

# Making 3D Panels For X-Plane

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## Making 3D Panels For X-Plane

by

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### My Way Of Making 3D Panels For X-Plane

By Gary Miloglav

#### My Basic Setup

- Windows 10 Home Edition
- 16 GB RAM
- Intel Core i7-7700HQ at 2.80 GHz
- 64-bit operating system, x64-based processor
- AC3D 8.3.30
- Plane Maker 11.35r1 (build 113510 64-bit)
- X-Plane 11.35 (on Steam)
- GIMP 2.8.22

I am, by no means, an expert in creative artwork, and I experienced many hours of frustration trying to figure out how to do this, but when I discovered how easy it was, I wondered why the X-Plane folks never bothered with a simple tutorial. With that said, I think the techniques mentioned here can be used to create very complex 3D cockpits (not just the 3D instrument panels). Also, the reason I wasn't satisfied with 2D instrument panels, as good as they are, is because I wanted to be able to use the mouse to change views, and "travel" within the simulation using the mouse. By that, I mean to go inside, outside, etc. without having to resort to the arrow keys and pre-built views.

Whenever I start to build an aircraft (this first example is the Apache Attack Helicopter) I first create a file folder in the X-Plane "Aircraft" folder (...X-Plane11/Aircraft/Helicopters/Apache), and the next thing is to search the internet for specifications, like a technical manual and/or a pilot operating handbook. In this case, I was fortunate to find the actual U.S. Army Technical Manual/Operator's Manual ([TM 1-1520-251-10](#)). It has everything I could ever need, so I downloaded it and put it into a subfolder "Documentation".

Once I have the basic X-Plane model created, and often before it is flyable, I create the 3D cockpit. I don't even bother with the 2D cockpit until I'm almost done with everything else and I need something that 3D can't do yet (like a HUD). At that point, I just cut and paste from my 3D cockpit to the 2D in plane maker. A good shortcut is to start with a panel supplied by X-Plane from the X-Plane11/Resources/bitmaps/cockpit/-PANELS- folder.

In this first example, I chose the "Panel\_Fighter\_IFR.png" file. It most closely matched the actual Apache pilots panel when comparing it with the one in the Technical Manual. You can always modify the png file to your liking with a good image editor like GIMP.

I copied X-Plane's panel into a new folder ".../Apache/cockpit\_3D/Panels", keeping the name "Panel\_Fighter.png". I opened it with GIMP, set the Canvas size to 2048x2048 so the final details would be clear, changed the panel size to 1/2 of the canvas, and created a block of gray color to become the side consoles:

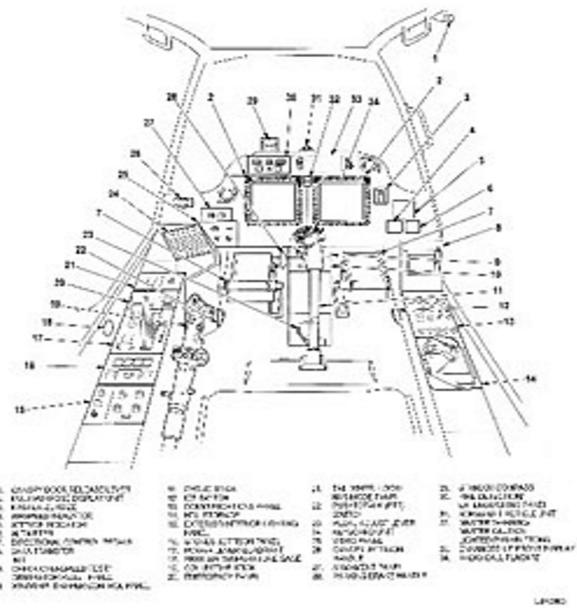


Figure 24A. | EDOE Pilot Station Diagram

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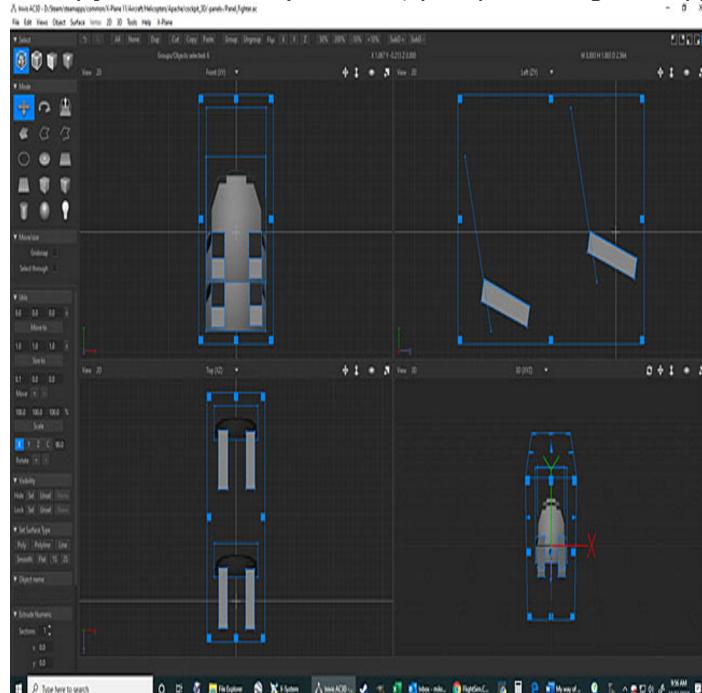
2-10 Change 2



In Plane Maker, fill in all the instruments you want. In this case, I added various instruments to both console areas. Obviously, I wasn't able (yet) to match what is in the technical manual, and don't worry about the "keyboard unit", that is a work in progress and not seen or mentioned again.



Next, I created an object in AC3D using the XP "Fighter\_Panel\_IFR.png". You can either create a solid object or just a surface. I usually prefer a solid object because I may want to modify it later, but in this example, I chose to make the panel a "surface". When adding the panel properties latter on, you have to modify just the surface (otherwise, your panel image will appear on all 6 sides).



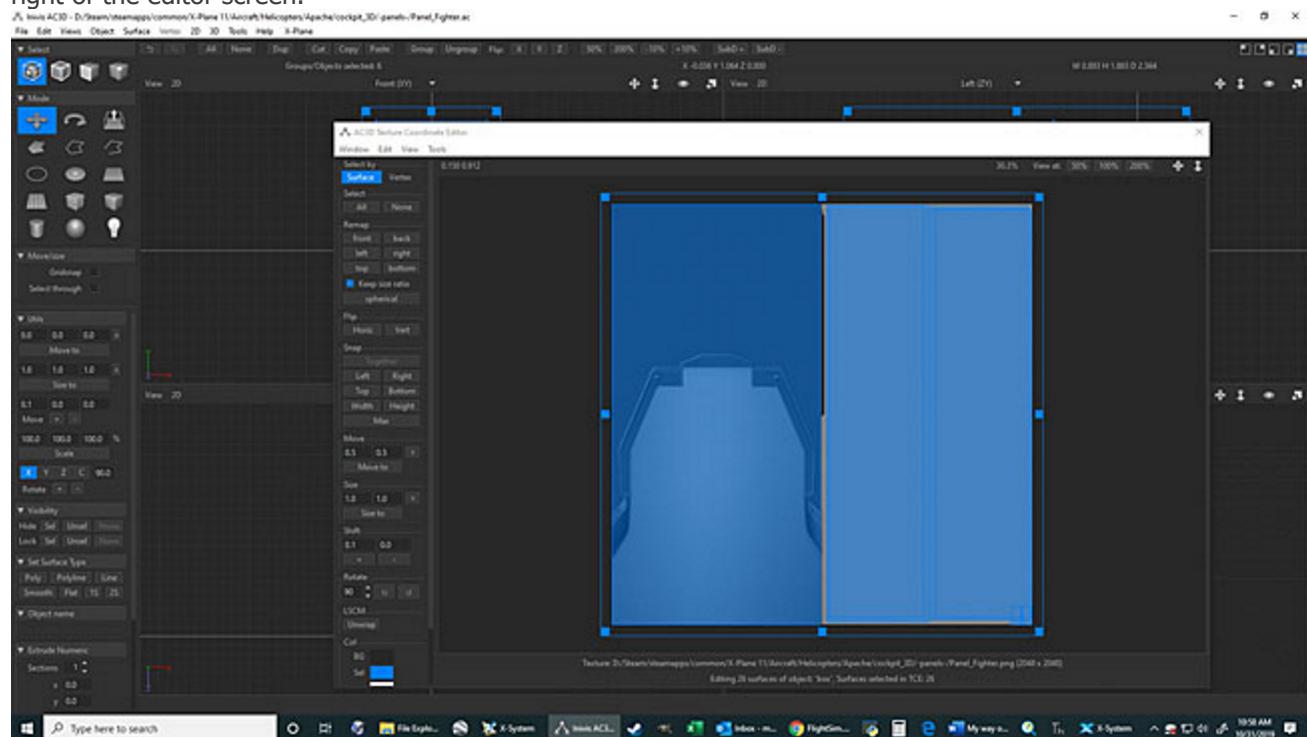
Because the Apache has dual panels (Pilot and Gunner/co-pilot), I copied the panel and put it in front of the pilot panel. I also added two consoles (left and right), then copied those for the co-pilot. Then, I adjusted the angle using the "rotate" button to give the cockpit the tilt needed to fit the helicopter, and separately,

the consoles a tilt that would make them more visible to the pilot/co-pilot. (First experiment with small angles until you get the correct axis - X, Y or Z).

Next, "select all" (Edit, "Select all" or Ctrl-A) and apply the texture to the object surfaces. ("Object" button, then "Texture" from the pull-down menu, then "Load Texture" and browse for the Fighter\_panel\_IFR.png file). Every cockpit object must be part of the same png file, although individual object surfaces can be adjusted to fit specific areas within the png file.

Now, using the "surface" cube (3rd cube from the left, top left of the AC3D home screen) and select only the panel(s).

Next, hit F10 to bring up the "Texture Coordinate Editor" and you will see (greatly expanded) the panel png. Use a mouse wheel to adjust the size or use the mouse to select either of the "arrow" keys in the upper right of the editor screen.

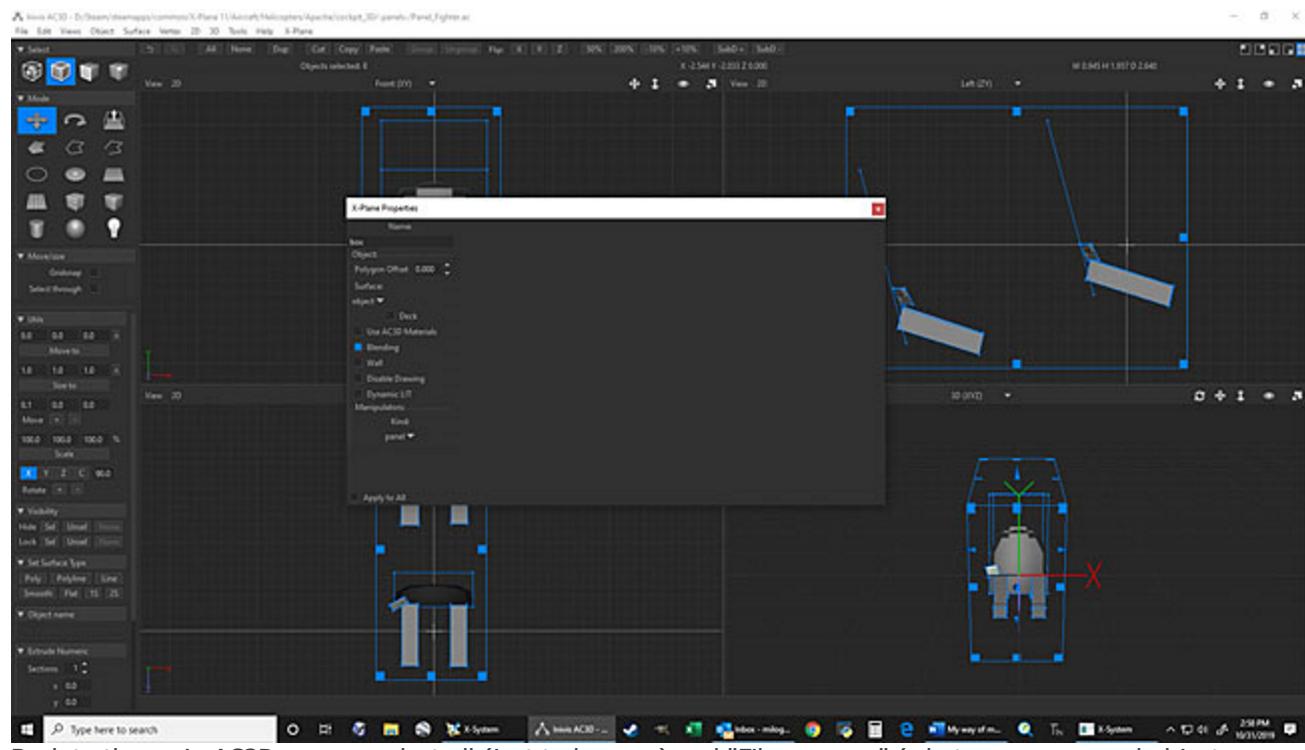


Use the sizing box to outline just the panel area using the square "handles". Note: include the transparency section, if any, you may have created in the panel png in GIMP as desired. In my case, the transparency is the upper half of the panel.

Then select the console surfaces from the main screen and apply 1/2 of the left side "gray block" to the left console, and the right 1/2 side of the block to the right console.

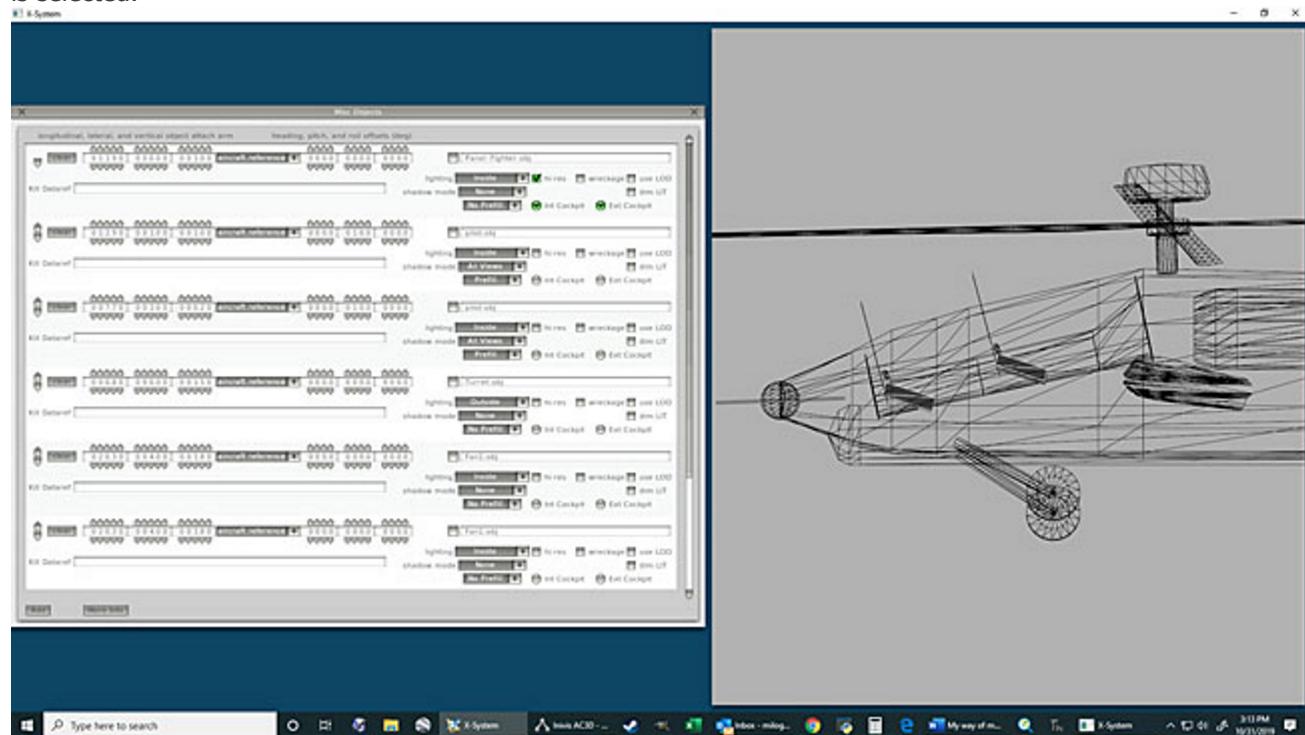
Do the same, if you haven't already, to the other panel and consoles. Sometimes, the result may be skewed, so experiment with the "Remap" controls and readjust using the sizing box.

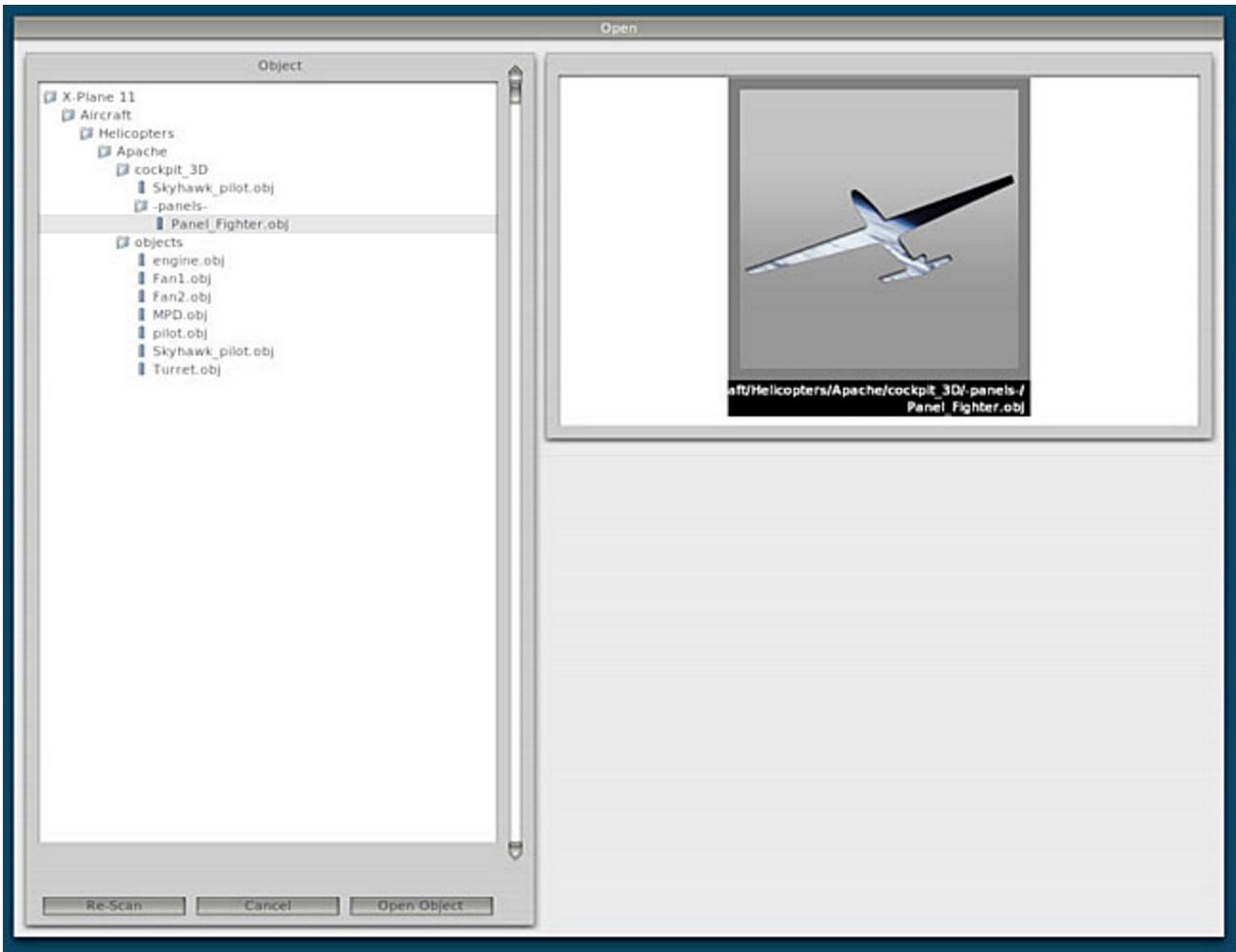
When all of the surfaces have been applied, click on "X-Plane" from the top AC3D menu bar to bring up the "X-Plane properties" screen. From the "Surface" pull-down menu, select "object". From the "Manipulators: Kind:" pull-down, select "panel". Optionally, you can select "deck" and/or "wall" to make the panel "solid" to prevent passing through when using the mouse in the simulator.



Back to the main AC3D screen, select all (just to be sure) and "File, save as" (whatever your panel object will be called). Make sure you save it wherever the panel png file is saved (Cockpit\_3D/-panels- folder). Then "File, Export, X-Plane 8 Object File (.obj)... in the same folder (Cockpit\_3D/-panels-).

OK, back to plane maker, select "Standard, Misc Objects", click "add" (bottom of the screen), the click on the square box on the right next to the blank box. If this is the first, or new object, hit the "Re-Scan" button at the bottom, then click on "cockpit 3D", and "panels" and you should see the name of the object you just created. It may not be visible in plane maker until you click on the "Ext Cockpit" radio button. Make sure the "lighting" is "inside" the "hi-res" is checked, "shadow mode is "none", "No Prefill" selected, and "Int Cockpit" is selected.





Save in Plane Maker and open or switch to the simulator. If the simulator is already running, click on "Developer, Reload the Current Aircraft and Art" to reload your cockpit object.

Note: Once you have added the cockpit panel object to plane maker, any further adjustments can be viewed in the simulator after doing the AC3D Export and the simulator "Reload", skipping the reload in plane maker. (Saves time)

Eventually, you should also synchronize the plane maker version with the simulator by clicking on the object box and saving.

#### **"Adjust To Fit"**

You will probably have to jump back and forth numerous times between the plane maker, simulator and AC3D to finalize the size and position. This is the hardest part...trying to get everything "just right", but when you're finished, and satisfied, you get a nice-looking panel.



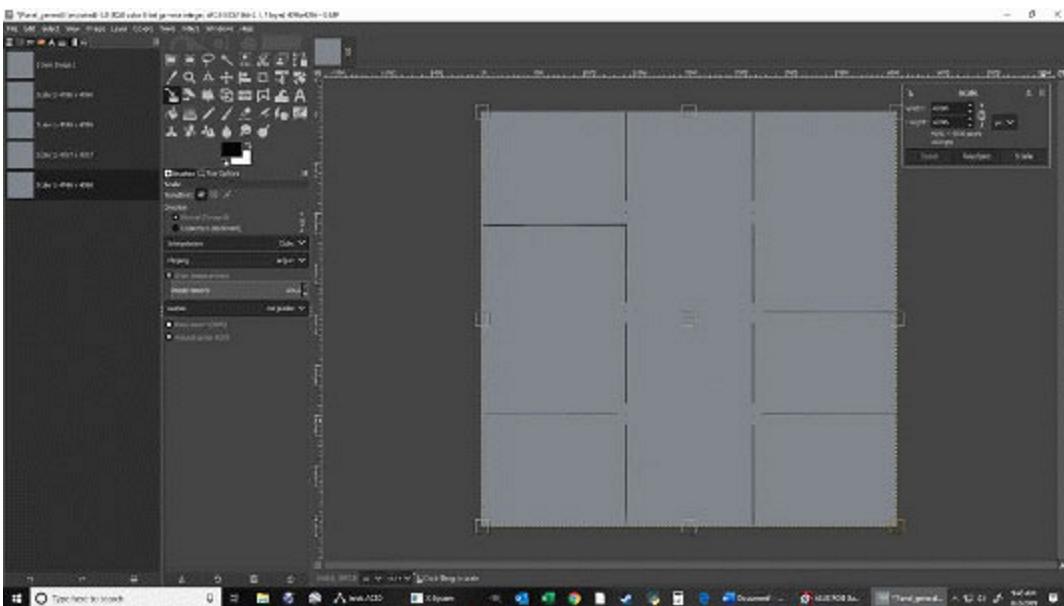
Another example:

This example is how I created a 3D panel for my flying saucer (more on that later). The panel is two semi-circles arranged above and below the pilot's forward view. As in this picture:

The first thing I did was to create a 4096x4096 pixel png in GIMP. The reason for choosing a 4096x4096 image is because I've learned that really enhances the resolution.



I then subdivided the picture into 12 sections that I wanted to represent as the panels. I created 12 sections by simply drawing fine dividing lines. At first, I was going to have the instrument panels completely surround the pilot, but later decided on two semi-circular panels.



I saved this image into the Cockpit\_3D panel folder, in the sub-folder "-panels-" as "panel\_general.png". From there, I started filling out the "squares" with the instruments I wanted. I wanted them all, but eventually decided on just the "relevant" ones that didn't duplicate functionality (much).

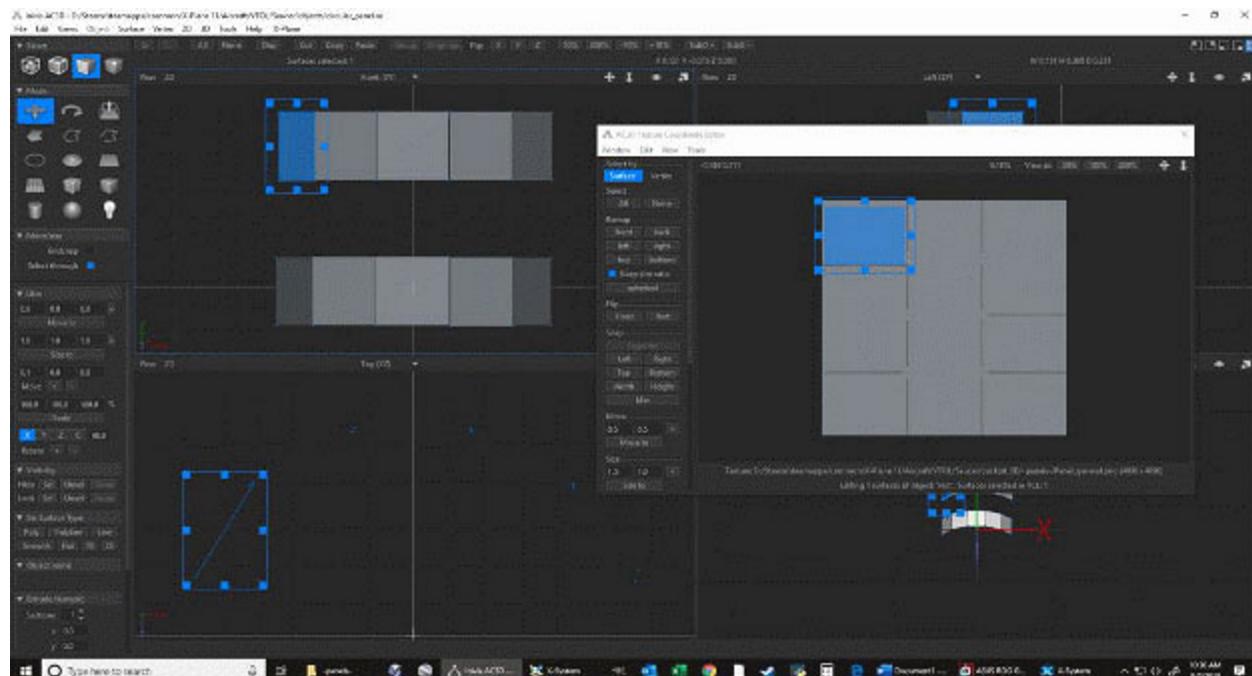
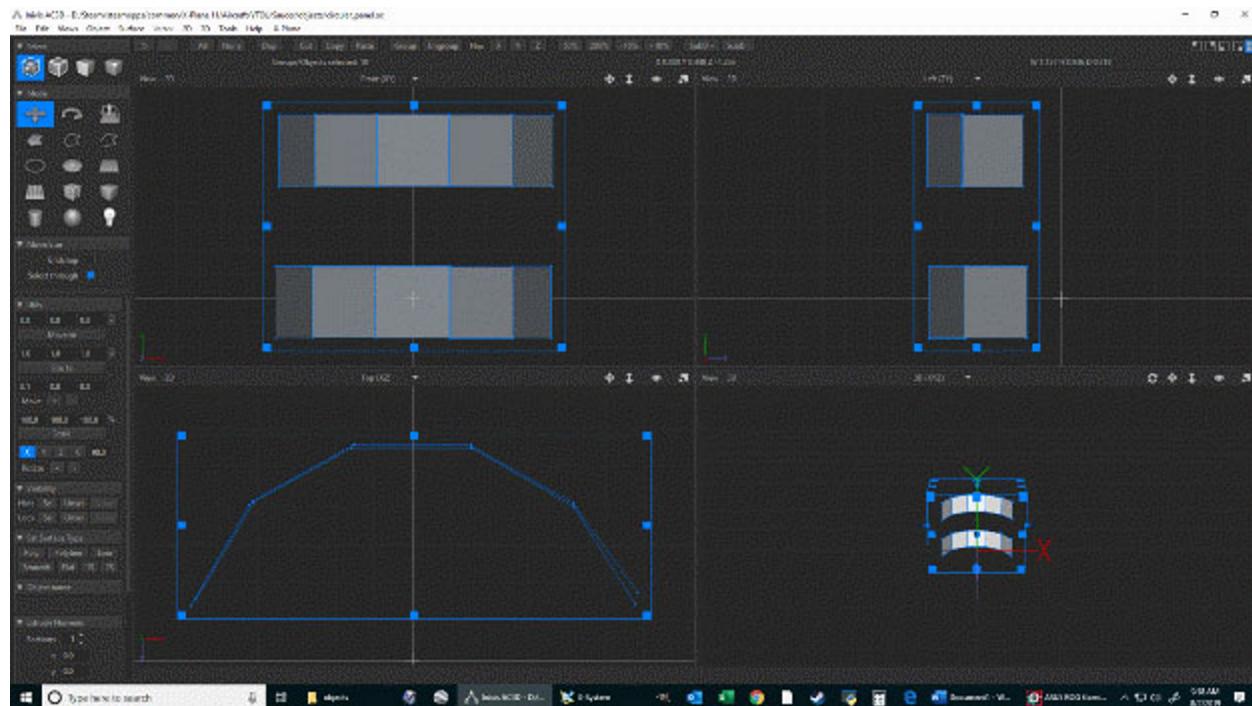
To make things easier, I used the "Group" function to organize which "panel" had which instruments.



Once I was satisfied with that, I went into AC3D to create the panel object. I originally used the "Sphere" mode, and then reduced the sphere into a circular section with a slightly tilted aspect to give the layout a raised desk look.

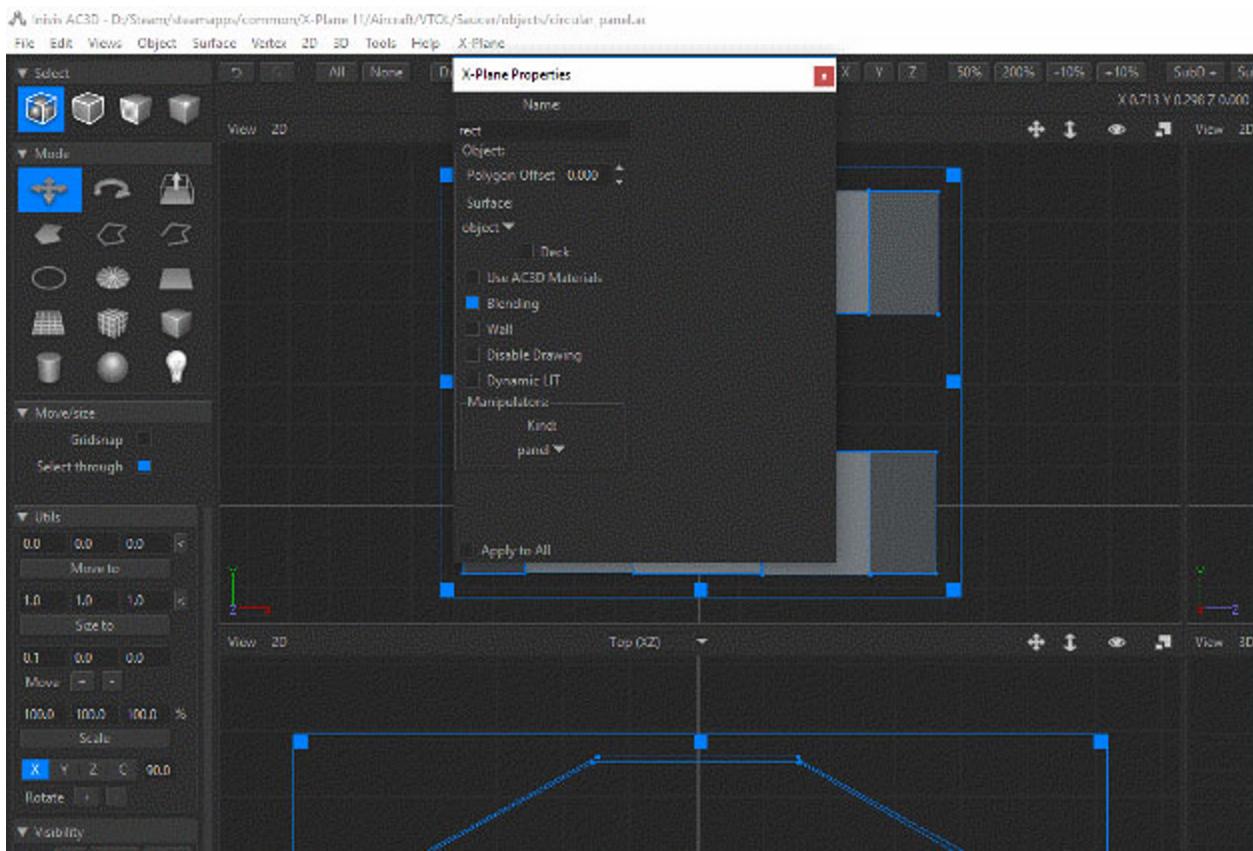
That didn't look well, so I switched to 12 individual square rectangles, and after experimenting with those, changed to 10 rectangles arranged in "top" and "bottom" semi-circular panels. Then, I loaded the object texture from the panel\_general.png from the Cockpit\_3D panel folder, sub-folder "-panels-".

Switch to "Surface", select each desired rectangle, then, using the "Tools/Texture Coordinate Editor" (F10), apply each square of the panel png to each rectangle on the object. Do this for each rectangle (that's why I grouped the instruments into "panels" in plane-maker).



### Most Important:

Select "X-Plane/X-Plane Object Properties" to open the properties screen. Under "surface", select "object". Under "manipulators, kind", select "Panel".



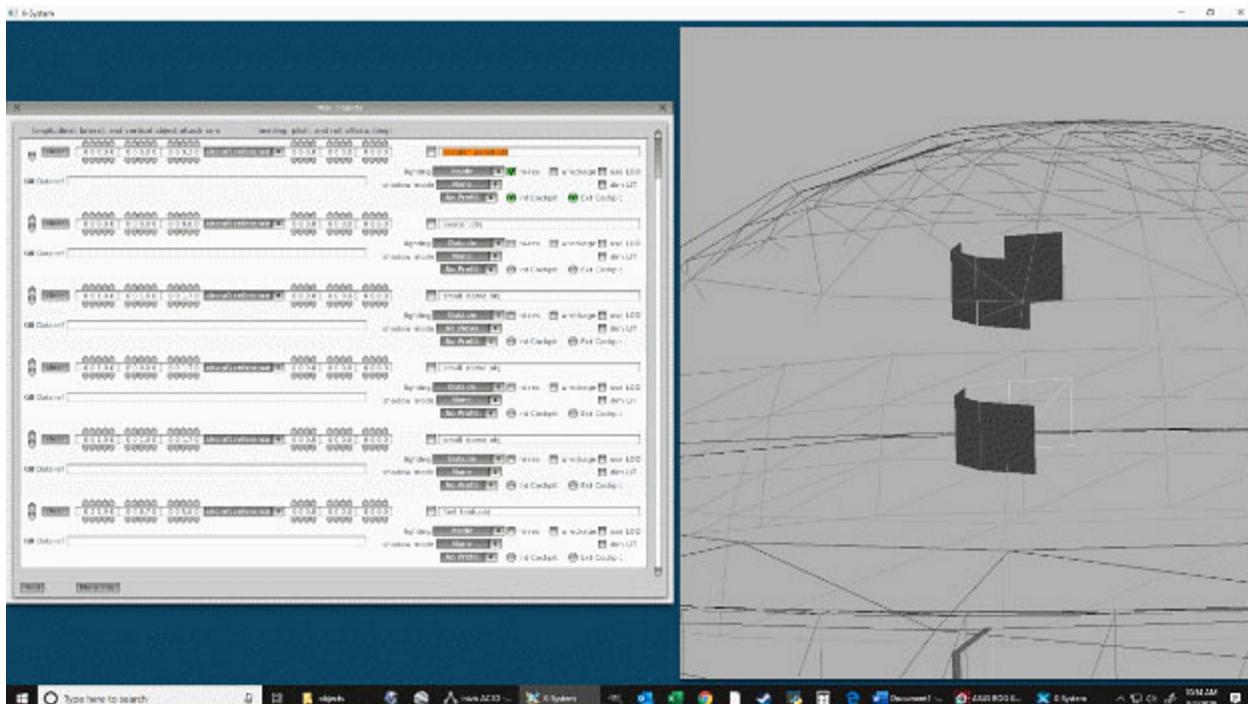
Before you wrap this up, it is a good idea to select everything and use the "Move to" click in the "Utils" to center everything. When finished, save the object (file/save as..) into the "objects" folder as whatever name you like to describe it.

I chose "circular panel". Remember to export it from AC3D as well (file/export/X-Plane 8 Object File (.obj...)) at the very bottom of the drop-down menu. Don't close the AC3D application just yet.

Going back to Plane-Maker, go to "Standard/Misc Objects" to add the panel. You should get used to doing a "re-scan" before selecting objects. If you are like me, you will be adding a lot of them. Below, the first object is my "circular panel" and after it is added, it should appear as dark objects seen here. If not, you may have to go back into AC3D to "flip normals" on each rectangle. Position the panel objects as desired. Use the "inside" lighting, "hi-res", "int cockpit" and "outside cockpit" selections as in the picture below.

Most likely is that it will not be the size you want, and you may not even see it (too small or too large) until you zoom in or out in the default view. If that is the case, go back into AC3D and make sure you are in the group object mode and everything is selected. Then use the "Scale" click to adjust the size of the object. (Don't use the "Size to") If the object is extremely large (usually the case) change the "scale" setting to 50, 50 50 for a 50% reduction. Once I get the object down to something reasonable, I do finer adjustments using either 110, 110, 110 for 10% increases in size, or 90,90,90 to decrease. You can use any adjustment you prefer, but just make sure they are all the same or your object will be distorted.

You will be jumping back and forth between AC3D and Plane-Maker each time you make an adjustment. Be sure to save and export from AC3D each time and click on the Plane-Maker object box next to the object name to reload it each time.



After a great deal of adjustments tweaking of instrument positions and sizes, AC3D, GIMP, and Plane-maker fiddling, you will eventually get where you want to be.

My top set of screens:

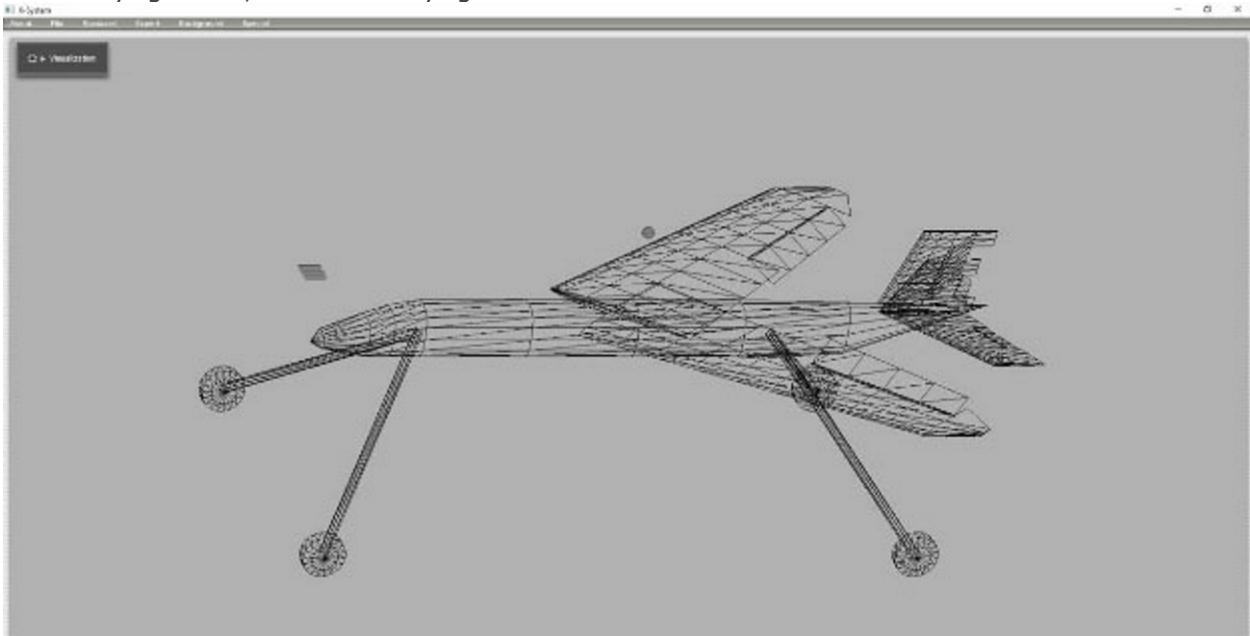


Bottom set:



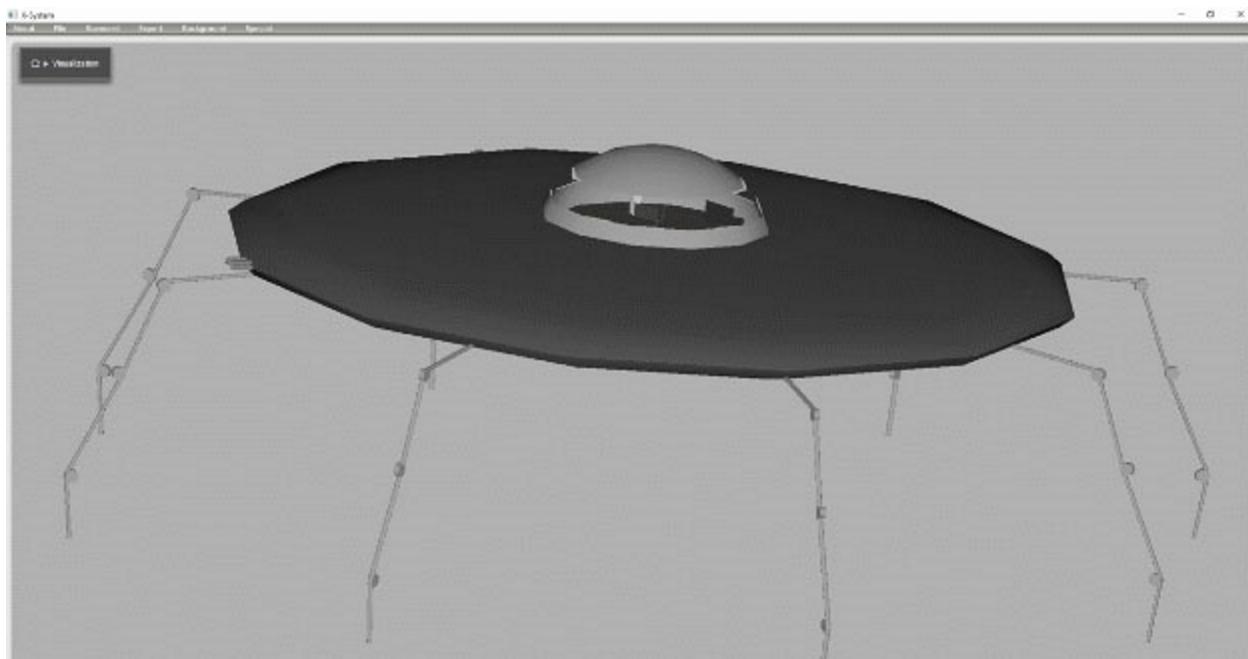
### Some Final Comments

X-plane will fly just about anything that's built (somewhat) aerodynamically sound. For example, in this case I built a flying saucer, but the underlying aircraft is this:



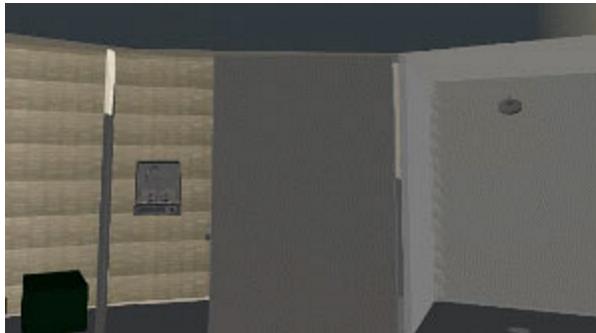
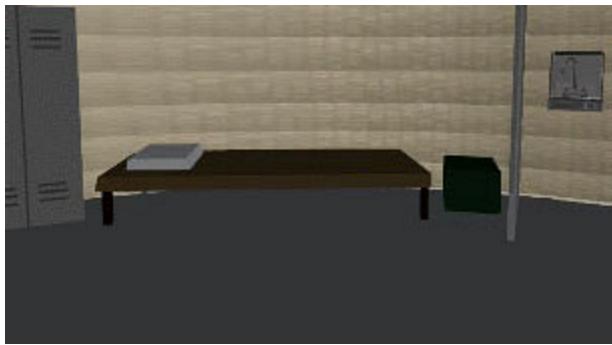
Adding objects does not affect the weight, balance, or flying characteristics, unless you manage to accomplish that, which I have not.

Using AC3D, GIMP and plane-maker objects function, I came up with this (and it flies well):



(I especially like the spider legs, which fold up when the landing gear is retracted and v.v.)  
Since I made this as a "Space Force" joke for some fellow Marines, I added an interior:





Final points:

1. Save often
2. In AC3D, make sure you are in "Object" mode when you resize, and "Surface" mode when you are placing surface textures from your png file
3. Have patience  
Enjoy!