Hypercosm
Teleporter
for SketchUp Pro™

Quick Start Guide

Hypercosm Teleporter
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For technical support, please contact Hypercosm by
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To see support options, frequently asked questions,
and other information, please see the Hypercosm
support web site at www.hypercosm.com/support/

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Introduction

Welcome to Hypercosm Teleporter for SketchUp Pro™, one of the most powerful and reliable means of posting your 3D content to the web. Hypercosm makes it easy to share your SketchUp™ scenes with others and to create dynamic interactive 3D web content.

Hypercosm Teleporter Benefits

The Hypercosm system allows you to publish 3D content just like you publish other rich media content such as video and sound. With Hypercosm, you can turn your 3D models into a rich communica-

tions medium and to open up the benefits of 3D graphics to a wide audience.

Sharing

The Hypercosm system lets you share 3D models with anyone regardless of whether they have SketchUp™ or not. All they need to do to view Hypercosm models is to install the free Hypercosm Player. This lets you share your 3D concepts with customers, colleagues, family and friends.

Low File Sizes

Hypercosm's patented unique approach to encoding object geometry and behavior results in very low file sizes that can be delivered over the web in a practical and effective manner.

Encryption

Hypercosm Teleporter translates your SketchUp™ models into a compressed and encrypted form that is practical and safe for you to post on a web site. Once they have been converted into Hypercosm format, your 3D scenes can not be edited in any way so your original models remain safe.

Ease of Use

Hypercosm Teleporter has an easy to use interface for quickly converting your SketchUp™ scenes into web deployable content. Once you've finished the installation process, with just a few mouse clicks you can translate your SketchUp™ scenes into web pages that can be posted on the Internet.

Interactivity

A 3D engine inside of the Hypercosm Player delivers realistic interactive graphics with textures and lighting supported by the 3D capabilities of your video card. Rather than just viewing a static image, viewers can navigate through the 3D scene interactively and gain a much better understanding of the 3D models than is possible with any other technique.

Hypercosm System Overview

Hypercosm 3D content is a powerful, web based medium for interactive, online communication of 3D visual information with online customers, clients, coworkers, collaborators, or students. The transmission of Hypercosm 3D content is made possible by a system of software products. The process of creating, posting, and viewing Hypercosm 3D content is depicted below:

Hypercosm 3D content viewed using Web browser with Hypercosm player software.
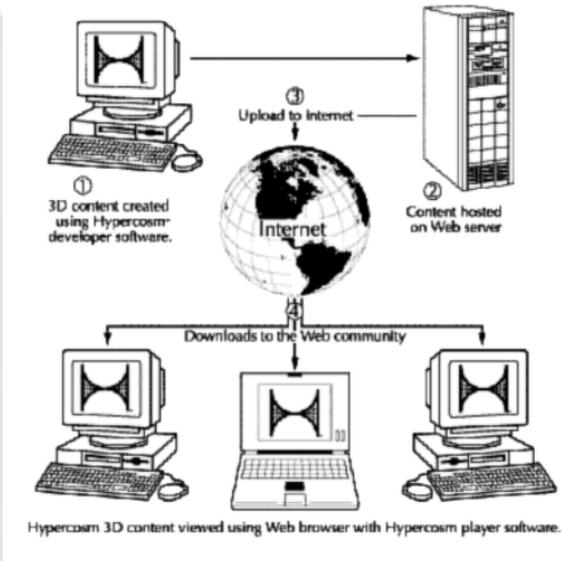
Hypercosm Software Components

There are two essential families of software components in the Hypercosm system. The first is Hypercosm viewing software which is used to display content that is in Hypercosm format. The second family of software is Hypercosm development software which is used to create content in the Hypercosm format.

Hypercosm Viewing Software

• Hypercosm Player
  To view Hypercosm content on the Web, online users first need the Hypercosm 3D Player, a web browser plug-in that runs

Hypercosm applets. The Hypercosm 3D Player integrates with the web browser in a similar fashion to other plug-in based media-enabling player technologies. All of these technologies require that end users download and install a player to use the particular media type that they enable. The Hypercosm Player software is freely downloadable from the Hypercosm web site (www.hypercosm.com).

Hypercosm Development Software

- Hypercosm Teleporter
  The first and most important part of the Hypercosm development software system is Hypercosm Teleporter. Hypercosm Teleporter translates 3D model and animation information from an existing 3D authoring tool such as Google's Sketch-Up™ or Autodesk's 3ds Max™ software and transforms it into a web deployable Hypercosm 3D applet that can be viewed using the Hypercosm Player.

- Hypercosm Studio
  Hypercosm Studio is a scripting tool used by expert Hypercosm developers. Using Hypercosm Studio, you can program directly in Hypercosm's object oriented OMAR (Object Oriented Modeling, Animation, and Rendering) language for maximum power and control. Hypercosm studio lets you program arbitrary behavior, interactivity, and even physics. For more information on Hypercosm Studio, contact Hypercosm.

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Chapter

Getting Started

To get started using Hypercosm Teleporter for SketchUp™, you must first install Hypercosm Teleporter onto a computer that already has SketchUp Pro™ installed. Once complete, you can run Hypercosm Teleporter by first starting up SketchUp™ and then running Hypercosm Teleporter from within SketchUp™.

Installing Hypercosm Teleporter

The following steps show you how to how install Hypercosm Teleporter. Once the Hypercosm Teleporter has been installed, you can run it from inside of SketchUp™.

- Step 1: Run the Installation Program
  To install Hypercosm Teleporter, run the Hypercosm Teleporter installer. This installer software can be found on the CDROM for the product version of Hypercosm Teleporter and can be downloaded from the web for the evaluation version. When the installer starts up, you should see the interface shown below. To proceed, click the "Install" button at the bottom.

- Step 2: Accept the License Agreement
  To proceed, you will need to accept the license agreement by
  clicking the top radio button in the interface shown below.
  Once this is done, click the "Next" button at the bottom.
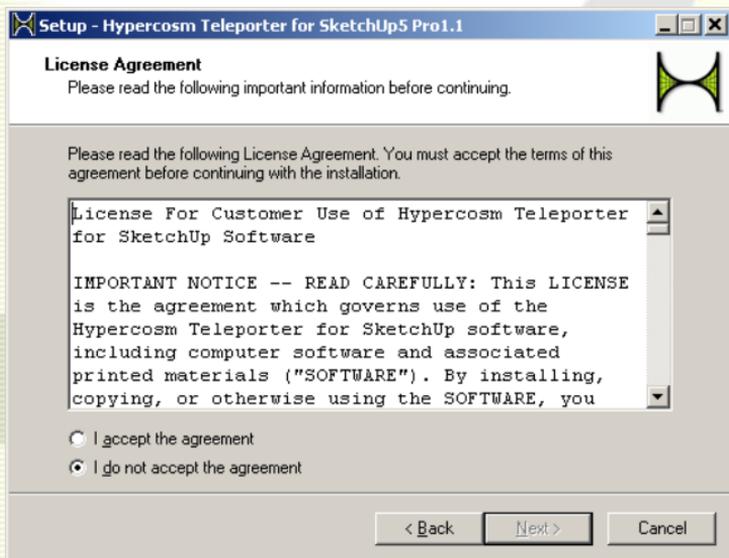
- Step 3: Select the Destination Folder
  The next step is to select the destination folder for the Hypercosm Teleporter software. Although you can install the software to any location on your hard drive, we suggest that you keep the default location (C:\Program Files\Hypercosm\Hypercosm Teleporter for SketchUp5\ or C:\Program Files\Hypercosm\Hypercosm Teleporter for SketchUp6\ depending on your version). To proceed, click the "Next" button at the bottom.
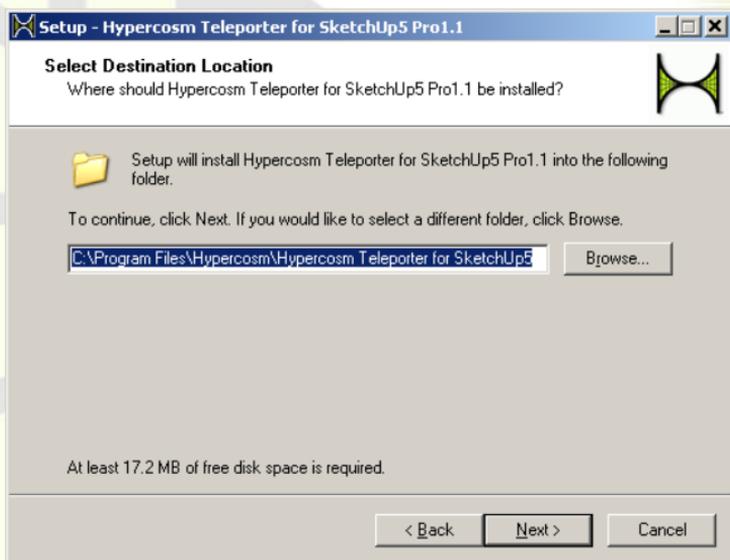
- Step 4: Install
  The next step is to hit the "Install" button to begin the installation process.
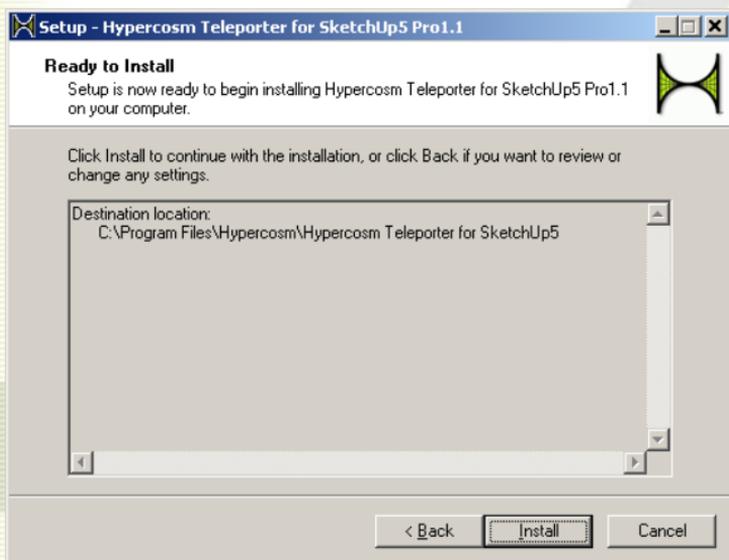
- Step 5: Finish
  After the installation step, you can click "Finish" to complete
  the installation process. Your software is now ready to use.

Running Hypercosm Teleporter from within SketchUp^{TM}

To run Hypercosm Teleporter, start up SketchUp™ and perform the steps described below.

- Step 1: In SketchUp^{TM}, select "Export..." from the "File" menu

  In SketchUp™, click the "Export" menu on the main menu bar and select the "3D Model..." option as shown below.
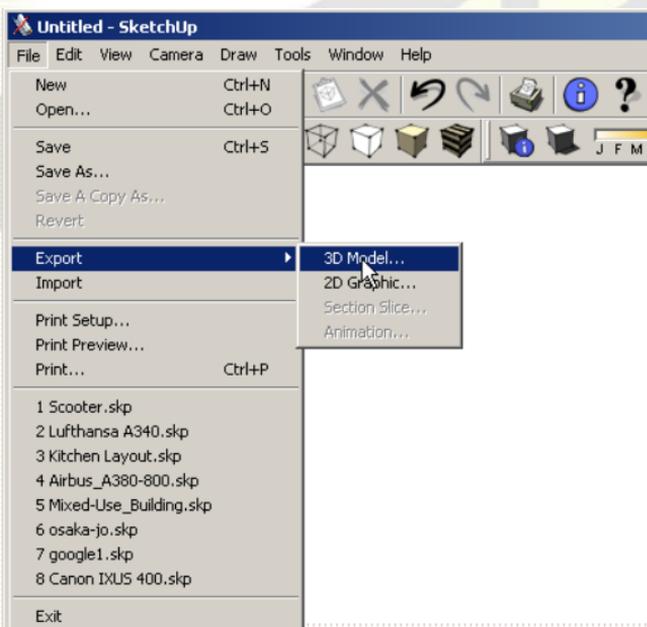
- Step 2: Type in a name for the exported scene
  By selecting Export from the File menu, a file dialog box will be displayed. In the first text box at the bottom of the dialog, type in a name for the exported scene. This name will be used for the web page as well as the folder that will be created which will contain the web page, the exported Hypercosm applet, and any other resources needed for the web deployable applet (such as sounds, textures, etc).
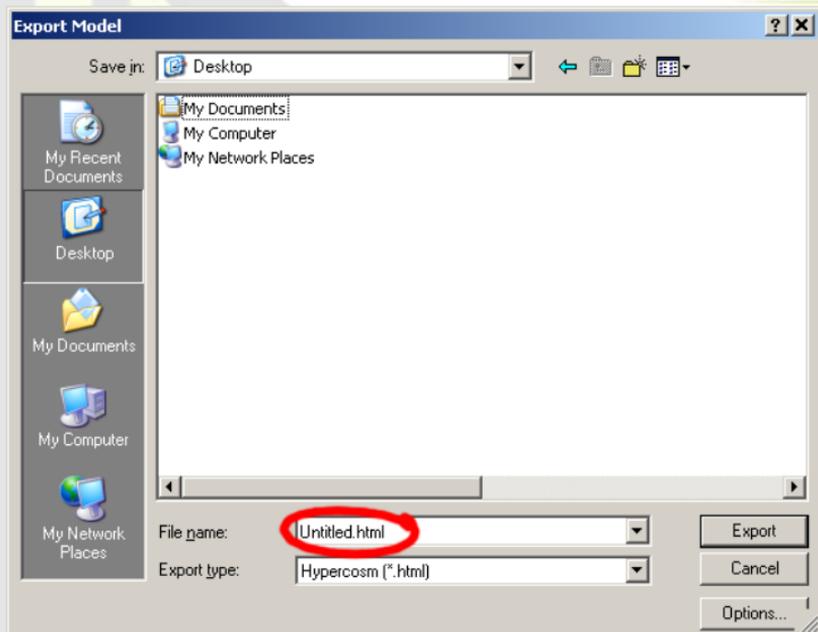
- Step 3: Select the "Hypercosm" Export Type
  Select the Hypercosm Teleporter exporter from a list of available exporters. This is done using the selection box labeled "Export Type" which is located at the bottom of the Export Model dialog box.
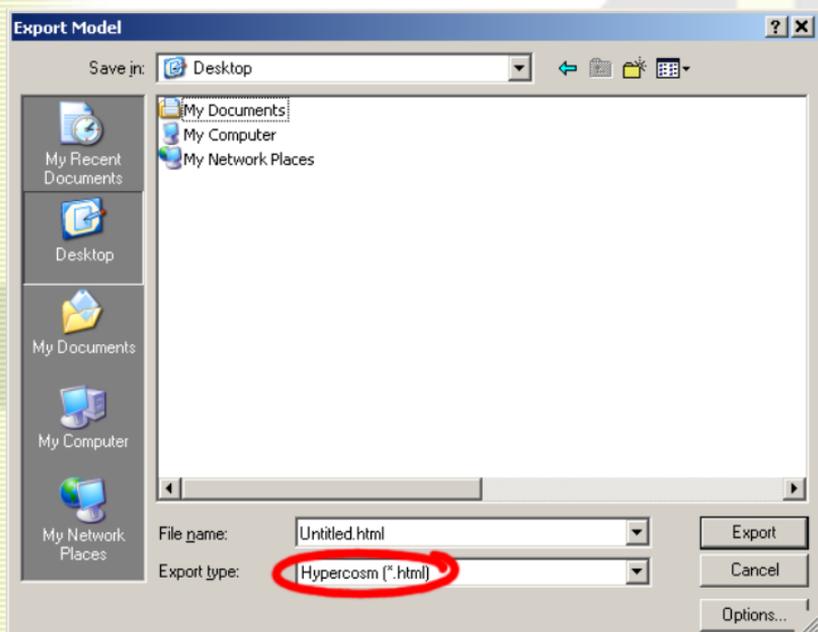
- Step 4: Press "Export"
  After you have selected a file name and type, press the "Save"
  button at the lower right corner of the dialog box.
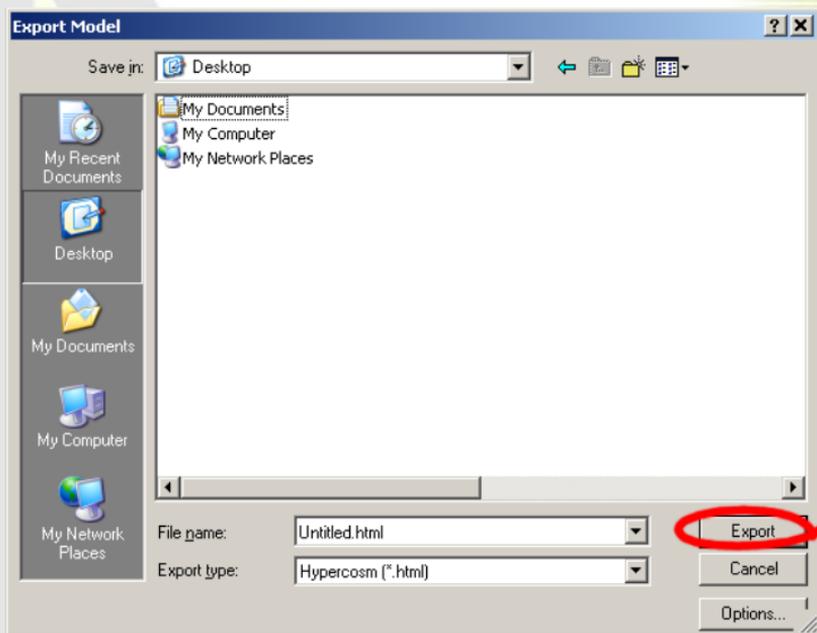
As the export progresses, you will see a progress bar like this:
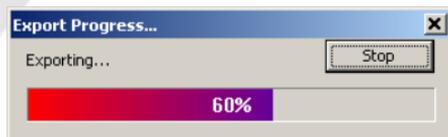
- Step 5: View
  When the export is completed, Hypercosm Teleporter will open
  the exported applet in your web browser for you to see.

  An exported applet displayed in IE6 and in Firefox:
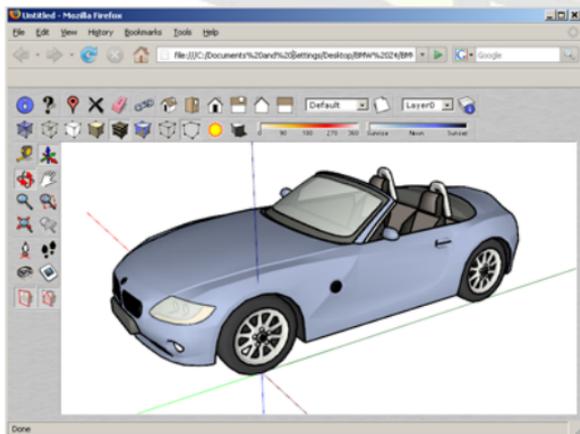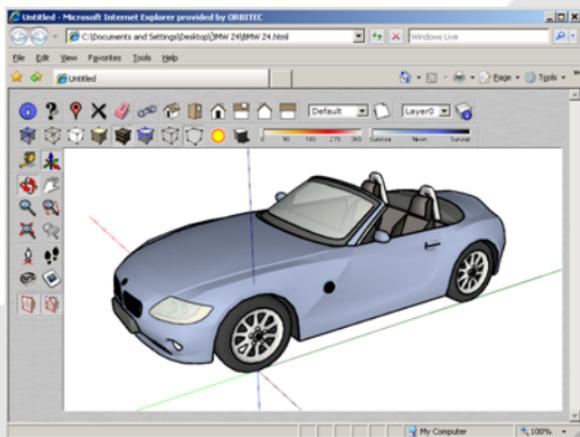
Hypercosm Applets

When you export files out of SketchUp™ using Hypercosm Teleporter, you will be creating a new type of file that is known as a "Hypercosm applet". An "applet" is a small program that runs using the assistance of another program, in this case the Hypercosm Player. Hypercosm applets are actually little programs to generate and display the 3D graphics depicted in your SketchUp™ scene. For those of you who are familiar with programming, the term "applet" usually refers to a Java applet. Hypercosm applets are conceptually very similar to Java applets except instead of using the Java Virtual Machine, they use the Hypercosm Virtual Machine which has special extensions for 3D graphics. For this reason, the applet files will be named using the ".hcvm" file extension which stands for "Hypercosm Virtual Machine".

Viewing Hypercosm Applets

When you export a SketchUp™ scene using Hypercosm Teleporter, it will create a Hypercosm Applet. Hypercosm applets are viewed using the Hypercosm Player.

The Hypercosm Player

The Hypercosm Player is automatically installed for you when you install Hypercosm Teleporter. The Hypercosm Player can be started up easily to view an applet in a variety of ways.

- ## Using Hypercosm Teleporter

  Normally, your web browser will automatically be started up whenever you export a scene to show you a web page containing your newly exported Hypercosm applet. If you wish to disabled this automatic viewing of exported applets, you can do so

using the "View After Export" option on the "Advanced" tab, which will be covered in more detail later.

- **Using Your Web Browser**
  The Hypercosm Player can be run just by starting up a web browser on any page containing a Hypercosm applet. The web browser will automatically start up the Hypercosm Player and display the running applet inside of the web page.

- **Using Windows**
  You can start up the Hypercosm Player directly just by double-clicking on any Hypercosm applet (.hcvm) file. This will start up a Hypercosm applet and will display the graphical simulation inside of a new window.

Sharing Hypercosm Applets

One of the great things about exporting SketchUp™ models using Hypercosm Teleporter is that Hypercosm makes it easy to share your models with colleagues and friends. By installing the Hypercosm Player, they can easily and conveniently view Hypercosm applets that are created from SketchUp™ models. People viewing Hypercosm applets will not be able to edit or change your models, but they will be able to view them and navigate through them.

Downloading Hypercosm Player

The Hypercosm Player can be downloaded and installed easily from the Hypercosm web site (http:\\www.hypercosm.com). To download and install the Hypercosm Player, just go to www.hypercosm.com/download and follow the instructions.

Posting Hypercosm Applets on a Web Page

One of the convenient ways of sharing Hypercosm applets is by posting them on a web site. You can post Hypercosm enabled web pages the same way that you post regular web pages. Just copy the directory containing the .HTML file that is exported from the Hypercosm Teleporter into your web site directory and link to it from your web site. Once you upload your web pages, your 3D model will be online. No special server software or other configuration is necessary. If anyone wants to view your 3D models, they just need to install the Hypercosm Player and then visit your web site.

Emailing Hypercosm Applets

Another convenient way to share Hypercosm applets is by using email. You can email Hypercosm applets just by adding them to your email as email "**file attachments**". One convenient way of emailing web pages and other collections of files is by using a utility such as "Winzip" to group a collection of files into a single file. Once you've emailed your Hypercosm applets, the person receiving the email will have to make sure that they have the Hypercosm Player installed. Once this is done, they will just have to save and unzip the file attachment and then double-click on either the .HTML file in the directory or the Hypercosm applet (.HCVM) file.

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Chapter

Using Hypercosm Teleporter for SketchUp

Although Hypercosm Teleporter allows you to very easily export files, it also has advanced features that allow you to customize the export process. This section describes Hypercosm Teleporter's advanced features and how you can use these advanced features to optimize the export process for best results.

The advanced features of Hypercosm Teleporter are accessed by hitting the "Options" button on the main "Export Model" dialog box as shown below.
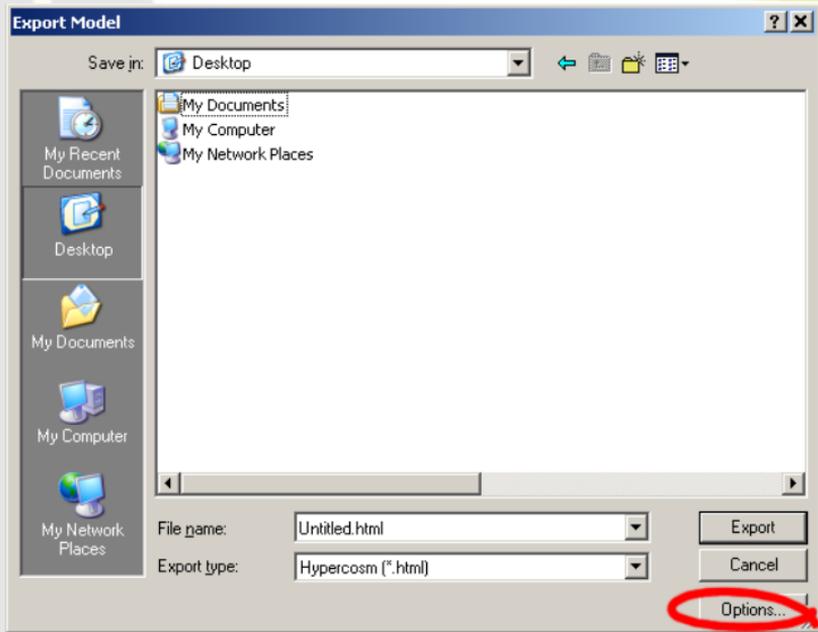
When you press the "Options" button, Hypercosm Teleporter will display its "Options" dialog box, from which all of its advanced options can be accessed.
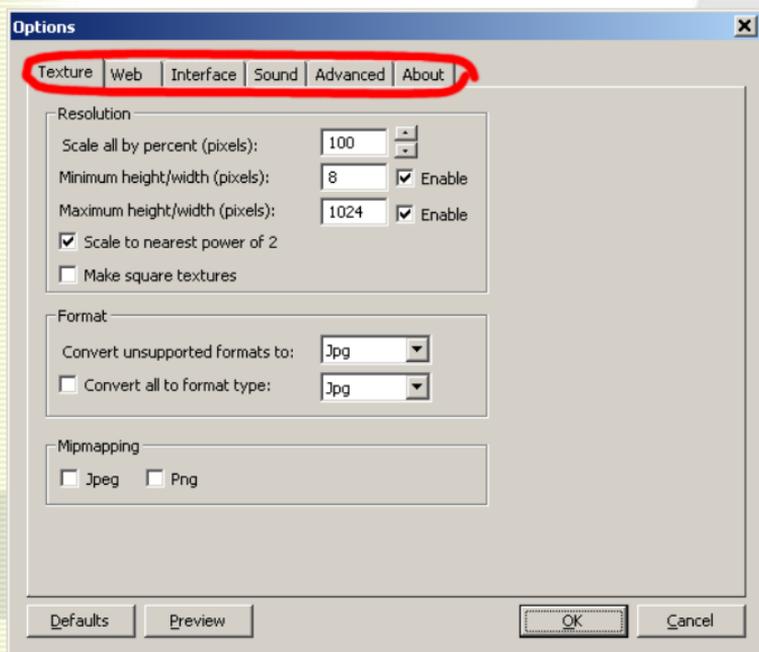
The most important feature of this dialog box is a series of tabs that run across the top. These tabs allow you to access the different aspects of Hypercosm Teleporters advanced functionality.

The following pages describe the various options that are available under each of the tabs.

The "Textures" Tab

Pressing the "Textures" tab will display the options shown below:
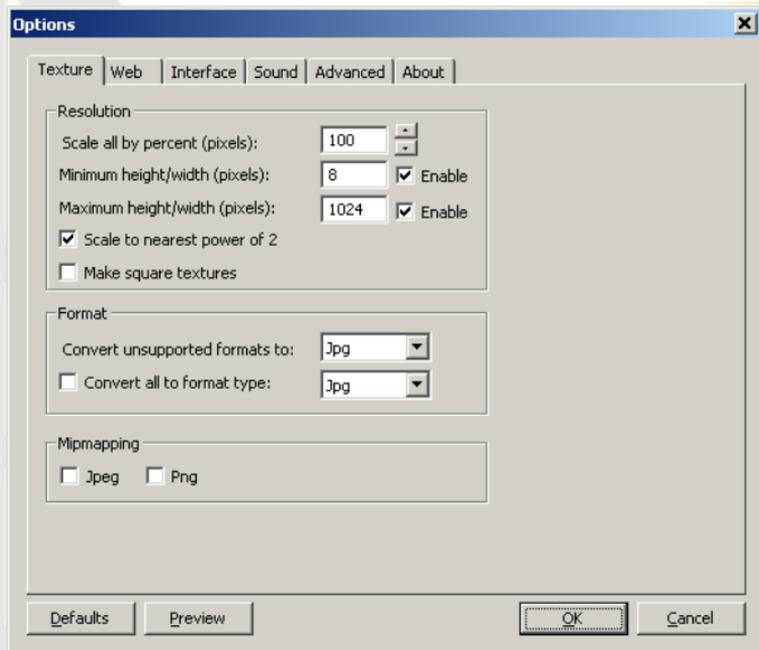
This interface is used to control the format and appearance of textures that are used to paint the surfaces of objects in the exported Hypercosm applet. These options are broken down into three main groups:

Resolution

The "Resolution" section presents a set of options for controlling the number of pixels in each texture map. This section presents the following controls:

- Scale all by percent

  This option will automatically scale all of the textures used in your scene by a constant factor. Often, the size of the textures is the largest factor in determining the file size of an exported scene. In order for 3D scenes to be placed on the web in a practical manner, it is often necessary to rescale the textures to find a good balance between file size (downloading time) and detail. This option provides a quick and easy way to do that without requiring you to go through your model and rescale all of the textures individually. The default value for this parameter is 100%.

- Minimum height / width (pixels)

  Often, 3D scenes have a mixture of very high resolution textures and small, low resolution textures. This option will allow you to down sample the high resolution textures by a significant amount without losing essential detail in the low resolution textures. By setting this value, you can ensure that textures will not be rescaled to a resolution below a certain point. The default value of this parameter is 8 pixels.

- Maximum height / width (pixels)

  This option is useful to place a maximum size on textures. This option allows you to automatically select all of the very high resolution textures for re-sampling while leaving the textures below a certain size unchanged. The default value for this parameter is 2048 pixels. Most 3D video cards are not capable of handling textures larger than this amount, so it is always a good idea to limit texture size to a value less than this even if downloading speed is not a problem.

- Scale to nearest power of 2

  For technical reasons, most 3D video cards require texture sizes that are an even power of 2. That means that if your textures are

not a power of 2, then the Hypercosm Player will have to rescale the images after they are downloaded so they can be displayed. By rescaling the textures when the model is exported, the Hypercosm Player can avoid this extra step.

- ## Make square textures
  For technical reasons, most 3D video cards require textures to be square (as well as being a resolution that is an even power of 2). If the textures are not exported as square, then the Hypercosm Player will have to rescale the images after they are downloaded so they can be displayed. Making the textures square avoids this extra step. Making the textures square and preserving the same amount of detail will result in larger textures which increases the downloading time. If downloading time is a concern, then you may choose to deselect this option.

Format

The "Format" section presents a set of options for controlling the file format used for storing texture map images. There are a variety of different file formats that may be used for storing images and each has their different strengths and weaknesses. The file formats that the Hypercosm Teleporter and Player support are as follows:

JPEG (Joint Photographic Experts Group)
The JPEG format is the most popular and most generally useful graphics format for the web. JPEG images offer good compression and work well for images with the wide range of continuous colors that you typically find in digital photographs. Unless you need transparency or have textures that have just a few colors, then you will want to use the JPEG image file format.

GIF (Graphics Interchange Format)
The GIF image format is an older format than JPEG and is not as good for storing digital photographs. However, the GIF fomat does

have a few unique features not offered by JPEG that make it continue to be popular for certain types of images. There are two main cases where you would want to use the GIF format: The first is if you require textures with transparency. The second case is if you have images with just a few colors. For transparency, GIF images contain a "transparency channel" or "alpha channel" that allows you to mask out certain parts of the image as invisible. This can be very important for creating stencil textures that have cutout areas. Another interesting aspect of the GIF image format is that it uses a compression technique called "run length encoding". This encoding scheme works by detecting places where the color of the image changes. For continuous tone images such as digital photographs, this scheme doesn't work so well because the image color changes at every pixel. However, if you have images with significant areas that are the same color, then this scheme works extremely well. For example, if you are creating texture images of text, symbols, diagrams, logos, or decals, then the GIF image format should be used. For these types of images, the GIF format will result in images that are 2 to 3 times smaller than an equivalent JPEG and look better because the RLE encoding scheme is a "non-lossy" technique that doesn't degrade the image because it doesn't lose any information.

PNG (Portable Network Graphics)
The PNG format was conceived of relatively recently as an alternative to the GIF format. The most important feature of the PNG format is that it allows 256 levels of transparency. The GIF format allows you to create transparent regions in an image, but the transparency in a GIF image is binary - either on or off. In a PNG image, you can have regions that are varying levels of transparency. This is useful for special effects such as clouds, smoke, and lighting and it is also useful if you want to soften the edges of stenciled textures.

The "Format" section of the Hypercosm Teleporter texture control interface contains the following options:

- Convert unsupported formats to:
  This option selects a format for textures that are not supported by the Hypercosm Player. The most common unsupported formats are TIFF (Tagged Image File Format) and an older format called Targa or TGA. The Hypercosm Player does not support these formats because these formats are not optimized for small file size and so they often result in images that are too large to be practical for web distribution. By default, all textures in unsupported formats will be converted to JPEG format.

- Convert all to format type:
  This option converts all textures to a uniform format type. This option is provided mainly for convenience and is disabled by default.

Mipmapping

Mipmapping is a process which allows textures to appear realistic in 3D at a wide range of distances. Without using mipmapping, textures look correct up close, but artifacts can appear when textured objects are placed a large distance away and the texture scale becomes small. The mipmapping interface allows you to enabled mipmapping for each of the available file types (JPEG, PNG, and GIF). The Hypercosm Teleporter interface allows you to enable or disable mipmapping specifically for each of the supported file types. Generally, it is a good idea to enable mipmapping for most textures. Sometimes, however, mipmapping introduces extra undesired blurring of the texture image. This can be particularly troublesome for textures used as text labels because the labels can become more difficult to read. These types of textures are best stored using the GIF file format. If you have a scene with a number of these types of textures that you want to remain very clear and sharp, then you can disable mipmapping for the GIF image file type and keep mipmapping enabled for all of the JPEG textures.

The "Web" Tab

Pressing the "Web" tab will display the options shown below:
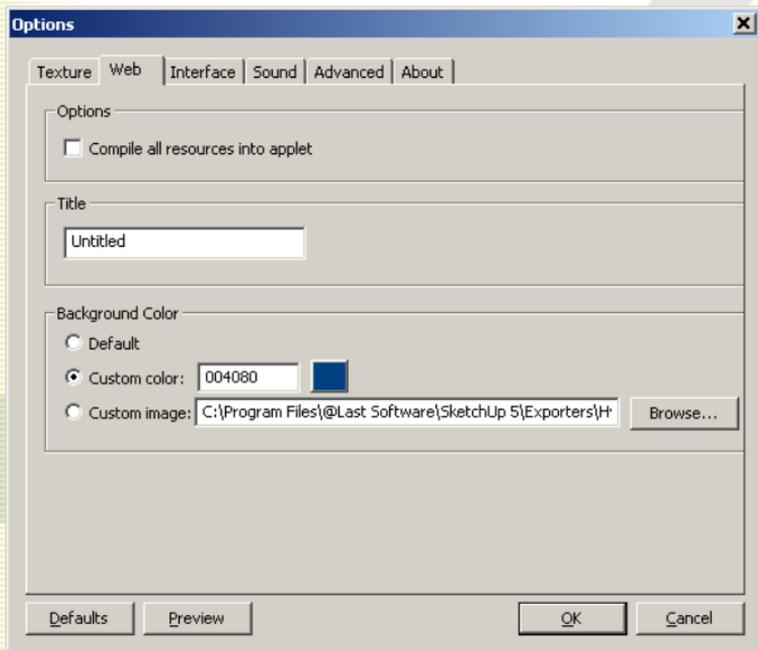
The "Web" dialog box is used to control how the 3D scene is exported to a web page. This dialog box has three sections:

Options

The "Options" section includes the following option:

• Compile all resources into applet
This option allows you to choose to either compile a 3D scene into a single large file or into a collection of smaller files which

can be individually edited and maintained. A complete Hyper-cosm applet can contain a variety of different parts. First, it contains the definition of the 3D geometry, materials, and animation. Second, it can also contain a collection of "resources". Resources are units of data that are defined in their own file format and are often represented as separate files. The most common examples of resources are texture images (JPEG, GIF, or PNG files), and sounds (.WAV or .MP3 files).

The advantages of compiling a scene into a single file are (1) simplicity and (2) security. When all of the applets are compiled into a single file, then you never have to worry about losing some of the textures or sounds that go along with the applet. Also, when they are all compiled into a single file, the textures and sounds used by that applet can not be changed. This can help to add an extra element of security to content creators who want to make sure that users of their 3D content can change their content and can not extract out elements of it for unauthorized use.

The advantages of compiling a scene into a series of files are (1) flexibility and (2) quick downloading. When the sounds and textures are kept as separate files, then they can be modified and changed later. This can be useful when tuning content for quick downloading. Second, when the resources are stored as a series of files separate from the applet, then the applet file is smaller. That means that the applet can be started up more quickly because it can be started before all of the resources have been downloaded. In this case, the sounds and textures will stream in after the applet has downloaded and they will appear in the applet as soon as they are downloaded and processed. For 3D scenes with large textures, this can make a significant difference in the amount of time it takes for the applet to start up and begin drawing to the screen.

The default value for this option is to NOT compile all resources into the applet. This is because most applets are intended to run on the web and the applets will download and start faster if they are not compiled into a single file.

Title

This text field can be used to enter a title for the web page. The web page's title is normally displayed at the very top of the web browser window in the "title bar" and is not visible anywhere on the actual web page itself.

Background Color

This section is used to change the background of the web page.

- Default
  When using this option, the web page will take whatever background color or image is specified by the "skin" that you are using. Most skins use a blank grey or white background.

- Custom Color
  This option is used to specify a color for the web page background. You can either enter a numerical value for the color using hexadecimal notion or you can click on the color chip to the right and bring up a color chooser that will allow you to select a color visually.

- Custom Image
  This option is used to specify an image that is used for the background. If the image is smaller than the web page, then the image will "tile" or repeat over and over again both vertically and horizontally.

The "Interface" Tab

The "Interface" tab will display the options shown below:
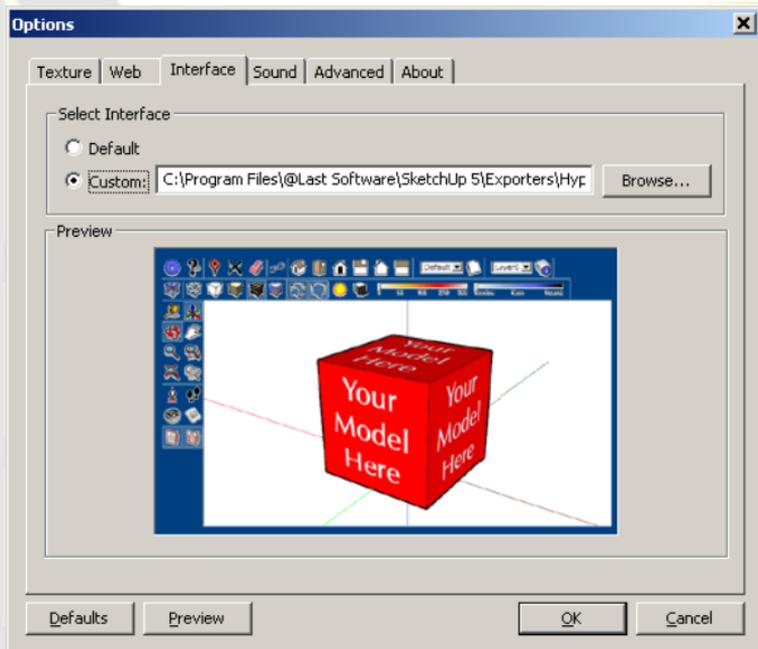
One of the great and powerful features of Hypercosm Teleporter Pro is that it allows you to have almost complete control over the 3D applet's user interface.

A variety of different user interfaces or "skins" are provided as part of Hypercosm Teleporter. In addition, new skins are available for download from Hypercosm's web site or you can create your own.

This tab is the way that different skins are selected.

Select Interface

This where you select a user interface skin. There are two main classes of skins that you can choose from. The "Default" option compiles a default user interface into the applet itself. The second, more flexible approach is to use a "web based" user interface skin. This approach lets you

- **Default**

    When using this option, The "Default" option compiles a default user interface into the applet. The default user interface used by Hypercosm Teleporter displays a dock bar similar to that used in the Macintosh OSX user interface with various icons and controls displayed across the dock bar. The advantage of this type of user interface is that since it's a part of the applet, no web page or Javascript is needed to view the user interface.

- **Custom**

    This second option allows you to have control over the user interface and to customize it to suit your needs. When this option is selected, rather than compiling the user interface into the applet, the user interface is defined by a user interface "skin" that is separate from the 3D applet. By selecting different "skins" to use with an applet, you can change the look and feel of the user interface. Since the user interface skins are defined using standard open HTML and Javascript, you can modify and change them as much as you wish.

    To select a different skin, press the "Browse" button to the right of the "Custom" radio button.

    When you press the "Browse" button, Hypercosm Teleporter will display the "Skin Browser" dialog box shown below:

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Select a Hypercosm Teleporter Skin

Look in: Standard Skins

- Default
- Getting Started with Large Buttons
- Getting Started with Small Buttons
- Mouse Only
- Standard with Large Buttons
- Standard with Large Buttons and Lighting
- Standard with Small Buttons
- Standard with Small Buttons and Lighting

My Recent Documents
Desktop
My Documents
My Computer
My Network Places

File name: Default

Files of type: Hypercosm Teleporter Skin Folder

Select
View
Cancel

Preview:

Using this dialog box, you can choose the skin that you would like to use. A preview of the skin is shown in the "Preview" pane at the bottom of the dialog box. If you'd like to try out the skin that you have selected, then press the "View" button on

the lower right. Once you are satisfied with your choice, hit "Select" to select that skin.

Below, you will see some examples of standard skins that you can use with your models:
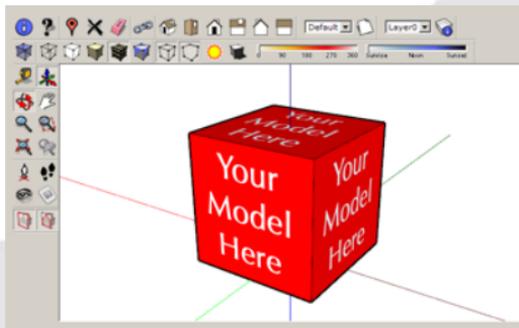
Standard Skin with Large Buttons and Lighting Controls
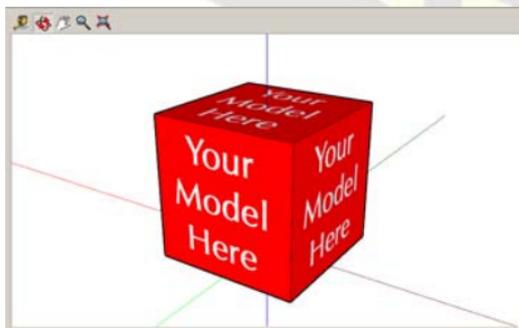
Getting Started Skin with Large Buttons

The "Sound" Tab

Pressing the "Advanced" tab will display the options shown below:
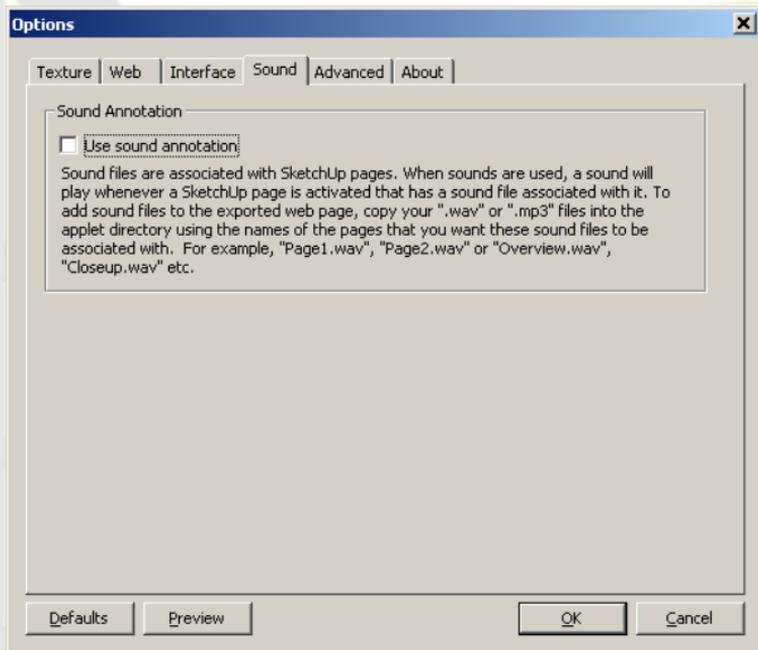
Sound Annotation

• Use Sound Annotation
  When this option is selected, the applet will play sounds when different pages are selected. The sound files must each have the name of the pages that they are to be associated with and they should reside in the same directory as the applet. The types of sound files that are supported are ".wav" and ".mp3".

The "Advanced" Tab

The advanced tab will display the options shown below:

Script

• Create OMAR Script Code
  When this option is selected, Hypercosm Teleporter will export
  your scene into a set of files written in Hypercosm's OMAR 3D
  scripting language. These files can be modified using Hyper-
  cosm's Hypercosm Studio scripting tool to add such things as
  physics, behavior, complex user interactions and logic that

could not be created in any other way. For more information
on Hypercosm Studio, visit Hypercosm's web site.

Background

The "Background" options allow you to change the appearance of
the drawing area that is displayed behind the 3D scene. You can
choose from the following options:

- Default
  When this option is selected, the background will be created to
  match the scene as it is displayed in SketchUp™.

- Custom
  If you'd prefer to use a different background than the one dis-
  played in SketchUp™, then you may select a background image
  with this option.

Precision

Precision determines the amount of numerical accuracy that is used
to represent the positions of points that are used to define the
objects in your 3D scene. The downside of using more precision is
that it will result in a larger file that will need to be downloaded.
Generally, you want to use the lowest level of precision that still
maintains the visual quality of the scene.

- Significant Digits for Coordinates
  The amount of precision that is used is measured in terms of
  number of significant digits. Each additional significant digit
  will cause the amount of precision to increase by a factor of 10,
  but will also increase the amount of storage necessary. The

default value is 6, which results in a precision of 1 part in
100,000.

- Significant Digits for Normals
This option works in a similar manner to the significant digits
for coordinates except that normally much less precision is
needed for normals because they are only used for shading. The
default value is 2, which results in a precision of 1 part in 100.

View

- View After Export
When this option is selected, your web browser will be
launched whenever an applet is exported to display the result-
ing applet in a web page upon the completion of the export pro-
cess. The particular web browser used (IE, Firefox etc.) is
dependent upon your system settings. This option is selected
by default.

The "About" Tab

Pressing the "About" tab will display the interface shown below:
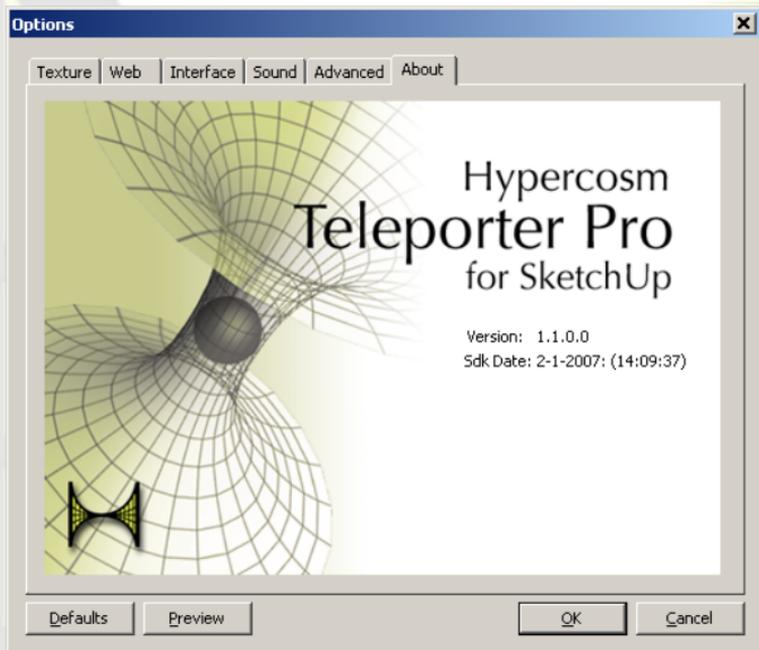
This main purpose of this display is to show you the particular version of Hypercosm Teleporter that you have installed.

How to Get Help

If you don't find the answers that you are looking for here, you can also consult the Support section of the Hypercosm web site located at: www.hypercosm.com/support/ . If you still don't find what you're looking for, the Hypercosm web site will direct you to email and phone support information