

## How to Tame Your Mechanical Layers Q & A

### PROCESS Q and A

| Questions / Comments   | Answers / Response  |
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| [One] could use the pdf.   | Granted, one can use methods other than fabrication formats (i.e., Gerber, ODB++, etc.) for outputting the information. In fact, the data in the mechanical layers is better suited for the PDFs. In the end, we need to remember that the PDF and the fabrication formats are merely vehicles to output the data of the mechanical layers.   |
| I deal with a lot previous designs where the layer scheme does not match with my own. What's the best way share my layer definition to a consulting company for instance?  | <p>We at Nine Dot connects have a similar issue given that we also provide layout services for our customers. We have different approaches depending on the customer.</p> <p>Some customers have nothing in terms of the mechanical layer set up. If they don't, use the one you know and have.</p> <p>If the customer has something, we will stick to what they've got. If layers are missing, then we will introduce layers where needed.</p>   |
| Considering your Orange vs Blue color scheme, would it be more practical to order the Mechanicals list by location (Top vs Bottom) as opposed to by Name (such as CourtYard Top/Bottom)? I would think "by location" is easier during creation, but "by name" is easier during viewing colors and selecting show or hide | <p>The 'location' method could certainly work. But as you mention, creation by 'location' requires one to carefully think it out on paper before typing them in. Unfortunately, if you forget a layer during the process, you will spend some time correcting it. You will also have to account for the possibility of adding mechanical layers in the future by leaving some mechanical layers in reserve.</p> <p>By using the 'name' format, a new set of layers can be readily tacked on to the end of the list.</p>   |
| I've never heard of conformal coating being used for mechanical stability... Our products go into hazardous gas areas and conformal coating is used to protect from corrosive gasses and moisture. We also use it to reduce the minimum spacing requirement to get hazardous area certifications                         | <p>I stand corrected. As stated in the comment, the primary purpose of the conformal coating is to protect the board against harsh environments.</p> <p>In the webinar, it was correctly stated that it is used in transportation and mil/aero; however, the reason given is incorrect. Conformal coating does not provide any additional protection for shock and vibration, though boards that are placed in transportation equipment need to deal with both mechanical stresses and harsh elements. Conformal coating will address one of the issues; the mechanical structure of the system needs to address the other.</p> |

## ALTIUM DESIGNER SPECIFIC Q and A

| Questions / Comments  | Answers / Response   |
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| Which layer is used for 3D models / bodies?   | Any mechanical layer in Altium Designer can be used. Some libraries will try to use a layer that is commonly used in the Altium Designer libraries to avoid the hassle of having to move the primitives from one layer to another  |
| When showing board from bottom side, can you make changes to the board when in bottom viewing?  | <p>Yes, you can make changes when viewing the board from the bottom. This is true for all primitives on <u>all</u> available layers within the PCB layout tool.</p> <p>When moving a component or primitive to the bottom of the board, start by moving the component. While the component is being moved, press the L key which will flip it to the bottom.</p>   |
| How do you create components with courtyards and .designators that will appear on the right layer when printing the Assembly drawing?             | <p>In the footprint library, anything that is placed on a certain layer will be ported to the equivalent layer in the PCB. This is true even if the names given to those layers are different. For example, whatever is on mechanical layer 8 (regardless of the layer name given by the librarian) will be ported over to mechanical layer 8 in the PCB layout.</p> <p>By the way, Altium Designer will NOT allow the user to disable a mechanical layer that has information that came from the footprint library. If the layer needs to be removed, the user would make the changes to the mechanical layer to the footprint in the library editor, and then push those changes to the PCB.</p> <p>As for the .designators, Altium should put those on the correct layer and fill in the proper designator that has been associated to the component.</p> |
| If a library footprint has the courtyard defined on mech14, how does that get mirrored onto mech15 when the component is flipped to the backside? | This can be done with the layer pair feature in the View Configuration dialog (shortcut: L key). At the bottom left of the dialog, look for the layer pair button and then set up the pairs.   |
| What is Altium's maximum number of layers?  | There are 32 mechanical layers available. Note that AD versions prior to AD10 only has 16 layers available.  |

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| <p>In the past I've found the need to set rules for mechanical layers. More specifically keeping a slight distance between component courtyards. Do you know of a way to setup design rules for mechanical layers?</p> | <p>Mechanical layers are exempted from the design rules <b>EXCEPT</b> when it comes to component clearance rules.</p> <p>Altium handles component clearances differently, depending on whether the component had a 3D body, a courtyard, or both. Unfortunately, the answer is not trivial, however, we did a webinar on this topic that goes into specific details.</p> <p>"3D without the M.E."</p> <p><a href="http://ninedotconnects.com/webinar-3d">http://ninedotconnects.com/webinar-3d</a></p>  |
| <p>Is the Draftman feature still available? How to separate tasks between using Draftman and traditional mech layer?</p> <p>Can the use of Draftsman replace the need for mech layers?</p>                             | <p>You can use Draftsman tool rather than the mechanical layers for the final documentation. Keep in mind that there are some mechanical layers that are more for use by the layout artist than the manufacturer. For example, the courtyards are extremely useful when performing initial component placement by the designer.</p> <p>The difference between the Draftsman tool and the mechanical layers is that the documentation is being drawn in a schematic-like environment, whereas, the mechanical layers are being used and grouped together in a layout environment.</p> <p>The draftsman tool makes it easy to generate tables of information such as the drill, stack and via tables. However, this can also be accomplished in the mechanical layers through Excel and copy/paste.</p> |
| <p>In Altium where do you change the layer names so that each project comes up with the new mechanical names?</p>  | <p>On a file level, this is done in the View Configuration dialog box in the both the PCB layout editor and the PCB footprint library editor. One can press the L key on the keyboard to quickly access this dialog.</p> <p>Unfortunately, there is no DXP preference that will capture and reuse the mechanical layers on new libraries or layouts.</p> <p><i>(See the following question for possible workaround)</i></p>   |
| <p>I am a contract engineer and I work with several clients. Is there a way to export/import just the mechanical layer definition.</p> <p>Can you save your Mechanical layer groups to load for future projects?</p>   | <p>Unfortunately, the answer is no when it comes to a specific feature in Altium Designer. However, we recommend that you look on the official Altium forums. There are links to scripts that users have made to address this issue. Note that there are two elements to consider. The first is the renaming. The second is the remapping of information on certain layers to another.</p>  |

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| <p>Is it possible to import just the mechanical layer setup into a different board?</p>  | <p>Please take caution in using these scripts. Try it on a copy of the project.</p>  |
| <p>Is there a way to change layer sets with shortcut keys instead of clicking on LS and selecting layer set desired?</p> <p>Comment from a participant:</p> <p>Name your new layer set C&amp;opper.<br/>Then the keystrokes are: DTO i.e. DT(letter after '&amp;')</p> | <p>Thank you for this short cut recommendation.</p> <p>For clarification for those who may be new to Altium Designer or have not played with the menu customization features:</p> <p>In the Layer Sets manager, one can create their own set of layers. Instead of constantly using the cursor to get to this list, one can assign a shortcut key to the layer set. By using the ampersand (&amp;) character, the next letter in the set name becomes the shortcut key.</p> <p>When accessing the shortcut, one must press D, then T, followed by your shortcut key. Just look for the underlined character in the name as a reminder.</p> |