

Creating 3D Pdf Files from a Chief Architect Model

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Software Required:

1. Chief Architect to create a 3d model in file format .3DS .
2. Software to convert exported model in file format .3DS to file format .u3D (version 1.0)
(I use Corel DESIGNER® X5 which is part of Corel DESIGNER® Technical Suite X5 which includes a program called Right Hemisphere's Deep Exploration™ CCE which converts the file as needed.
<http://www.corel.com/servlet/Satelli...1#tabview=tab6>)
3. Software to create a 3D pdf file.
(I use Adobe Acrobat 8 Professional which can create 3D PDFs but only from .u3d version 1.0 files.)

Alternately, you can use Chief Architect to export a 3D model in .3DS, .DWG or .DXF file formats and/or use a different software program from those mentioned above to create a 3D pdf file directly. The .DXF file format is usually the lesser quality and less desirable format to use. It is a matter of what software programs you own and/or the cost of acquiring programs to use for this purpose. I believe Adobe Acrobat 8 and 9 are useful for 3 above but Adobe Acrobat 10 requires an expensive add-on module. Also, Simlab's Composer 2.3 (Bookmarked @ \$94) and Quadrispace's Share3D PDF2011 (Bookmarked @ \$79) seem to be able to use a .3DS file directly from Chief Architect to create a 3D pdf file in one step. They also can edit and manipulate the 3D pdf in more ways than Adobe Acrobat 8 Professional, although such additional work may not be desired for the effort involved.

Here are the steps I use to embed a 3D model into a PDF document:

1. Create a 3D View in Chief Architect
2. Export a Chief Architect 3D render view to a 3DS file and save it. (Export/3D Model (3DS))
3. Open the saved 3DS file in the Deep Exploration program, then convert it by saving it as a u3D file.
4. Import the u3D file in Adobe Acrobat 8 Professional and create a 3D pdf file, or more exactly, place the 3D model as part of a pdf page by embedding a 3D file on a page of a PDF document, as follows:
 - a. File/Create PDF/From Blank Page
 - b. Tools/Advanced Editing/3D Tool
 - c. Either Click & drag on page to create 3D pdf box or double click on page to create a default sized box.
 - d. Use the "Browse" panel in the pop-up box (titled "Add 3D Content") to select the u3D (version 1.0) file created above. Press "OK" and your 3D pdf is created. (You can adjust other settings in the same pop-up box or adjust them later.)
 - e. Click on the 3D model with the "Hand" or "Select" tool to enable (or activate) the model, open the 3D toolbar, and play any animation.
 - f. Move, delete, or resize the 3D area or canvas in which the 3D model appears.
(Tools > Advanced Editing > Select Object Tool)

Controlling, Selecting and Measuring 3D Models that are Embedded in a PDF Document

In Adobe Acrobat 8 Professional, after you embed your 3D file, you can adjust the area or canvas in which the 3D model appears, edit the presentation properties for the 3D toolbar and content, change the lighting and colors, and create additional exterior, interior, cross-sectional and component views. In addition, you and your clients can review, measure, comment via the 3D model and the pdf document. You can selectively hide and show parts of a 3D model, remove a cover to look inside, and turn parts around as if holding them in your hands or using the 3D model creating program, without a fuss or knowing more than how to use the basic tools. Furthermore, you can save your completed views so that you and you client can later easily view them again.

Steps and Settings to Prepare the 3D PDF for Client Viewing

When you properly prepare the 3D pdf's views and settings, a client can easily tour the model with a minimum of effort and no technical knowledge. The basic instructions to prepare a 3D PDF are as follows:

1. Disable the tool bar toggle so that the tool bar is always visible. (*Edit/Preferences/3D (under Categories)/Enable Toggle For 3D Toolbar Control (uncheck).*)

Instructions to a Client or Other Recipient of a 3D pdf Model

The basic instructions to a client who will be viewing a 3D PDF are as follows:

1. Left Click on the 3D pdf model to show tool bar.
2. Select the various views from the drop down list under "Views".
3. Make sure that the "Background Color" and "Lighting" is acceptable for viewing the model. Otherwise make adjustments using the 2 tools on the right side of the tool bar.

For more advanced viewing:

4. Use "Spin", "Pan" and "Zoom" under the drop down arrow on the leftmost button on the tool bar. Avoid the default "Rotate" mode as it is harder to control. (*Note: Select on the "Views" if you lose control of the model.*)
5. Explore the rest of the tools on the tool bar as you wish.

Adobe Acrobat 8 Professional Help

Move, delete, or resize the 3D canvas

Choose Tools > Advanced Editing > Select Object Tool.

Note: Be careful not to confuse the Select Object tool with the basic Select tool. You must use the Select Object tool to adjust a 3D canvas.

Select the 3D canvas and make any changes you want to apply:

To move the canvas, drag it to a new location on the page.

To delete the canvas (and the 3D model), select it and press Delete.

To resize the canvas, drag the frame corners. The 3D content stays proportional within the adjusted frame.

3D toolbar overview

The 3D toolbar appears after you click the 3D model with the Hand tool, which also enables the 3D model and plays any animations associated with it. The 3D toolbar always appears in the area above the upper left corner of the 3D model and cannot be moved. A small blue triangle appears immediately below the 3D toolbar, which you can click to hide and show the toolbar.

Note: You can disable or enable the blue triangle toggle by choosing Edit > Preferences (Windows) or Acrobat > Preferences (Mac OS), selecting 3D under Categories, and then clicking the Enable Toggle For 3D Toolbar Control option.

You can use the 3D toolbar to zoom in and out, rotate, and pan across the object. Use the Model Tree to hide or isolate parts, or make parts transparent.

You manipulate a 3D model by selecting and dragging various 3D navigation tools. When you navigate in

3D, it may help to think of it as viewing the stationary 3D model from a camera's perspective. You can rotate, pan (move up, down, or side-to-side), and zoom in or out.

Note: You can hide the toolbar by right-clicking/Control-clicking the 3D model and choosing Hide Toolbar. To show the toolbar, choose Show Toolbar from the same context menu.

Notes:

1. The **Model Render Modes** include combinations of factors that affect the appearance of the 3D object. The default rendering mode is usually solid, but you can also choose another rendering mode. You can also change the lighting of the 3D model as well as the background.
2. You cannot use Acrobat to make changes to the 3D source images themselves. To do that, you must use a 3D authoring application.
3. Use items on the 3D toolbar to make any of these changes:
 - a. To change the rendering style, choose an option from the Model Render Mode pop-up menu.
 - b. To view an orthographic projection, click the Use Orthographic Projection button . An orthographic projection effectively removes a dimension, preserving the size ratio between objects but giving the 3D model a less realistic appearance. Click the button again to use perspective projection.
 - c. To turn lighting on or off or to change lighting, choose an option from the Enable Extra Lighting pop-up menu.
 - d. To change the background color, click the arrow next to the Background Color swatch and choose a color.
 - e. *Note: Model Render Modes, Lighting Schemes, and Background Color options are also available by right-clicking/Control-clicking the 3D model. Model Render Modes also appear under the Options menu on the Model Tree panel.*
4. The Model Tree panel appears in the navigation pane on the left side of the work area. You can also open the Model Tree by clicking the Toggle Model Tree button on the 3D toolbar, or by right-clicking/Control-clicking the 3D model and choosing Show Model Tree.

Create cross sections

Displaying a cross section of a 3D model is like cutting it in half and looking inside. Use the Cross Section Controls dialog box to adjust the alignment, offset, and tilt of the cutting plane.

1. Click the Toggle Cross Section icon on the 3D toolbar to turn on or off the cross section.
2. (Optional) Click the arrow next to the Toggle Cross Section icon, and choose Cross Section Properties, which opens the Cross Section Controls dialog box. Then do any of the following:
 - a. Change settings under Alignment, Display Settings, and Position and Orientation.
 - b. Click the Save Section View button to save the current cross-sectional view. (The saved view will appear on the Views menus in the 3D toolbar and Model Tree with a default name, SectionView[n].)

Set 3D views

The default view of a 3D model lets you quickly revert to a starting point at any time as you interact with the model. A default view is different from a preview, which determines what the 3D model looks like when it's not activated. The list of all available views for the 3D model appears in the Views menu on the 3D toolbar and in the Model Tree.

You can also create additional views of the 3D model in Acrobat that let you quickly navigate the 3D

content as you want (such as top, bottom, left, right, inside, outside, exploded, or assembled). A view includes lighting, camera position, rendering mode, the Model Tree state, and transparency and cross section settings. When you add a comment or markup to the 3D model, Acrobat automatically creates a view.

You can link views to bookmarks in the Bookmarks panel, or you can use the Go To 3D View action to link views to buttons and links that you create on the page.

Measure 3D objects

Use the 3D Measurement Tool to measure 3D models. You can create measurements between combinations of points or edges of the 3D model. As you move the pointer over the 3D model, specific points and edges are highlighted. The 3D Measurement Tool supports four types of measurements: perpendicular distance between two straight edges, linear distance between two points, the radius of circular edges, and the angle between two edges (or three points). You can also display comments while taking measurements. However, these comments (also called measurement markups) are not preserved after the document is closed.

Hide, isolate, and change the appearance of parts

Some 3D models are composed of individual parts. You can use the Model Tree to hide or isolate parts, zoom in to parts, or make parts transparent.

In the 3D model, use the Hand tool to click the part you want to manipulate. If a preference setting prevents you from using the Hand Tool, use the Object Data Tool (Tools > Object Data > Object Data Tool) to select parts. Or, select the part in the Model Tree list.

From the Options menu in the top pane of the Model Tree, choose any of the options presented to achieve the desired effect.

Comment on 3D designs

Comments added to a 3D object are associated with specific views that are defined when the comments are added. If the view is changed—for example, if the 3D object is rotated or moved—the comments are no longer visible.

When the view of a 3D object is changed, any comment associated with that object disappears.

Note: If you don't want a comment to be associated with a 3D view, add the comment to another part of the page, outside the 3D object area.

Note: Adding comments to 3D model views requires version 7.0.7 or later of Acrobat or Adobe Reader.¹

¹Adobe Acrobat 8 Professional Help Files