



RabbitHoles™ Tech Specs

3D Scene Creation for ISO B5 Size Holographic Print

174.4x250.4mm / 7 x 10in

SmallPixel :: 0.8mm :: Portrait

Following is a step-by-step of specifications and suggestions for setting-up and rendering RabbitHole™ 3D content.

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To avoid wasted rendering time, we highly recommend that our TechTeam review scene setup or rendered bitmaps prior to full sequence rendering. This way we can confirm that set-up & animation parameters are correct. Please contact us with first, middle and last frames rendered and we will provide you with the best advice for optimizing your RabbitHole™ content. You can send your artwork for review/submission to technical@rabbitholes.com

Questions? Please contact your Project Producer

***The illustrations and terminology used throughout the document are made for 3Dmax, but the same concepts can be applied for Maya, XSI or Lightwave.*

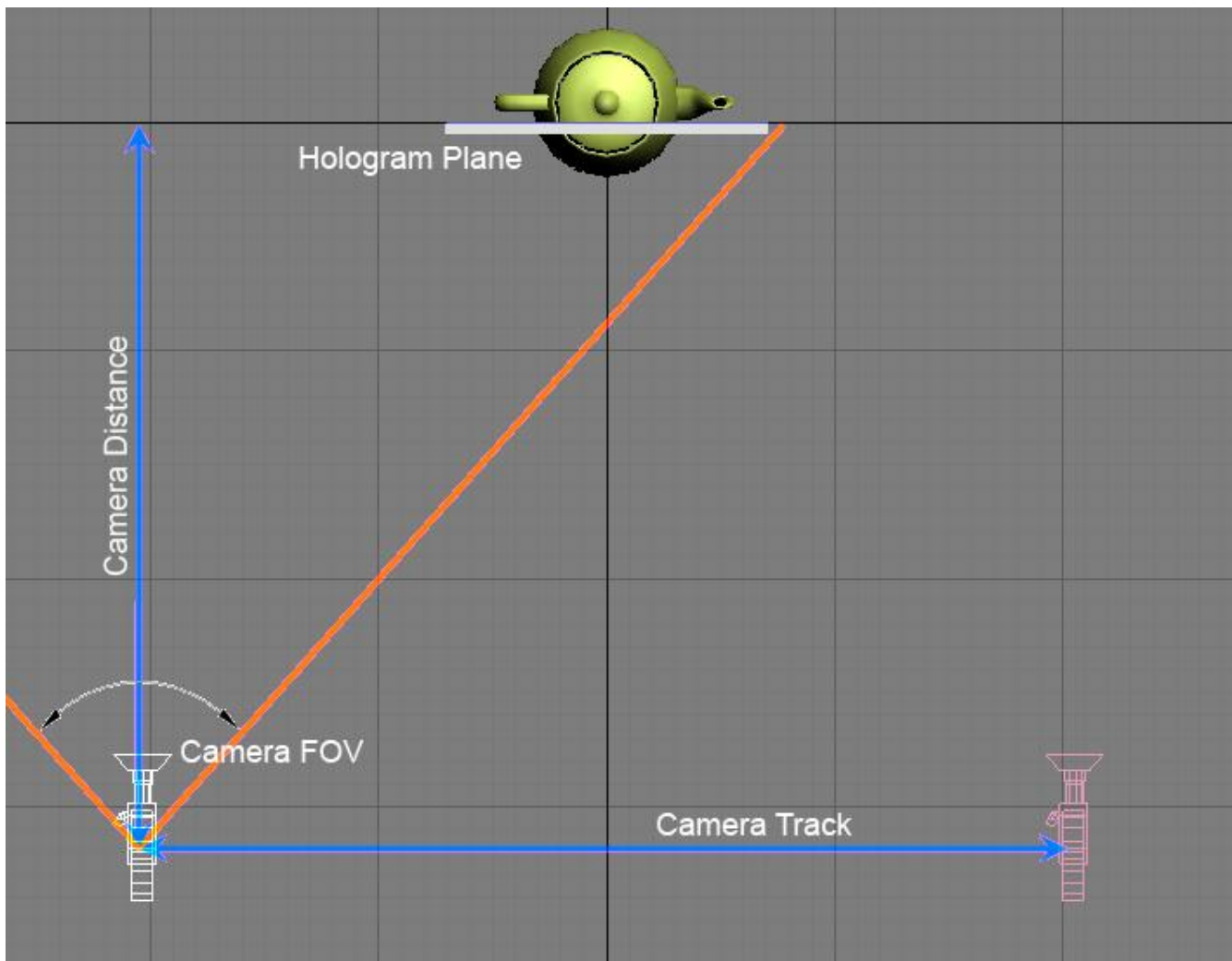
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Hologram size :: ISO B5 :: 174.4x250.4mm / 7 x 10in	
Rendered Images/Frames ::	0 to 1279 (1280 total)
Rendered Image Size [Resolution] ::	1497 x 313 (24 Bit RGB**)
Camera FOV [Horizontal FOV] ::	77.925 degrees
Camera Distance [from hologram plane] (mm) ::	739.952mm
Camera Track [total horizon traveled by camera along X axis] (mm) ::	1023.2mm (X= -511.6mm @ frame 0, X= 511.6mm @ frame 1279)

**acceptable file formats include :: PNG, JPG, BMP, TIF, GIF



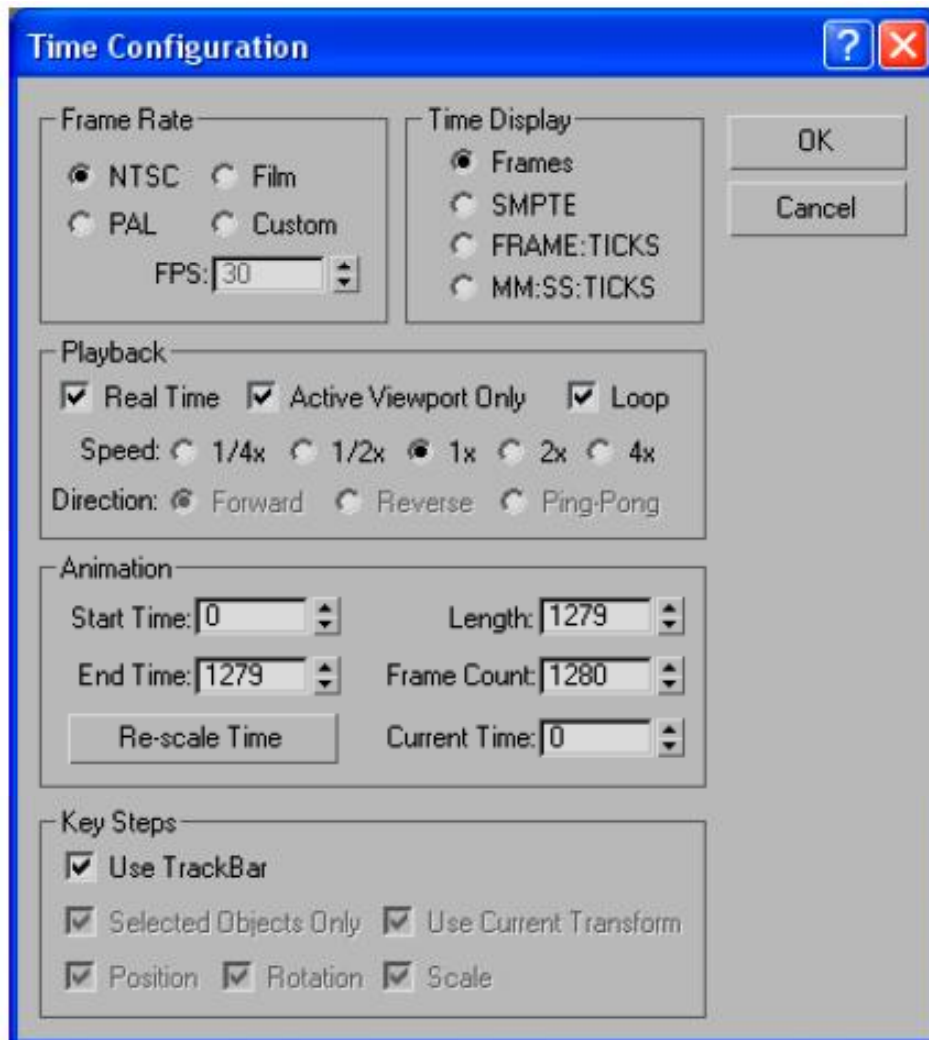
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CAMERA/FRAMES SET-UP

Start 3DSmax (or re-initialize with File>New), then go in the time configuration panel (bottom right). Change parameters for animation end time from 100 to 1279. Click "OK".




0
0
0

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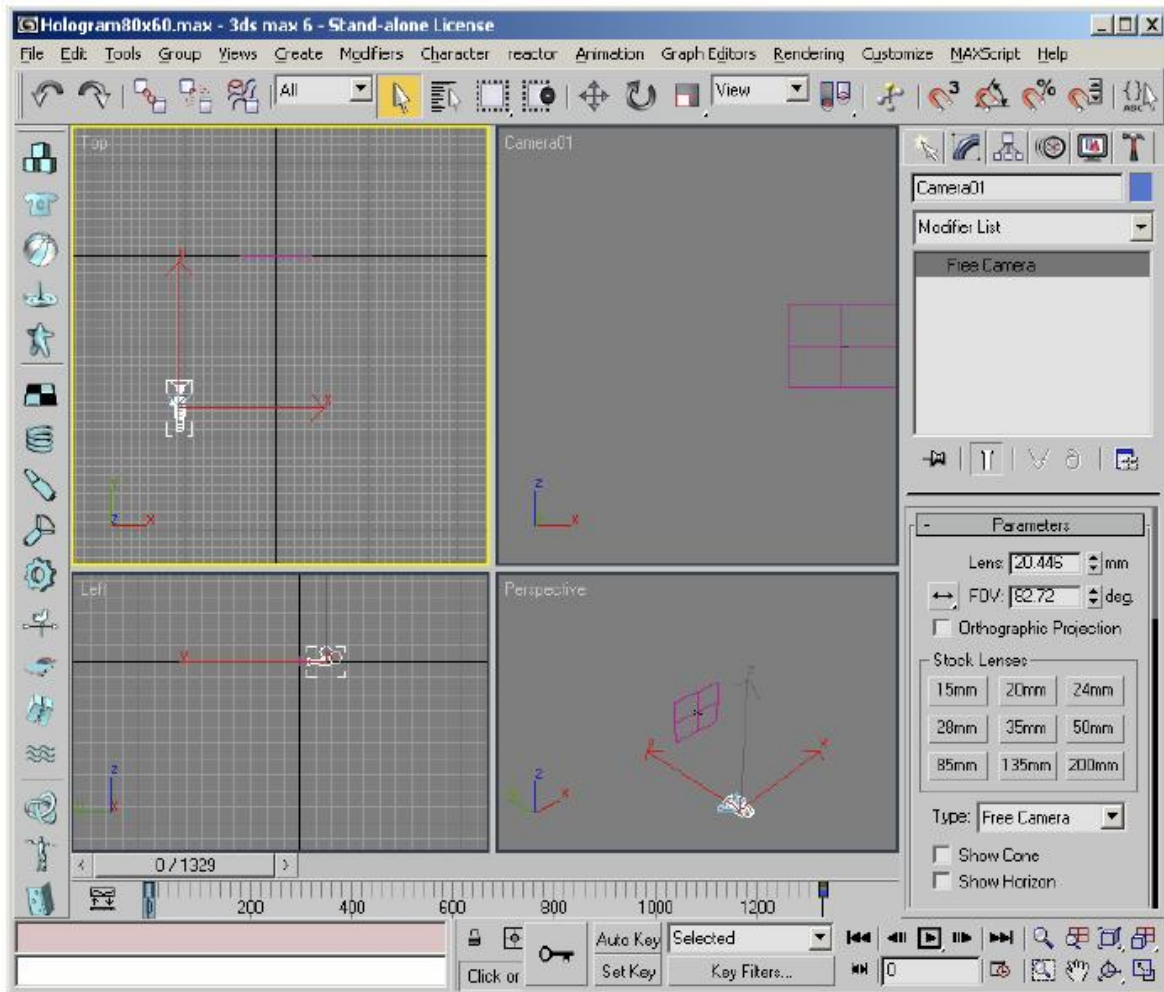
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Add a "free camera" facing the origin (0,0,0) and position it at -739.952 of that center. (Y= -739.952 for 3dsmax, Z= -739.952 for Lightwave)

Working from frame 0 by default, enter the first keyframe for X at that position. Activate "set key toggle", enter -511.6 (**don't forget the value is negative**) in the box for X, and then create a keyframe. 

Move the frame slider to 1279, and enter 511.6 (**positive**) in the X box. Create another keyframe. Next, press on "set key" to exit the keyframe creation process. At this point, you should have a camera that makes a traveling from left to right from frame 0 up to frame 1279.

Frame 0 ::

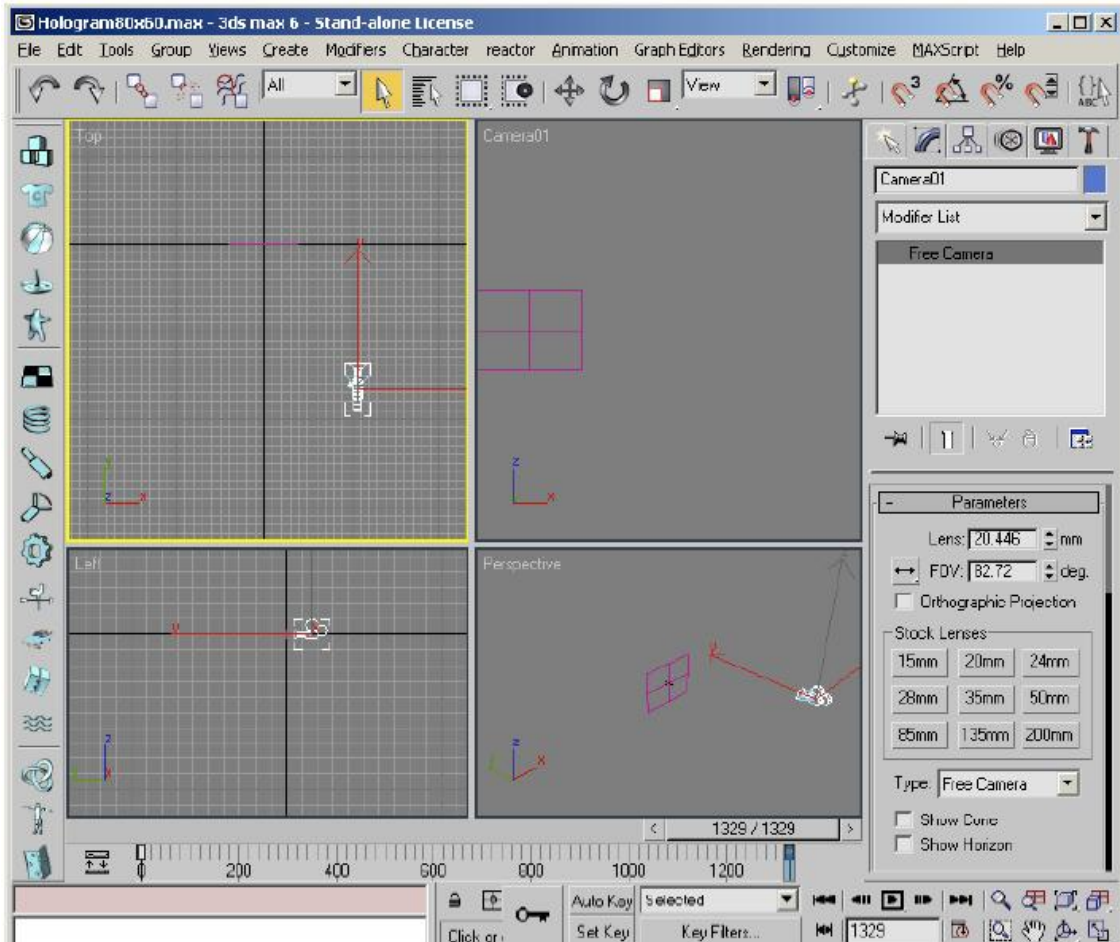


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Frame 1279:



0
0
0

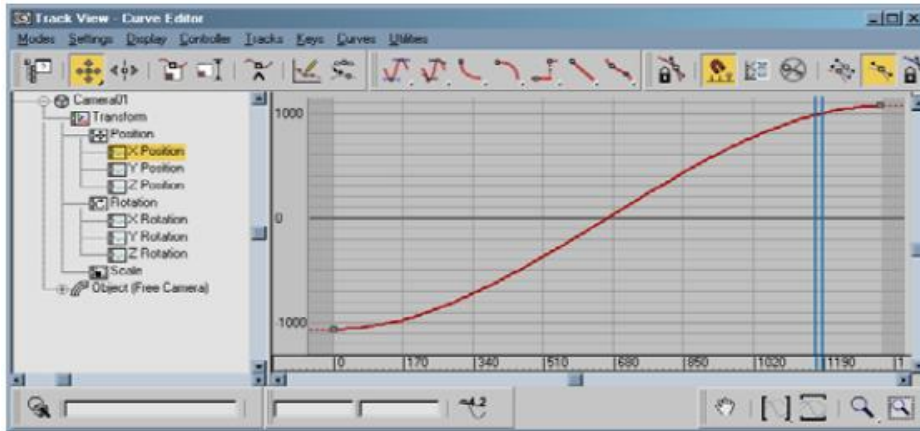
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CAMERA TRAJECTORY

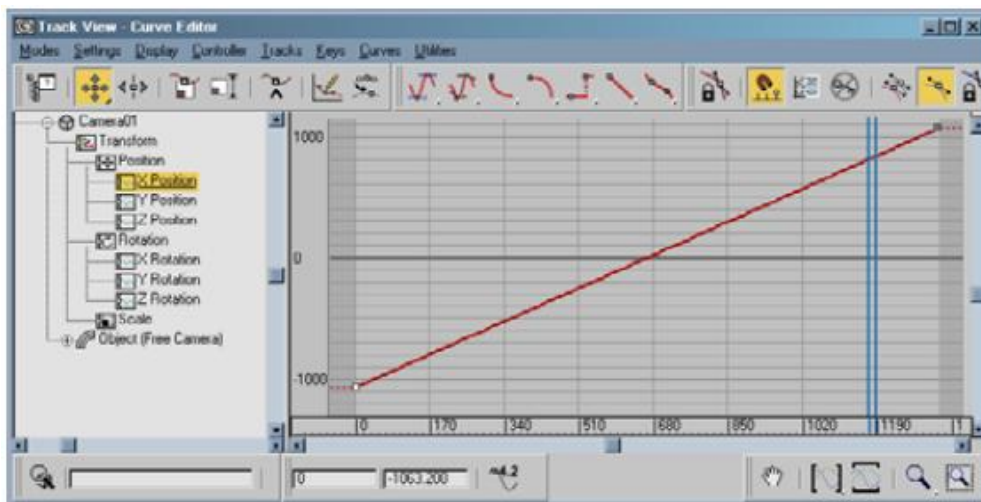
Next step is to make sure the camera trajectory is linear - **for our process to work, there must be only linear keyframes on animation and on the camera.** Select the camera with a right-click and select the curve editor function from the popup menu. In the curve editor, select the X position from the camera, the screen should look like this ::



Transform this curve to a line, by selecting the 2 points generated by the keyframes we entered earlier and click on the "Set Tangents to Linear" icon.



The graph should look like this ::



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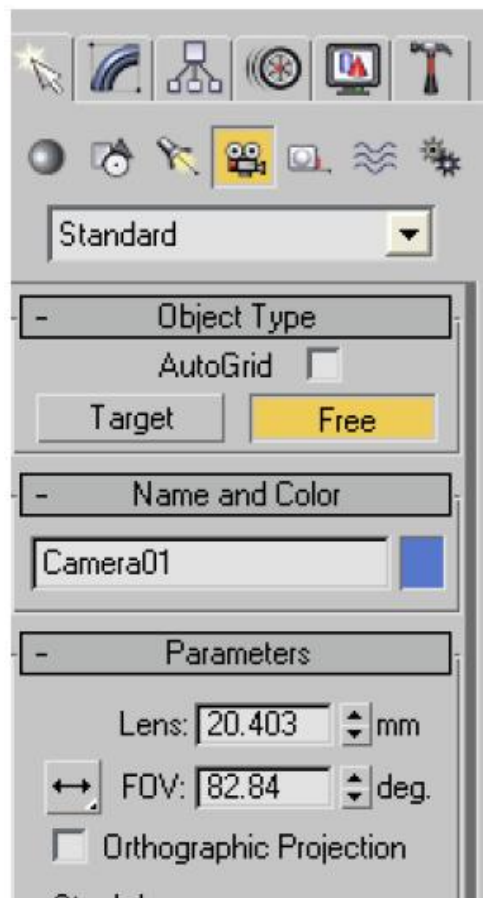
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HORIZONTAL FIELD OF VIEW

Now, you need to change the Horizontal Field of View (HFOV) for the camera.

Select the "Modifications Panel" and change the FOV value to 77.925 degrees. Make sure the icon on the left of FOV is 2 horizontal arrows (see below).

Do not modify anything else, do not put any rotation in the camera, and leave the lens value as it is after inputting the FOV value.



CAMERA RESOLUTION

For the camera resolution, open the render menu (f10) and put width: 1497 and height: 313.

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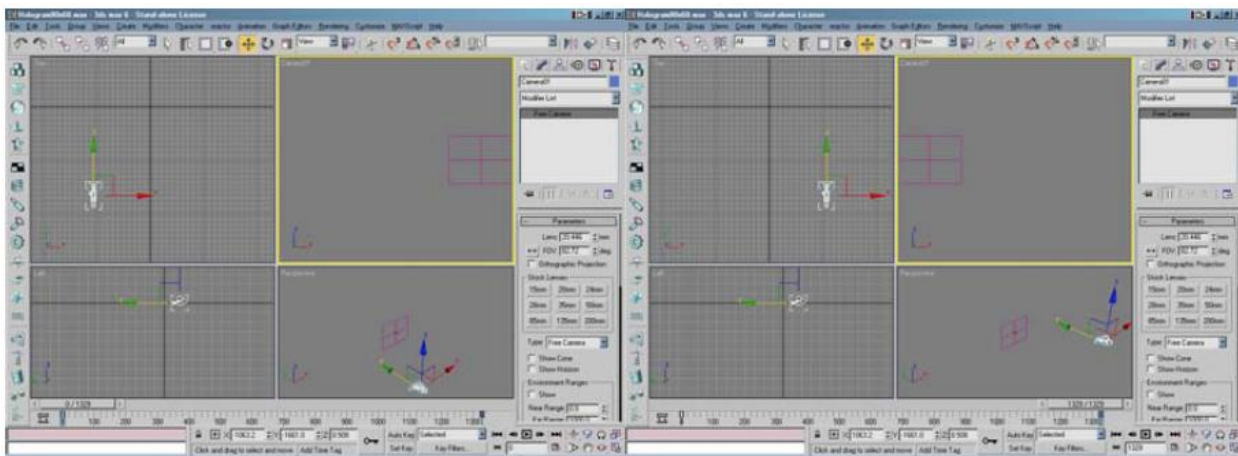
Do not touch anything else on the output size. Select the rendering directory and make sure that the renderer will output bitmap in 24 bits (16.7M colors, no alpha channels). Again, acceptable bitmap formats include :: PNG, JPG, BMP, TIF, GIF.

One last reference needed is a generic plane to make sure everything is aligned properly. Create a 174.4x250.4mm plane located at (0,0,0) to be used as a reference on how the hologram will look. Everything that will be in front of that plane (closer to the camera) will "come out" of the hologram at the same distance, and everything behind that plane will give the impression that the object is inside (behind) the film. Obviously, you don't want to render that plane for the final output.

If everything is okay, the scene should look like this.

Frame 0

Frame 1279



Notice that the edges of the plane are exactly at the edges of the camera, this means everything was entered properly. When objects will be placed in the scene, if something is clipped at the edges, it will also be clipped on the final hologram.

As for the volume effect, generally the best balance is to have 1/3 of the image in front and 2/3 in the back. Again, this depends on the type of scene that is being generated. For a 174.4x250.4mm hologram, user should limit objects to a maximum of about 30cm in front of the film plane, this limit will ensure the sharpness of the object and prevent too much clipping.

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ANIMATION

Animation must be slow and subtle, rather than video-like with fast panning, transitions, and zooming. If you want to rotate the object, general rule of thumb is to go a maximum of 30 degrees horizontally - it is best to imagine slow-motion rates, such as those observed in a sports replay or slow and dramatic movie battle-scene.

Also, because RabbitHoles™ rely on a specific light source to be replayed, a completely dark scene will not display as well as scenes containing bright and contrasted areas.

Some other suggestions for ideal content include ::

- ✓ Vertical motion is better than horizontal motion
- ✓ 3D objects slowly rotating accentuate the holographic effect due to an increased perception of the object's angular information
- ✓ Make animation smooth and avoid drastic scene changes

Things to double-check:

- ✓ Camera settings for FOV, linearity, and position so it does not move up or down during panning
- ✓ Keyframes must be linear, never use splines
- ✓ Film plane is at (0,0,0), anything closer to the camera will be in front of the film plane, anything further will be behind the film plane
- ✓ Rule of thumb, 1/3 in the front of the film, 2/3 in the back for main objects
- ✓ Bright and contrast images will yield the best results, avoid large blocks of white

Again, to avoid wasted rendering time, we highly recommend that our TechTeam review scene setups or rendered bitmaps prior to rendering so we can confirm the set-up & animation parameters. Please contact us with first, middle and last frame rendered and we will provide you with the best advice for optimizing your RabbitHole™ content. You can send your artwork for review/submission to technical@rabbitholes.com

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