

Time	Subject – Total video time – 33:52
00:00	<p>Introduction about: Making, coding and animating a 3d gauge >> (Krispy note at the beginning of the video below)</p> <ol style="list-style-type: none"> 1. decide what type of gauge you want to build 2. find code in the FSX-SDK modeldef.xml file that looks like your gauge 3. calculate your calibration code for the gauge needle movement 4. write your animation code in modeldef.xml 5. apply animation tag to animated needle 6. animate needle 7. test instrument inside FSX <p>>> Calibrate airspeed gauge: max kph = 260 max knots 140 $\text{knots/frame} = 140/200 = 0.70$ $\text{kph/frame} = 0.70 \text{ knots/frame} = 1.296 \text{ kph/frame}$</p>
NOTE	<p>Cockpit of the Jodel D112X model used is Krispy's own model. More information about the project over here: - http://kp-coolstuff.com/3d_project1</p> <p>Download location of the example files: - http://www.fsdeveloper.com/forum/resources/jodel-blender-project.152/</p> <p>Install the Jodel project on your computer:</p>
01:30	Open the Jodel project in Blender:
	<p>You can create the background of the gauge: - with Gimp - find something similar on the Internet and adapt it to your own needs</p>
02:30	3D View, Toolbar-Left, [Blender2FSX], [FSX Animation Tool]:
03:10	<ul style="list-style-type: none"> - [+] search on “needle” to get an overview to all sorts of needles - [+] search on “needle-asi-eh101” for the Air Speed Indicator needle from the default FSX EH101 chopper
03:30	Minimize Blender
	Located and open the FSX-SDK's MODELDEF.XML file
	<p>This file located over here when you have performed a default FSX-SDK installation: C:\Program Files (x86)\Microsoft Games\Microsoft Flight Simulator X SDK\SDK\Environment Kit\Modeling SDK\bin</p>
05:00	<p>Open de modeldef.xml in an editor: (for example notepad.exe) - go to the top of the file - [edit][find]”needle_asi_eh101” to locate the code related to this animation-tag - copy the first line containing the string ”needle_asi_eh101” - paste the line in a new file >> - [find next] to find the next location of the string ”needle_asi_eh101” in modeldef.xml - copy the entire section between <PartInfo> and </PartInfo> - paste that section into the other file >></p>
06:30	<p>Close the modeldef.xml file again Continue with the newly created file</p>

06:50	<p>Rename</p> <ul style="list-style-type: none"> - Animation name “” into “my-asi” - typeParam2 “” into “my-asi” - <name> into “my-asi” <p>>></p>
07:20	<p>Now we need to create a new GUID number so this needle stays unique inside the modeldef.xml file</p> <ul style="list-style-type: none"> - delete the old GUID number <p>>></p> <p>Open a NEW COPY OF Blender: 3D View, Toolbar-Left,[Blender2FSX],[FSX File Properties Tool]:</p> <ul style="list-style-type: none"> - [Generate GUID]
08:30	<p>Copy this GUID from Blender into the new file between guid=”...” ← there</p> <ul style="list-style-type: none"> - close the NEW COPY of Blender again
08:45	<p>Explanation about the XML code in the rest of the code-fragment:</p>
09:00	<ul style="list-style-type: none"> - delete everything between the <Parameter> and the </Parameter> headers - insert the 2 <Code> and </Code> headers
09:20	<p>Open the gauges background image in an image viewer</p> <ul style="list-style-type: none"> - max speed 260 km/uur
10:00	<p>Open the relative FSX-SDK document located at: (not present on my computer!)</p> <p>#OR open the FSX SDK HELP FILE called “fsxsdk.chm” located at: C:\Program Files (x86)\Microsoft Games\Microsoft Flight Simulator X SDK\SDK\fsxsdk.chm"</p> <ul style="list-style-type: none"> - [Tab – Index], search for “Simulation variables” <p>Scroll down to the Aircraft Flight Instrument data header:</p>
10:30	<p>Explanation about airspeeds (true vrs indicated)</p> <ul style="list-style-type: none"> - copy the [AIRSPEED INDICATED] header - paste it in the newly opened file between the <code></code> tags
12:20	<p>Explanation about:</p> <ul style="list-style-type: none"> - units for the gauge - unit conversion for knots to knots <p>>></p>
14:00	<p>unit conversion website shown:</p>
16:20	<p>Copy of the needle-(xml)code back into the modeldef.xml file at the end</p> <ul style="list-style-type: none"> - save the modeldef.xml file and close it.

17:10	<p>Open up Blender again 3D View,Toolbar-Left,[Blender2FSX],[FSX File Properties]: - [Initialize Toolset] [FSX File Animation Tool]: - [+]search “my-asi” in the assign animation to selection 3D View: - select the ais needle object - [Assign] Animation View: - reset framecounter to:0 3D View: - [I][R] to create the 1st keyframe Animation View: - set framecounter to:100 3D View: - [R][Y] to rotate the needle downwards - [I][R] to create the 2nd keyframe Animation View: - set framecounter to:200 3D View: - [R][Y] to rotate the needle upwards again to 260 - [I][R] to create the 3rd keyframe</p>
19:30	<p>Animation View: - reset framecounter to:0 - [>] to play the animation - reset framecounter to:0</p>
19:45	Save the file
	# At this point you can export your Jodel model into an FSX .mdl file
20:10	<p>Explanation about difficulties of the turn-coordinator animation. This must be done within 180 degrees not in 360 degrees.</p>
21:00	<p>- opening of your modeldef.xml file - showing the code section inside the modeldef.xml file - playing the animation in Blender</p>
23:00	<p>Altitude meter animation: - 1st needle for 100 (“needle_alt_100”, every 20 degrees keyframe, full 360 animation - 2nd needle for 1000 (“needle_alt_1000”, every 20 degrees keyframe, full 360 animation</p>
25:20	<p>Vertical Speed meter: clockwise / counterclockwise animation - different animation startpoint at the 03:00 position, “needle_vsi” (0,70,140) keyframes</p>
27:00	<p>RPM gauge: - needle_rpm, 0 to max scale, need only the 0, 22, 45 degrees keyframes</p>

27:40	Compass animation: <ul style="list-style-type: none">- the needle stays stationary, the background-image rotates- variable used is: “cylinder_wiskey_compass”- start animation 0 at North, 180 South, North again → 360 keyframes
29:10	Fuel gauge,left: (self created code) <ul style="list-style-type: none">- opening modeldef.xml to see the code- variable used is: “fuel_tank_left_main_level” <p># TIP: you need to start your animation at 0 % fuel</p>
30:00	Fuel tank gauge, right: (self created code) <ul style="list-style-type: none">- variable used is: “fuel_tank_right_main_level”
31:00	Oil pressure gauge:(self created code) <ul style="list-style-type: none">- variable used is: “general_eng_oil_pressure_1”- animation from zero to max_gauge
32:40	Ampere meter: <ul style="list-style-type: none">- variable used is: “elect_main_bus_amps”- animation from zero to max_gauge
33:52	End of the video