



REVIT PURE PRESENTS
PAMPHLETS



ISSUE #6 / FALL 2017
VIRTUAL REALITY



REVIT TO VR

revitpure.com

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WHAT IS THIS “PAMPHLET” ?

Revit Pure Pamphlets are published 4 times a year by email. Each edition covers a very specific Revit theme.

We like to pick themes that are complex and confusing. Our job is to make these topics simple for you.

Here are all pamphlets published so far:

Pamphlet #1 - Summer 2016 - **Worksets**

Pamphlet #2 - Fall 2016 - **Schedules**

Pamphlet #3 - Winter 2017 - **Phases**

Pamphlet #4 - Spring 2017 - **CAD**

Pamphlet #5 - Summer 2017 - **Filters**

Pamphlet #6 - Fall 2017 - **Virtual Reality**

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WHAT’S UP WITH VIRTUAL REALITY?

It is still unclear whether VR will turn out to be a complete fad for the general public. I know that the use in architecture is undeniably cool and useful. The problem is: with so many headsets and apps, it is easy to get lost in the VR world. Don’t worry, we got you covered.

This guide is built to help you understand everything you need to know to bring your Revit model to the alternate universe . Enjoy and have fun.



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REVIT TO VIRTUAL REALITY

 360 STEREO PANORAMA WITH SMARTPHONE	
DEVICES	BEST PLUGINS
SAMSUNG GEAR VR - 99\$ 	
GOOGLE DAYDREAM - 79\$ 	 ENSCAPE™
GOOGLE CARDBOARD - 15\$ 	
+ REQUIRED SMARTPHONE...	



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360 STEREO PANORAMA (WITH SMARTPHONE)

The cheapest and easiest way to try VR with Revit is to create **360 stereo panoramas**. They are like regular renderings, except you visualize them by putting on a VR headset and moving your head around. You cannot move around the model, use hands or interact with the environment. The observer point of view is fixed. These panoramas are visualized with smartphone compatible VR headsets.

Pros:

- Cheap
- Easy to set-up
- Easy to carry around.
- Compatible with most Revit rendering plug-ins.
- No expensive graphic cards required.

Cons:

- No interaction with the model.
- Smartphone VR is not as good quality as computer VR.
- Cannot use hand-guided menus.
- Harder for the eyes to adjust than with computer VR.

Compatible VR devices:

- Samsung Gear VR
- Google Daydream
- Google Cardboard








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Best Revit Plug-ins:

- Autodesk Cloud Renderings
- Lumion
- Enscape
- V-Ray

If you never experienced VR with architecture projects before, 360 stereo panorama is the best way to start. If you like the experience, then you can try Full VR with a computer.

 FULL VR WITH COMPUTER	
DEVICES	BEST PLUGINS
OCULUS RIFT - 399\$ 	
HTC VIVE - 599\$ 	



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FULL VR (WITH COMPUTER)

Full VR means you can move around inside a Revit model, interact with it, crouch and even change the time of the day. Unlike 360 stereo panoramas, the experience is not limited to a single point of view. However, you need a killer graphic card and an expensive VR headset.

Pros:

- Possible to move around the model.
- Possible to use hand controllers.
- Great visual quality.

Cons:

- Require an expensive VR headset (Oculus at 399\$ or Vive at 599\$).
- Requires an expensive graphic card.
- Longer to set-up.
- Not convenient to carry around.

Compatible VR devices:

- Oculus Rift
- HTC Vive

Best Revit Plugins:

- Iris Prospect
- Enscape



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WHICH HEADSET TO BUY?

SMARTPHONE HEADSETS:

Smartphone powered VR headset work by plugging you phone in front of the device. You can use navigation tool on the headset itself or with a remote controller. The better VR devices are only available with Android phones for the moment. If you have an iPhone, your only option is the limited Google Cardboard.

You have to be aware that VR performance with a phone is OK, but for an actually amazing, mind-blowing experience you are much better off with the more expensive computer devices.



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Samsung Gear VR



The Samsung Gear VR was the first major consumer VR headset to be released, in November 2015. The software components are handled by Oculus, the same company that made the Oculus Rift device and who is now owned by Facebook.

Price: 99\$

Compatible Smartphones:

- Samsung Galaxy S6 and S6 Edge
- Samsung Galaxy S7 and S7 Edge
- Samsung Galaxy S8 and S8+
- Samsung Galaxy Note 5
- Samsung Galaxy Note 8



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Google Daydream



Google released their own VR mobile device in November 2016. It is small and cute with a textile design instead of the usual cheap black plastic we usually see. The remote controller is great. The apps and menus are limited.

Price: 79\$

Compatible Smartphones:

- Google Pixel and Pixel XL
- Samsung Galaxy S8 and S8+
- Asus ZenFone AR
- Motorola MotoZ
- Huawei Mate 9 Pro
- ZTE Axon 7



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Google Cardboard



Almost 10 millions copies of the Cardboard have been sold.: This is by far the most democratic VR device out there. Unfortunately, the cardboard is very limited. It can make you dizzy and nauseous quite quickly.

Price: 15\$

Compatible Smartphones: Most recent phones. The better the phone, the better the performance.



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WHICH ONE SHOULD YOU CHOOSE?

Find a device that fits with your phone. If you have an iPhone, your only option is the cardboard. Honestly, the experience might leave you dizzy and disappointed.

The Samsung Gear VR and Google Daydream are similar. The Daydream is more sleek and cute while the Samsung Gear VR has the better apps and interface. The visual quality for both devices is very similar.

COMPUTER HEADSETS

Computer based VR headsets require high-quality graphic card. A Nvidia GeForce 1060 GTX might work, but we recommend at least the GeForce 1070 GTX.

For the moment, 2 headsets are dominating the PC market: the Oculus Rift and the HTC Vive. Both are great devices. Read the following pages to learn more.



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Oculus Rift



The Oculus Rift is the device that put VR on the spotlight after many years in the dark. It was conceived by Palmer Luckey and financed through kickstarter in 2012. Facebook bought Oculus in 2014 and released the first consumer version in 2016.

The Touch controllers were released in late 2016. They add another degree of immersion, making you feel like you actually have hands.

Price: 399\$



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HTC Vive



The HTC Vive was co-designed by HTC and Valve, famous for the Steam gaming platform and legendary games such as Half-Life. It was announced in 2014 and released in 2016.

Price: 599\$

WHICH ONE SHOULD YOU CHOOSE?

Both these products are great. The Oculus Rift is more sleek, lightweight and easier to set up. It also has integrated headphones. The HTC Vive is heavier and bulkier, but is the better device in terms of quality and sensor precision. The Oculus Touch controller are slightly better. If you can pay the difference, go with the Vive. If price is an issue, go for the Rift. Either way, both devices are excellent.



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STEREO PANORAMA - THE BEST PLUGINS

Most Revit rendering apps can now produce stereo panorama. That means you probably won't need to learn a new software to use VR. Here are the best plugins:

Autodesk Cloud Rendering



If you have an Autodesk subscription, that means you have access to Cloud renderings. No need to buy another plugin: simplify your life by using basic Revit settings, materials and lighting.

If you haven't already, you should try the Autodesk 360 panorama feature. The stereo version does the same thing, but two images are rendered and can be experienced with a VR headset.

Create a basic cloud rendering. Make sure you like it, then select "Make A Rendering With Different Settings" and select Stereo Panorama. Low quality renderings are free and high quality renderings are available with cloud credits.

Once the rendering is done, you have the option to download the rendering to GearVR.

Website: gallery.autodesk.com/a360rendering



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Enscape



Enscape is the best Revit rendering tool. It is incredibly simple to use and produce great quality renderings in seconds. It also has capabilities for stereo panorama of any resolution. As you will reader later on, it also has options for a full VR experience.

Price: 449\$/year for fixed-license, 679\$/year for floating license.

Website: enscape3d.com

Lumion



Lumion is awesome. The default libraries contains thousands of people, trees and other beautiful 3D objects. You can walk around the model and easily add environment elements. You can produce and export a 360 stereo panorama in a few minutes. The process of linking to Revit is a little more complicated than with Enscape, even if still mostly simple.

Price: 1 800\$ to 3 600\$ (permanent license)

Website: lumion3d.com



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V-Ray



V-Ray has been around for a long time, and it still one of the best rendering program. It now has direct Revit plugin integration and can produce stereo panorama. It is probably the rendering tool with the best visual quality, but it lacks the simplicity of new apps like Enscape and Lumion.

Price: 695\$ (permanent license)

Website: vray.us/vray-revit

FULL VR- THE BEST 2 PLUGINS

This is where we get serious: walk around your Revit model in VR. Among the plugins I tried, two of them where clearly better.

First, you have to know what exactly you are looking for. There is a lot of Full VR solutions out there, but many of them implies a complex process of exportation and importation. What you want is a one-click solution. It should be quick, efficient and noob-friendly. This eliminates a few of the solutions: Revit Live by Autodesk seems promising, but at the moment the workflow is too complicated and unreliable.



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IrisVR



IrisVR is a one-click solution. Simply pick a 3D view inside Revit and click “Experience in VR”.

Why it is awesome: Using IrisVR, I felt like I was back in architecture school. The first thing you see when putting the VR headset is your model sitting on a table, like if it was an actual physical model. You can spin and scale the model using the controllers. I really liked the “Outlines” option, which add lines for each object edge.

You can then teleport at any point inside the model, where you can experience your project from a first-person perspective. It is possible to change the time of the day with the controllers. You can also add a section to cut part of the model, or add red 3D paint around by pressing the trigger.

Although I have a GTX 970 graphic card, which is below the recommended GTX 980 minimum, the performance was perfect for all the small and medium projects I tried. The rendering, although not ultra-realistic, is smooth and sharp.

I got a few glitches with the glass effect in large projects, but this is probably related to my graphic card.



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What could be better: The visual style is kind of cartoonish. I actually enjoy this look since it is similar to physical models, but if you are looking for an ultra-realistic visual style with reflection, occlusion and photons, this is not the plugin you are looking for. Interior renderings are quite basic. There is no artificial lighting options available.



IrisVR was probably designed for Sketchup first: It works with surfaces instead of solids. This is obvious when cutting the model: elements don't have thickness. This is not a major issue though.

If you add entourage like people and trees, the appearance will be kept to a 2D cardboard style. Other plugins automatically transform the entourage to beautiful 3D objects.

The price is quite steep.

Price: 200\$/month/user

Website: irisvr.com



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Enscape



Why it is awesome: Enscape is already my favorite Revit visualization plugin for it's simplicity. Turns out it is also among the best tool for VR in Revit.

Enscape is incredibly simple to use. Inside Revit, pick a view and click "Start" to open Enscape. Then, click on "Allow VR" and put your headset on. That's it. The entourage, trees and grass are automatically converted to be visually realistic.

As opposed to IrisVR, Enscape does render your model with reflection and other visual effects. That means you will need a powerful machine to run it properly. With my GTX 970 video card, I had to use the "Medium" visual quality, which was ok-ish on small projects.

Another thing I like is that Enscape is already a killer app to produce renderings. No need to buy and learn another plugin, you could do both renderings and VR in the same one. It also has the stereo panorama feature, as described in page 15.



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What could be better: The visual quality is great, but there seems to be weird things going on if you move your head too quickly. Materials with reflection effects seem to have some glitches when moving. This issue is probably resolved with a killer graphic card like the GTX 1080.

On edges that are far away from the observer, there also seem to have aliasing and quality problems. The problem seemed to be solved with higher rendering quality, although it made it drop below 60 fps. At this frame-rate, users might get nauseous.

The features are more limited than in IrisVR: you can't turn off layers, use sections or annotate the model. The most useful feature is available though: change the time of the day by simply holding a button and twisting the hand. If you can afford a killer graphic card, I would say this plugin is the obvious choice.

Price: 449\$ a year for fixed-license, 679\$ a year for floating license.

Website: enscape3d.com



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THE FUTURE OF VR

VR is still in the infancy stage. All the plugins explored in this pamphlet will be 10 times better within 5 years. Here is a list of exciting developments you can expect in the near future:

Standalone VR: HTC and Google are collaborating on a Standalone VR headset. That means you won't need a smartphone or a computer to use it. Your Revit model could be directly exported to the headset by Wifi.

Multiple users in the same model: Right now, experiencing VR with Revit is something you do alone. What if you could hang out in your Revit model with a bunch of friends or with clients? This feature is already available with many video games, so expect it in Revit sooner than later.

Manipulate objects and the environment: How cool would it be to actually use your hand to turn the handle of the door to enter the building you designed? In the next iterations of VR plugins, we can expect to have more interactive objects, including furniture and interior lighting.

Augmented Reality: What if VR is eclipsing a better technology? AR might be the actual champion. It mixes the real with the virtual in a way that might be more interesting for use in the field. Headsets like the Microsoft HoloLens can be used to go to an actual construction site and visualize your Revit model in-place. Have a look at the **Visualive3D** plugin.

Website: visualive3d.com



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THANKS FOR READING !

How did you like this pamphlet? Was it helpful, or was it the worst PDF you ever opened in your life? Please send your thoughts at nick@revitpure.com. Also, please let us know what theme you would like covered for the next Winter pamphlet.

We also have a special announcement. The **DESIGN** package will be released in early 2018. It will contains tutorials on how to create awesome and beautiful views. You will also learn how to produce sexy renderings and how to properly use VR with Revit. More details to come. Stay tuned!



DESIGN PACKAGE WINTER 2018