WHICH SOFTWARE SHOULD I CHOOSE?

REVIT

CHIEF ARCHITECT

SKETCHUP
designstudentsavvy.com
Congratulations! You’ve reached the point in your interior design business where it’s become necessary to think about purchasing a drafting and visualization program. But, how do you know which program is going to be the best option for you?

I was in the same position and searched the web looking for a comparison and honest reviews of the three main options available to interior designers – AutoDesk Revit, Chief Architect and SketchUp Pro – but I couldn’t find exactly what I was looking for. I wanted to read a detailed assessment from someone who had been in my shoes and had experience with all three.

In this short e-book, I will provide an overview of each program from my own perspective. I am, by no means, an expert user of any of these programs; however, I would deem myself proficient in all three. I also know how to use some features of them very well and others not at all. Therefore, this guide is written from the perspective of a residential interior designer for other residential interior designers and not meant to serve as a comprehensive analysis. Everything I have written here is my own opinion, aside from system requirements and pricing information.

WHY DO I NEED A DRAFTING PROGRAM?

Drafting programs can be expensive, but they can also pay major dividends. Here are some reasons to invest in a drafting program with 3D visualization capability:

+ Easily draw accurately to the fraction of an inch.
+ Produce professional looking construction documents for communicating with contractors.
+ Sell your clients on your designs more easily with 2D and 3D visual aids.
+ Quickly and easily experiment with multiple design scenarios in 3D.
+ Generate wireframe perspectives that can serve as a base for manual renderings.
+ Visualize color and material placement and proportion.

I have found that using a drafting program to produce my construction documents – even if only for a furniture plan – helps me to present myself to my clients as professional and experienced. They are confident in the design because they know I’ve put serious thought into the placement of the furniture and other elements and that the layout will work because they can see it for themselves.

I also use these programs to create 3D perspective views of the spaces I design. Some clients are just not visual thinkers, and a 3D perspective can help them understand my design for the space.

So, now that we have identified some great reasons for investing in a drafting program with 3D capability, let’s move on to a review of each program in detail.
REVIT (AUTODESK)

Revit is a powerful drafting and 3D program by the company AutoDesk, which is also responsible for AutoCad and a myriad of other programs. It has been adopted by a large number of commercial architecture and interior design firms who have transitioned from 2D drafting (AutoCad) to 3D modeling as well as some residential design firms.

MY EXPERIENCE

I learned to use Revit during my Masters degree program at Iowa State, and later I taught Revit to sophomore students both as a TA and a full-time instructor. I have used Revit professionally, primarily to design kitchen and bathroom remodels, with some degree of frequency since early 2011.

SYSTEM REQUIREMENTS

Revit is only available for Windows users, so you will either need to have a PC or a Mac running Parallels or Bootcamp with a Windows installation. You can read more about the system requirements on the Revit website.

In my experience, a fairly fast processor (over 2.1 GHz) and 8 GB of RAM are necessary to run Revit optimally. In addition, it’s critical to check the graphic card requirements carefully because Revit doesn’t play well with certain graphic cards, which can slow down 3D views and prohibit 3D rendering in the program.
DRAFTING AND MODELING IN REVIT

Revit allows you to draw in 2D and automatically generate a 3D space at the same time. You can easily create walls, floors and ceilings from a sketch or field measurements and then add windows and doors. The program comes loaded with a library of objects that you can use to furnish and design your plan.

You can also build and save custom elements like furniture, cabinets, and fixtures to use and reuse. Revit refers to these as family files. There are different types of family file templates that you can use to start drawing your model in 3D. You can develop a library of objects to save yourself time in the future.

Revit has many tools for modeling in 3D. It also supports parametric modeling, which allows you to build a model once and then assign parameters to it so you can easily resize it or apply materials. This feature is particularly useful for modeling kitchen cabinets. For instance, you can model a three drawer base cabinet that is 15” wide and use parameters to change the width to 18”, 21”, or any custom dimension. There are limits to parametric modeling, but it can be a very efficient and powerful tool.

Rooms in Revit don’t come with any details like base moldings. Some windows and doors do not automatically come with casings. You will need to add those details manually to make your drawings complete by using the 3D modeling tools.
PRINTING FROM REVIT

Revit’s print layouts (or paper space for CAD users) are integrated right into the program. You can use the title block templates provided and customize them to create your own branded construction document title blocks. Then you just drag and drop floor plans, elevations and sections onto the sheets. You can add drawings of different scales to the same sheet and use the drawing titles to label them and automatically indicate the scale. If you make a change to the model or change the scale, the viewport on the printable sheet will update automatically.

OTHER NOTES

Revit provides the capability to do detail drawings and work with 2D lines, shapes and hatches to enhance your drawings. The library includes a number of 2D details such as nominal lumber sections, insulation, etc. You may or may not have the need for this level of detail when it comes to constructing the actual building, but they also come in handy when designing custom millwork.

Revit is an incredibly powerful program, and it includes a ton of features that are necessary for designing huge commercial structures but might be overkill for the small-scale residential designer.

There are also some potential downsides to using Revit. The family files that come with the program are pretty basic. You may find yourself building many models for your design because you can’t find what you need in the library. For example, the kitchen
cabinets come with a slab door front. If you want a raised panel or recessed panel door, you’ll need to build them from scratch for every cabinet. The furniture pieces are incredibly basic, limited in number and boxy looking.

You can import SketchUp models from the 3D warehouse into Revit, and more manufacturers are making 3D models of their products available to import into your Revit files. In addition, there are websites where you can search for and download models – some for free and some for a cost. Revit City, for example, has models available that you can download for free, which were created by members of their forums.

Screen shot of Revit City download library
But, you need to be careful when downloading models from non-professional sites because they can crash or corrupt your file. I always create a new family file for any model I’ve downloaded and never import directly into my drawing file. I always save a backup of my drawing before importing a new model.

Finally, I find it challenging to do a basic 2D plan in Revit without going to the trouble to build everything in 3D. This can become a problem when I simply want to generate a furniture plan, and I don’t intend to show the clients a perspective of the space. Furthermore, clients are usually not willing to pay for the amount of time it takes to build everything in 3D. I have created some basic 2D symbols to make this process more efficient, but I have had to draw all of those from scratch.

You can import CAD drawings into Revit family files to create 2D families, so if you have a library of symbols from AutoCad, you can convert them for use in Revit.

3D VIEWS AND RENDERING

Revit comes with an extensive materials library, and it is easy to add new materials or copy existing materials and alter the scale or color. While you can quickly apply materials to Revit families, it can be challenging to apply materials to models imported from SketchUp and also to manage those materials. This can become an issue if you plan to source many of your models from SketchUp.

Revit has several family files for lighting, and those families can be modified and customized to create different types of
lighting solutions. Adding appropriate lighting to models is very important for creating photo-realistic renderings.

Living room view rendered in the cloud

Revit can generate 3D photo-realistic renderings within the program, which take time to complete (often hours), and you can’t use the program while it’s rendering. They also have an online service “the cloud” to which you can upload your models for rendering for a fee. The cloud renderings are incredibly high quality and can be printed at large sizes.

If you’re interested in non-photo-realistic rendering, the newest version of Revit also has an option for a sketchy line style.
**COST**

The base subscription is $228 per month or $2730 per year.

**Revit Lite** is a new product from AutoDesk that has some of the features of Revit combined with the 2D CAD capabilities of AutoCad. It does not support realistic or sketchy 3D views, animations and walkthroughs, nor will it generate schedules (one of the really nice features of Revit).

Revit Lite is $625 per year.

**WHAT I LIKE ABOUT REVIT**

+ One step to draw 2D and 3D plans.
+ Easy to customize templates for both drawings and printing sheets.
+ Ability to create parametric family files.
+ Extensive materials library that you can easily add to.
+ Robust 3D modeling tools.
+ Ability to easily generate different views like existing conditions, demo, and electrical plans.
+ Automatically generate sections and elevations from plans.
+ Robust dimensioning tools.
+ High quality cloud rendering capability.
+ Sophisticated lighting tools for photo-realistic rendering.
+ Sketchy line style for non photo-realistic perspectives.
WHAT I DON’T LIKE ABOUT REVIT

+ Can be challenging to learn without formal instruction.
+ Not available for Mac operating system.
+ Difficult to draw simple 2D plans, including electrical plans.
+ User interface is primarily point and click based vs. keyboard shortcuts (you can create keyboard shortcuts).
+ Very basic library.
+ Can be necessary to draw everything in 3D to generate 2D construction documents.
+ High cost.
+ Lack of rendering styles aside from photo-realistic and sketchy.
+ Difficult to add materials to SketchUp models.
CHIEF ARCHITECT PREMIER

Chief Architect is a drafting and 3D modeling software program specifically designed for architects and interior designers. There are two versions of Chief Architect available – Chief Architect Interiors and Chief Architect Premier. The same company also makes Home Designer software, which also has several versions available. For the purpose of this comparison, I will be referring to Chief Architect Premier.

MY EXPERIENCE

I became aware of Chief Architect through an online forum of interior designers. Many of the designers mentioned that they used Chief Architect (CA), so when I was looking for a software solution for my business, I decided to download the trial version to see how it compared with Revit and SketchUp. At the time, I was using SketchUp for drafting and modeling my projects.

I initially purchased the Interiors version of CA, but I found it lacking in some of the tools I was used to using in Revit. I had purchased some training for the program and found it didn’t apply to the Interiors version, so I eventually upgraded to Premier. I currently use CA Premier for almost all of my projects.

SYSTEM REQUIREMENTS

I use CA on a 2009 Macbook Pro with a dual core processor and 8 GB of RAM. I have had no problems running the program or any issues with my graphic card. You can read more about the
system requirements on the CA website.

DRAFTING AND MODELING IN CHIEF ARCHITECT

Chief Architect is similar to Revit in many ways. 2D drafting and 3D modeling occur simultaneously. To start a project, you would draw the walls and then add windows and doors. When walls form a closed loop, a ceiling and floor are automatically generated. By opening up the options for the room, you can easily add base and crown moldings and modified the ceiling height.

Screen shot of Chief Architect modeling space

CA comes loaded with an extensive library of windows, doors, cabinets, architectural elements, furniture and other items.
In the year that I have been using CA, I have imported only a handful of objects to my user library. I have found that CA imports SketchUp models more seamlessly than Revit; however, I have not tried to modified their materials to date.

One major benefit that I found CA to have versus Revit and SketchUp is that the 3D models from the CA library are designed to read well in 2D. While some Revit models also look good in 2D plans, many of the curved objects (for instance, a toilet downloaded from Kohler) do not read well. This is even more of an issue in SketchUp. There are workarounds, but CA just handles this well out of the box.

The other major benefit to CA is the extensiveness of the library and that almost all of the models are parametric. You can open up a model from the CA library and easily change the dimensions and materials. In addition, if you subscribe to the CA maintenance package, you have access to a large number of catalogs online, which you can import into your library for even more choices.

CA, like Revit, has built-in functionality to easily generate section cuts and elevations right from the model. There are several options for viewing the plan including a kitchen and bath plan and an electrical plan.

Chief stands out with it’s different styles for perspective views. The options include a vector drawing, technical illustration, sketchy, duotone and watercolor. I tend to use the technical illustration style most of the time because it presents well. I prefer not to show materials in my renderings in most cases.
I also like how you can toggle shadows on and off and that lighting effects are visible in 3D perspectives.

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**PRINTING**

Chief Architect has a paper space called Layout, which opens within the software framework as a separate file. Views are sent to Layout from the plan file. Dimensioning occurs on the plan, while annotation can be added on both. Views update as the model updates, except for perspective views, which are sent to Layout as images.

CA comes with basic sheet templates, which can be further customized.
Screen shot of layout in Chief Architect

OTHER NOTES

Chief Architect includes extensive functionality for kitchen and bathroom designers including NKBA dimensioning. It comes loaded with all of the parts and pieces needed for kitchen design, and those can be completely customized without building models from scratch. CA also comes with CAD tools for adding 2D details and creating custom models.

CA has extensive training available on its website, but third party training is limited to a few websites. Tutorials and YouTube videos are not as extensively available as for Revit or SketchUp. Drawings and sheets are easily customizable to create fully branded presentations.
Chief Architect is a comprehensive software solution. You can design an entire house, including the interior and the landscape all in one program.

**3D RENDERING**

Chief Architect has a built-in rendering program. I have not used it extensively because it’s not a cloud-based service, and so it takes hours to generate a photo-realistic image. I did generate one rendering and thought the quality was comparable to a Revit rendering (not cloud) or Shaderlight rendering of a SketchUp model.
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The same view in the line drawing style.

**COST**

Chief Architect Premier is $2695 for a non-expiring license or $199 per month rent to buy. There is a support license available for $445 per year, which includes upgrades to all major releases, and access to the online catalogs and training videos.
WHAT I LIKE ABOUT CHIEF ARCHITECT

+ Extensive library of architectural elements and interior furnishings and accessories.
+ Online catalogs to download additional content.
+ Training videos available on the website.
+ Ability to easily generate multiple plans from one drawing.
+ Built-in parametric models.
+ Models from library look great in both 2D and 3D.
+ Ability to customize the look of plans and sheets.

WHAT I DON’T LIKE ABOUT CHIEF ARCHITECT

+ Inability to lock dimensions.
+ Default settings for Layout aren’t as “pretty” out of the box as SketchUp’s version of Layout.
+ Odd workarounds for architectural features like multi-level spaces.
+ Dimensioning can be tedious and complicated.
SKETCHUP PRO

SketchUp is a 3D modeling space software that is not specific to architecture or interior design. SketchUp can be used to model virtually anything in three dimensions and is used not only by architects and designers but also by industrial designers, furniture designers, wood workers and landscape architects, to name a few. SketchUp originated as a Google product was eventually sold to Trimble.

MY EXPERIENCE

I first started using SketchUp in 2004 to design my kitchen remodel. I taught myself how to use it through experimentation and the training on the SketchUp website. In 2007, I used to it to design my second kitchen remodel.

SketchUp view of my kitchen remodel
When I transitioned careers to interior design in 2007, I used SketchUp at the office to create 3D models for spaces that were difficult to understand in 2D. My first SketchUp model for client was of a series of built-ins along a curved wall, which was nearly impossible to show accurately as 2D elevations. I continued to use SketchUp in conjunction with AutoCad over the next several years.

During my Master’s program, I used SketchUp to quickly generate 3D perspectives of spaces so that I could print them out and sketch on top of them, and I still use this technique. I also used SketchUp as a major component of my Master’s thesis, which explored how people perceive different types of rendering.

Shaded view of a SketchUp model
The same view rendered with Shaderlight

I don’t teach a full SketchUp class at Iowa State, but I do introduce it during the sophomore year and spend a couple of classes covering the basics. I think SketchUp is a very versatile and robust program, and I enjoy using it on certain projects. There are architects and designers, such as Nick Sonder, who use SketchUp for all of their drafting purposes.

**SKETCHUP PRO VS. SKETCHUP MAKE**

Trimble offers two versions of SketchUp – Pro and Make. Make is 100% free to use, while Pro costs $700 for a non-expiring license, and a maintenance subscription is $120 per year.

SketchUp Pro comes with Layout, which is SketchUp’s version of paper space. If you want to produce quality construction documents with title blocks, scaled drawings and annotations,
you really need to invest in SketchUp Pro and not try to get by with SketchUp Make. SketchUp Pro also has the capability to import CAD drawings, which can be critical when collaborating with other designers or architects. You may also need this feature when a manufacturer makes a 3D CAD model available for download but not a SketchUp model.

SYSTEM REQUIREMENTS

SketchUp Pro is available for both Mac and Windows operating systems. Read more about the system requirements on the SketchUp website.

DRAFTING AND MODELING IN SKETCHUP

SketchUp is a 3D modeling space, which utilizes edges (lines) and planes. It does not model solids unlike Revit. For instance, if you draw a cube in SketchUp, the inside is hollow. If you draw a wall in SketchUp, the inside is hollow. The 3D form of the wall is created by zero thickness planes and edges.

Out of the box, SketchUp does not have the ability to draw walls or add windows, doors or other architectural elements. You will need to draw the walls in 2D and then extrude them into 3D. You can draw your own architectural elements or import them from a model you downloaded from the SketchUp 3D warehouse, a manufacturer’s website, or other source. This sounds more complicated than it actually is.
SketchUp has a series of tools that make modeling in 3D fairly quick and easy. I actually like that you can create very basic models out of simple cubes and other forms or very complex models. (Seriously...go check out Nick Sonder’s work.) I enjoy the flexibility of the program, and I will often use it if I just want to create a basic wireframe view that I can print out and sketch on top of.

SketchUp maintains a 3D warehouse where you can download user generated models or models uploaded by manufacturers. For example, Brizo faucets are available for download as are many models from Kohler, GE and more. This can make designing very quick and easy. There are thousands of models in the 3D warehouse available for free, and there are other websites where you can purchase models as well.

SketchUp is open source, which means they make their code available to third party developers. These developers have created robust plugins for SketchUp that you can download (many for free) and use to make the program even more versatile. I have some favorite plugins, including 1001 bit tools. 1001 bit tools has several tools for automatically generating architectural elements like windows and doors. You can browse all of the plugins that are currently available in the SketchUp Extension Warehouse.

SketchUp can be used to create 2D floor plans and furniture plans, if you’re not interested in building a full 3D model, but, much like Revit, it requires an up-front time investment to develop elements that you can use in 2D drawings.
PRINTING

In order to print scaled construction drawings from your SketchUp models, you need SketchUp Pro, which comes with a separate program Layout. You import your SketchUp model into a Layout file and place your views on pages. Dimensions and annotations are all added in Layout, not in SketchUp. Layout comes with several templates for title blocks and annotations or you can create your own. One reason I like Layout is that you can create beautiful branded construction drawings very easily.

Layout also allows you to create hybrid views – you can overlay views on top of one another to show materials and shadows combined with an elevation or perspective. This can be a wonderful tool for communicating designs to both clients and contractors.
There is one major downside to Layout. If you change your model, the dimensions do not update automatically and you need to redo them. I have learned to wait until my design is finalized to go to the trouble dimensioning in order to reduce the probability of do-overs.

**OTHER NOTES**

SketchUp comes with a very basic material library. It’s possible to modify the scale and tinting of those materials to create new materials, and it is easy to import your own custom materials.

SketchUp allows you to create scenes of your models to save different views. The section tool is used to create section cuts, which can be sent to Layout for dimensioning. The camera options include parallel projection, which flattens a view to make it appear 2D.

The program comes loaded with a variety of visual styles, which can be tweaked and customized. It’s possible to build custom styles from scratch using the Style Builder, which is a separate program that comes with SketchUp Pro. Custom styles are both aesthetic and functional. You can use them to further communicate your brand through your drawings, but you can also use them to show very specific views in a particular way.

You can combine scenes, section cuts, styles, camera options and other parameters to create elevation views, section views, reflected ceiling plans and other views you might need to communicate your design.
3D RENDERING

SketchUp is a 3D modeling space, which means you are working in 3D as you are drawing your model. You can set up cameras and assign those cameras field of view degrees and eye level to customize your views. But, SketchUp doesn’t not include a built-in rendering engine, which means you will need to use a third party rendering software to create photo-realistic renderings.

Most residential designers don’t tend to show clients photo-realistic renderings because of the time they take to produce – and for a number of other reasons. If this is a feature you don’t plan to use, then you don’t need to worry about purchasing additional software.

If you do want to produce photo-realistic renderings with your SketchUp models, there are several options. Kerkythea is a free rendering software available for download. I used Shaderlight,
which is another option, for my Master’s thesis as well as for my graduate studio project. Another popular option is SU Podium. You can also hire professional renderers to further enhance your models and create photo-realistic renderings should the client require it.

**COST**

SketchUp Pro costs $700 for a non-expiring license and $120 per year for a maintenance subscription.

**WHAT I LIKE ABOUT SKETCHUP & LAYOUT**

+ Quickly mockup 3D views of a space.
+ Large warehouse of models to download from both manufactures and users.
+ Ability to import CAD drawings and models.
+ Very versatile.
+ Open source plugins extend the functionality of the software.
+ Create beautiful presentation perspectives without rendering.
+ Easily create branded title blocks and annotation in Layout.
+ Ability to create hybrid views in Layout.
+ Variety of options for 3D rendering engines.
+ Desktop shortcuts speed up workflow and improve efficiency.
WHAT I DON’T LIKE ABOUT SKECHUP & LAYOUT

+ Everything is drawn from scratch or with a plugin - no integrated ability to draw walls, windows and doors.
+ No built-in furniture library.
+ 3D models don’t necessarily translate well to 2D.
+ Can be tricky to find snap points for rounded or curved edge objects.
+ Difficult to model lofted surfaces like sofa cushions.
+ Challenging to build parametric models (it is possible).
+ Dimensions in Layout don’t automatically update when model changes.
CONCLUSION

I like all of three of these programs for various reasons and dislike each in some ways. None of them is completely perfect. Even before I purchased Chief Architect Premier, I found myself moving away from using Revit. I found that it was easier to generate a basic, good-looking model in SketchUp that I could sketch on or even show clients than it was in Revit. I also greatly preferred the aesthetic of the annotations and sheets I could generate in Layout.

Ultimately, I ran into the same problem with SketchUp that I did with Revit. It was taking way too much time to draw basic plans when I needed to build everything from scratch. I didn’t feel I could justify charging my clients for the number of hours it took me to draw their plans, for kitchens in particular. I felt I had two options – build models from scratch in my spare time to improve my personal library or look for another option.

This dilemma led me to Chief Architect, which I purchased after test driving it for 30 days. The number one feature that I love in Chief (and which saves me countless hours) is the library. I would estimate that Chief has reduced my time to draft a kitchen by 80% from Revit or SketchUp. I also use it extensively just to draw 2D plans because all of the library models are loaded with 2D friendly symbols.

I do prefer the aesthetic of SketchUp’s Layout and the ability to create hybrid views to Chief Architect’s Layout. I prefer Revit’s dimensioning tools and 3D modeling tools to Chief Architect’s
and SketchUp’s.

While I am happy using Chief Architect for my business, I often recommend using SketchUp to designers who are just getting started because of the low cost but also because it’s easy to learn (in my opinion). I still use SketchUp for some projects when I feel modeling them in Chief might be too complicated or take too long. For instance, I had a project with multiple angles in an attic and I didn’t want to figure out how to create them using the roof tool in CA. I was easily able to model the space in SketchUp.

![SketchUp view of attic space](image)

SketchUp skills are also compatible with both Revit and Chief Architect. Many of my students will model furniture and lighting in SketchUp and then import them into Revit families. I sometimes will build custom furniture and lighting in SketchUp and import those models right into my Chief Architect plan.
In summary, each program has pluses and minuses. If you are considering purchasing any of them, my advice is to download the free trial version of each and use it to draw the same small, very basic project. Take note of what features you like and which you don’t as well as how much time you spend achieving the same end result.

I hope that this guide was useful to you. If you have any further questions, please email me at jillian@designstudentsavvy.com and I will be happy to answer them.

On the following page, I’ve provided a summary table of some of the features I discussed throughout the e-book.
<table>
<thead>
<tr>
<th>Feature</th>
<th>Revit 2016</th>
<th>Chief Architect</th>
<th>SketchUp</th>
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<td>Automatic 3D Walls</td>
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<td>Library with architectural elements</td>
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<td>Online sources for additional models</td>
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<td>Large quantity of online tutorials and help</td>
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<td>Easily draft 2D plans without creating 3D elements</td>
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<td>Available for Mac</td>
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<td>Parametric Modeling</td>
<td>Y – requires user to build models from scratch</td>
<td>Y – included with most models in the CA library</td>
<td>Y – but can be challenging to learn, user builds models from scratch</td>
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<td>Materials Library</td>
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