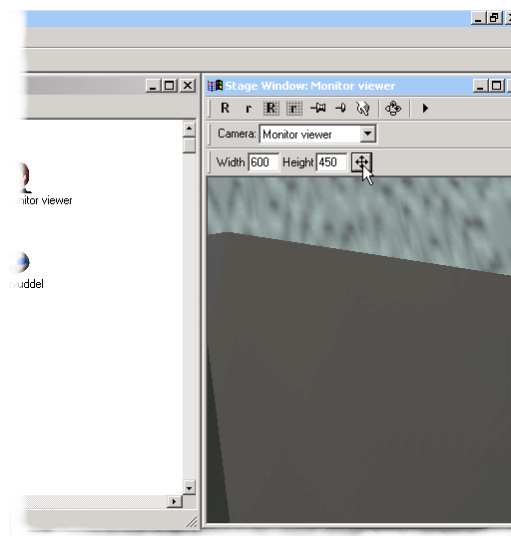*Drag and drop the Mouse - Arcball action in the World Start event*

9.   Drag and drop the "huvuddel" from the Scene Graph menu into the Mouse - Arcball action in the Event Map.

Drag and drop the "huvuddel" in the Mouse - Arcball action

Visualization window size

10.   Select the Monitor Viewer in the Camera combo box in the Stage Window. A small portion of the object will cover the entire window, either because the object is too large or too close to the camera. This problem will be solved in step 13.

11.   Write the digits 600 in the Width field and 450 in the Height field in the Stage Window, then press the relative submit button.
By doing this you will instruct the Designer to create an HTML file with an embedded Cult3D window with the following dimension: 600 x 450 pixels.
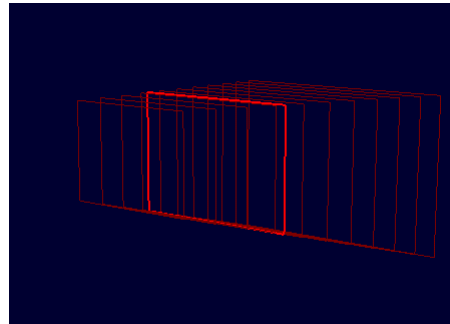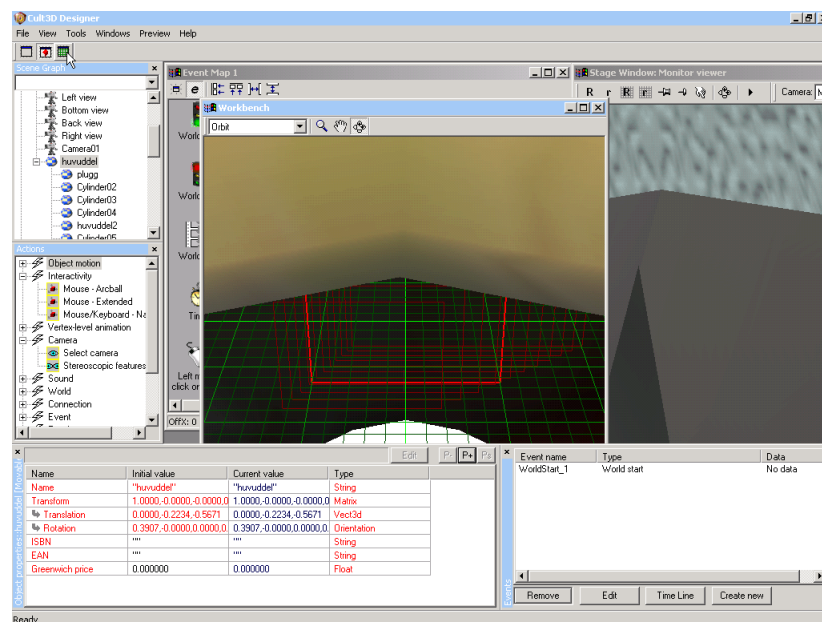

Visualization window size

Scale and position the 3D object

By following the next steps you will position and resize the object in such a way that it will fit the 3D Stereo Space.
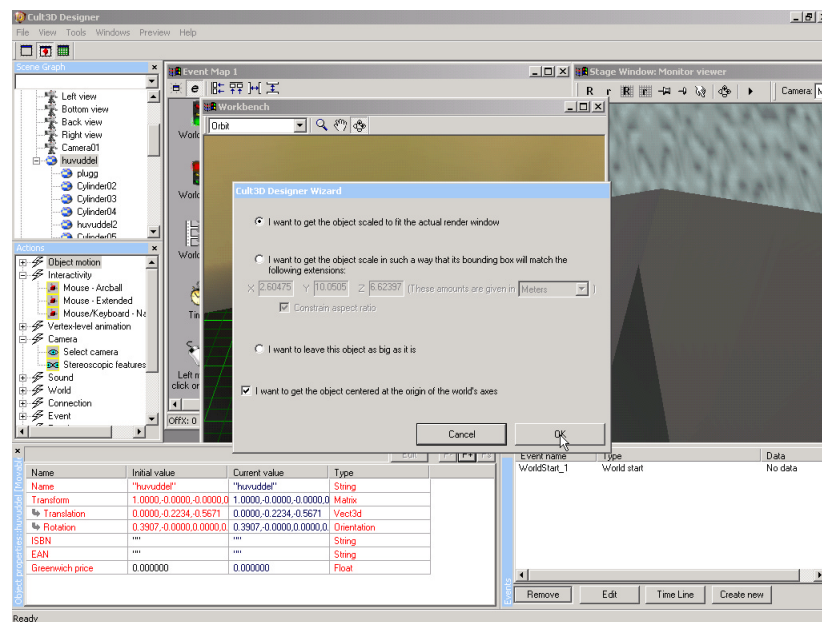

3DSS: 3D Stereo Space

12.   Open the Workbench window from the main toolbar by pressing the relative button.
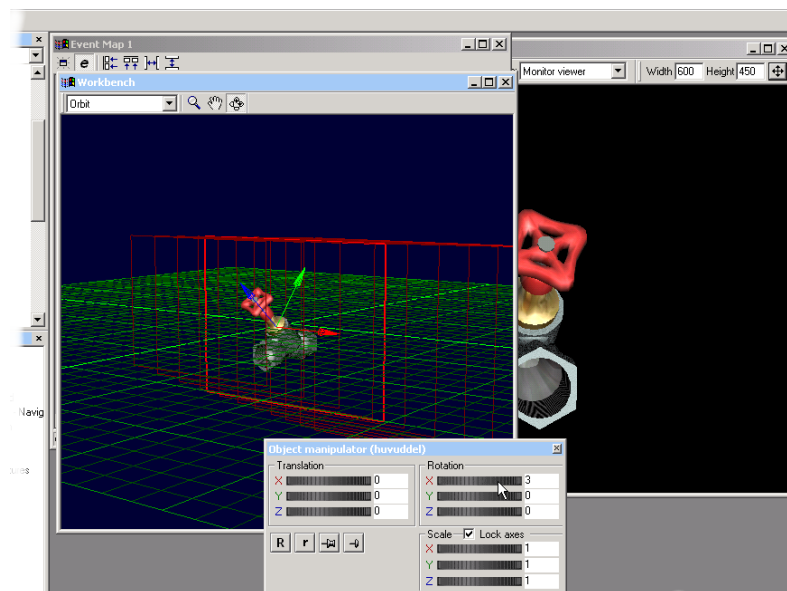

Workbench Window

13.   Select Tools/Resize/Centre all and press OK. The resulting size and position of the object will be very close to the wanted final result.

Resize/Center all tool

14.   Go to the View/Manipulator and fine-tune size, rotation and placement. Note: the object must never be larger than the Stereo Safe Frame.

Position and scale with the Manipulator tool

Your object should be small enough to pass through the Stereo Safe Frame (Stereo Window). The best 3D Stereo effect is obtained by using
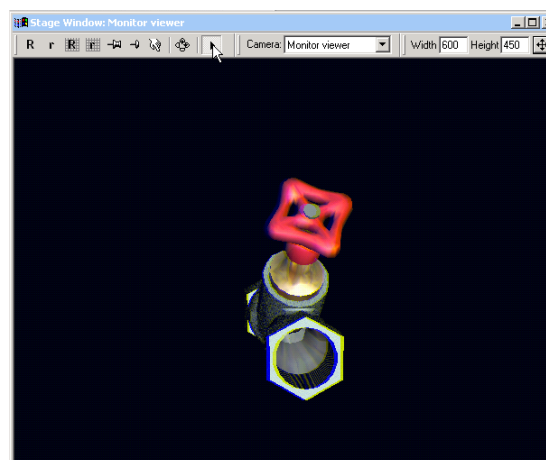
meso stereo, where half of the object is in front of the Stereo Window (Stereo Safe Frame) and the other half is behind.

In order to control the final stereo effect check the foremost part of your object with the 3DSS frames; they can be edited from the "Grid & Helpers" tab in the File/Preferences menu. If the object protrudes too much, it will cause undesired strain to the viewing user's eyes.

During the viewing process it is necessary to keep in mind that the Stereo Window must never cut off or touch that part of the object that reaches out of the screen. Otherwise the 3D Stereo effect will be destroyed.

15.   Test your 3D stereo object by pressing the preview button in the Stage Window.
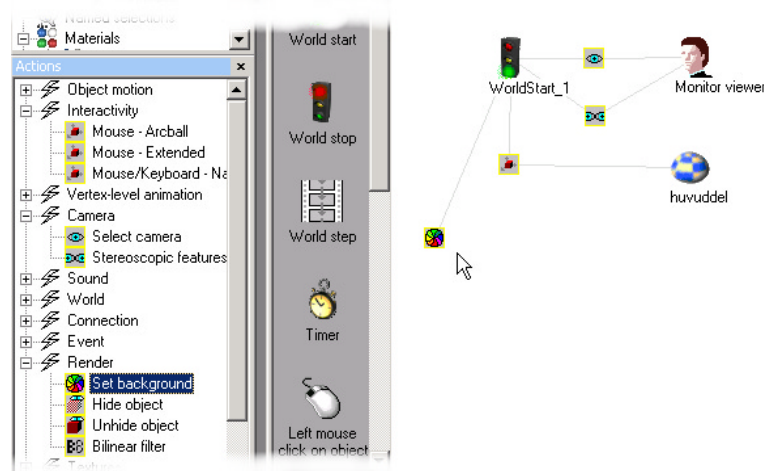

3D Stereo preview

How to set-up a background

The ColorCode 3-D background image "BG.jpg" has been provided for this tutorial Please read in the manual for other background solutions.

Read the following steps if you want to add a background image, otherwise jump directly to step 21.

16.   Go to the Scene Graph menu and right click on Textures; select new and then select Texture and open the BG.jpg file.
       The image file will then be added as a texture in the Scene Graph as "Texture_1".
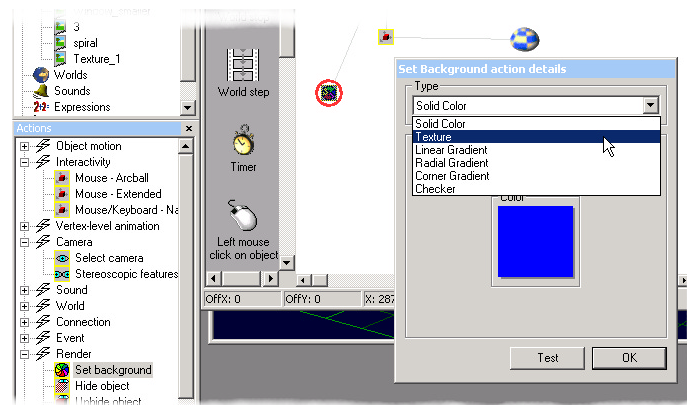
17. Go to the Actions menu and select Render/Set Background and drag it in the World Start event in the Event Map.

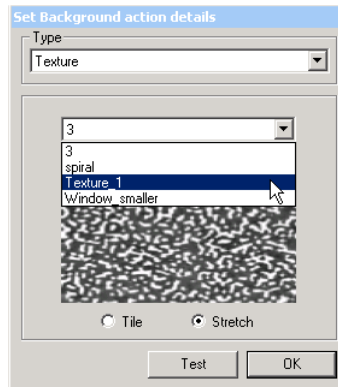*Event Map window showing the Set background action*

18. Right click on the Set background action in the Event Map, and select Details.

19. In the corresponding dialog box, select Texture in the Type combo box and press OK.

Type Combo box

20.	In the second combo box select the desired texture, "Texture_1", and press OK.

Select the background image

Saving the finished Cult3D Stereo object

21.	When you are satisfied with the result you can save your 3D Stereo object as a Cult3D object ready for publishing on the Internet. Select File / Save internet file. At the same time the Designer will automatically create an HTML file.

Put on your 3-D Viewer (stereo glasses) - double click the HTML file and enjoy the result!

Explanation of special terms used in this tutorial:

Stereo terms used in this documentation

Stereo Window:
The Stereo Window is the XY plane situated at the zero point of the z-axis of the camera frame. It corresponds to the screen plane. When objects are moved to a positive value of the z-axis they will be placed in the front of the Stereo Window and visa versa.

Stereo Safe Frame:

It represents the screen plane (Stereo Window) in the virtual scene.
Everything shown inside this frame will be visible on the screen in the finished project. If an object or part of an object is outside this frame it will be cut off. During visualisation the object or parts of the object will reach out of the screen if placed in front of the Stereo Safe Frame and visa versa. The Stereo Safe Frame is shown in the workbench window as a frame consisting of thick red lines.

Monitor Viewer:
This is a special Cult3D camera you will need to select when you want to use Cult3D Stereo for Objects. The Monitor Viewer will visualize your object based on the Viewing Configuration parameters.
The use of this camera will determine the presence of the Stereo Safe Frame in the scene.

3D Stereo Space (3DSS):
This is the 3-dimensional space inside which you can move your object safely in all directions. Everything shown inside the 3D Stereo Space will be visible on the screen in your finished project. The 3D Stereo Space (3DSS) is shown in the workbench window as a number of frames consisting of thin red lines in front and behind of the Stereo Window.

Meso stereo:
When approx. half of the object is in front of the Stereo Window (Stereo Safe Frame) and the other half is behind, it is called meso stereo. This gives you the best and most pleasant 3D Stereo effect you can obtain.