@Last Software©

SketchUp 2.0 Readme
Last modified: February 27, 2002

Welcome to SketchUp 2.0. SketchUp is a deceptively simple, amazingly powerful tool for creating, viewing, and modifying 3D ideas quickly and easily. It has been developed to combine the elegance and spontaneity of pencil sketching with the speed and flexibility of today's digital media.

SketchUp runs under Microsoft Windows™ operating systems and is compatible with any pointing devices and printers supported by Windows. The hardware and software requirements are the following:

- 400 MHz processor
- 32 MB RAM
- Microsoft Windows™ 98, NT4.0 w/SP3, 2000, XP or later
- 20 MB free disk space for minimum installation
- Windows™ compatible pointing device (mouse, digitizer, etc.)
- Microsoft Internet Explorer™ 4.0 or higher.

Recommended:
- 600 MHz Pentium processor or higher
- 128 MB RAM
- A scroll-wheel mouse.
- A 100% OpenGL compatible 3D accelerator graphics card, running in 32 bit color mode. For a minimal investment, a 3D accelerator can provide a tremendous increase in performance (up to 3000%) and image quality.

SketchUp supports import and export of AutoCAD™ 14 and 2000 DWG and DXF Files, Image files such as BMP, JPEG, PNG, and TGA, as well as export to 3D Studio™ .3DS and Piranesi Epix formats.

What's New?

The latest version has several new features:

- **2D Hidden-Line Vector (HLV) Output**
- **Print to Scale**
- **Scale Tool (with Mirror Capabilities)**
- **Multi-Copy (Linear and Radial Arrays)**
- **Groups**
- **In-Place Group and Component Editing**
- **Auto-Folding Geometry**
- **Enhanced Color and Material Exploration**
- **Image Objects**
- **Sky and Ground Rendering Effects.**

As well as several enhancements to existing tools:
- **Divide Edges Into Equal Parts.**
- **Protractor Tool and Rotate Tool Lock.**
- **New, More Readable Icons and Cursors.**
- **Adjustable Segments For Arcs and Circles.**
- **Flip (Mirror) Components Along an Axis.**
- **Copy and Paste Between Active SketchUp Sessions.**

Known Issues and Limitations

Antivirus Software
- As with many applications, anti-virus software may cause problems with the SketchUp install. We strongly urge you to disable any anti-virus software before installing SketchUp.

Windows 95
SketchUp does not officially run on Windows 95 for several reasons. First, Windows 95 does not install with all the components necessary to run SketchUp. It also has some serious bugs which were addressed in later versions of Windows. These issues are beyond the control of @Last Software, and we apologize for any inconvenience.

If must use SketchUp under Windows 95, please be aware that we cannot provide technical support.

you may need to update the OpenGL32 DLL to the latest version. Version 1.1, which is standard in Windows 98 and later, may be downloaded from the Microsoft site at the following location:

http://download.microsoft.com/download/win95upg/info/1/W95/EN-US/Opengl95.exe

Please note that this location is current as of May 2001. If the link does not operate, please search the Microsoft download area for "OpenGL".

Users of Windows 95 will also need to install Microsoft Internet Explorer version 5.0 or later in order to use all of the features in SketchUp. This may be downloaded for free from the following address:

http://www.microsoft.com/windows/ie/downloads/archive/default.asp

Windows NT^{TM} and Windows 2000^{TM}
- As with all applications you must be logged on with administrative rights to the machine on which you are installing SketchUp under Windows NT & Windows 2000.

Logitech^{TM} Mouse
- If you are using a Logitech Wheel Mouse be sure to set the wheel button to "Middle Button". Alternatively, you can use the Logitech Auto-scroll feature if you make sure that "Use MS Office Compatible Scroll Only" is checked under the Options button, AutoScroll tab. Note that the similar check box on the main Buttons page does not work. Instead, you must click the Options button and the AutoScroll tab.

OpenGL issues
- Many video cards ship with mini-OpenGL drivers or drivers that do not offer 100% OpenGL compatibility. These include certain products based on Sis^{TM}, ATI^{TM} and S3^{TM} chipsets, which are extremely common. The problem stems from the fact that these cards are designed to accelerate games, but not professional 3D applications. SketchUp only works in accelerated mode with 100% OpenGL compatible drivers. Otherwise, software rendering mode should be used.

- See the section below for information specific to certain graphics cards.

Self-Casting Shadows (shadows on faces)
- Please make sure that your desktop display is set to **32 bit color mode**. When using many 3D accelerator cards, turning on self-casting shadows when in a lower color mode can seriously slow down the rendering performance of SketchUp.

- On the OpenGL property page, for Display Precision, "High" means a 32 bit z-buffer, "Medium" a 24 bit and "Low" a 16 bit. The higher the better as it generally minimizes rendering artifacts. Under the Shadows section, Yes means it supports full shadows. (casting shadows on faces) "No" means it doesn't. With many drivers display precision and shadow availability are generally a trade off. All that these settings mean is that your hardware can theoretically support the operations. We currently have no reliable way to accurately determine beforehand whether the driver supports what SketchUp wants to do with it.

- SketchUp tries to default to a software rendering mode that will provide the best balance of image quality and performance. SketchUp should support self-casting shadows by default.

- Self casting shadows uses an OpenGL feature called the stencil buffer. Some drivers, including the software OpenGL provided by Windows, often report that they offer support for the stencil buffer feature when in reality they do not or only offer partial support. This may cause artifacts or strange rendering behavior.

AutoCAD issues
- AutoCAD solids, regions, and splines are not supported for importing into SketchUp.
- AutoCAD hatching, dimensions and text are not supported for importing into SketchUp.

Dual Monitors
- At this time, SketchUp does not support systems running dual monitor systems. If you are using a system that spreads your Windows desktop across multiple monitors, SketchUp may not launch properly with both monitors active or you may experience strange dialog box positioning.   Also, if only one of the graphics cards on a dual monitor system supports OpenGL graphics acceleration, windows may not properly report its capability to SketchUp and, as a result, SketchUp will not be able to utilize it. Also, since running dual monitors requires twice as much video memory, some systems that run well on a single monitor may disable hardware acceleration surreptitiously when the second monitor is used.

Microsoft Internet Explorer 4.0 issues
- The right click context menu within the Component Browser will not present a component specific menu. You can access most of the missing commands by right clicking on a component in the graphic view instead.

This issue can be overcome by simply downloading and installing Microsoft Internet Explorer version 5.0 or later. See:

http://www.microsoft.com/windows/ie/download/ie501SP1.htm

SketchUp Journal Tutorial Files
As of 2.0 SketchUp no longer supports journal files.

Graphics Card Compatibility Issues:
The following section explains known compatibility issues for specific boards. These issues vary depending on operating system, OS patch version, graphics card board revision, driver version, and OpenGL version/implementation. It is impossible for @Last

Software to test every permutation of graphics card and computer system, but these are the general issues that we've come across:

16 bit Color mode
Many OpenGL drivers do not support all features in lower color depths. Please make sure your desktop display is set to 32 bit color.

Software Rendering Mode (Microsoft OpenGL 1.1)
This OpenGL implementation comes with all versions of Windows except the earliest release of Windows 95. SketchUp defaults to using software OpenGL. This implementation of OpenGL is fairly slow, but it tends to be much more stable and offers greater compatibility than the majority of third party OpenGL drivers.

3DFX Banshee, Voodoo1, Voodoo 2, Voodoo 2 SLI
These cards support GLIDE only. GLIDE is a subset of OpenGL that is designed for games only. They do not support full OpenGL. Consequently, they will not work with SketchUp or any other windowed OpenGL application.

3DFX Voodoo 3, 4, 5
Cards based on these chips definitely improve the pixel fill rate of SketchUp, though not nearly as well as competing cards. Also, they are no longer being officially supported by the manufacturer.

Full Screen Anti-Aliasing does not appear to work in windowed applications.

There appears to be significant tearing in accelerated mode. Triple buffering doesn't help.

ATI Rage / Rage Pro
The OpenGL driver provided with these chips is not 100% OpenGL compatible. Please use software rendering.

ATI Rage Mobility
These chipsets are quite common, especially in laptops. The OpenGL drivers that ship with these chips do not support acceleration in 32-bit mode as of the release of SketchUp 1.2. They offer acceleration in 16-bit mode, but the implementation does not offer 100% OpenGL compatibility. Streaking, dashing, and many other artifacts will prompt you to disable hardware acceleration.

Diamond FireGL
The latest drivers for these cards offer a sub-standard OpenGL implementation that has only been designed for a hand full of obsolete applications. Please use software rendering only.

Diamond Stealth III s540
This card only supports what is called an OpenGL MCD wrapper, which is a subset of OpenGL designed to accelerate games. This card actually runs faster in software mode, anyway. Needless to say, hardware acceleration should always be disabled.

Cards based on Nvidia Chipsets

Nvidia offers the best Hardware and software for affordable, consumer level OpenGL.

- Nvidia Riva 128
- Nvidia Riva TNT
- Nvidia GeForce
- Nvidia GeForce 2
- Nvidia GeForce2Go
- Nvidia GeForce 3
- Nvidia GeForce 4

Many Architecture firms are standardizing on these types of cards due to their outstanding quality and performance. To learn more about how Nvidia 3D acceleration can improve SketchUp's performance, contact your SketchUp representative or distributor.

In general, you'll want to set your Nvidia-based display adaptors color depth to 32-bit. 16 bit may in some cases introduce limitations and associated artifacts.

Fast Feedback can cause display artifacts when full screen anti-aliasing is enabled. These do not damage the SketchUp model.

@Last Software
http://www.sketchup.com/