Altium Designer

Advanced Training with Altium 365

Template 1 - Draftsman Templates

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Software, documentation and related materials:

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Template 1 - Draftsman Templates

1 Purpose

Using templates provides a standardized means for creating documentation. Like Schematic and PCB templates, Draftsman templates offer the opportunity to create custom documents to facilitate the generation of fabrication and assembly drawings.

In this exercise, you will create a new Draftsman template, modify an existing Draftsman template, and use it as part of a project. Compared to a standalone option, working with a workspace offers additional options for creating and managing Draftsman templates.

2 Shortcuts

Shortcuts used when working with Template 1 - Draftsman Templates

F1	Help
⚙	Preferences
P » S	Board Assembly View
T » A	New Sheet
CTRL+S	Save Document

3 Preparation

1. Close all existing projects and documents.

4 Draftsman Preferences

4.1 Draftsman Defaults

2. Click on the gear icon ⚙ to open the *Preferences.*

3. Select the *Draftsman* section and expand it to access the *Defaults*.

4. In the *Default Primitives* section of this page, you can choose between using *Mils* or *MM*. Please keep *MMs* as the default for this training.

5. The *Primitives* drop down menu provides a means of navigating to the various groups of primitives available for changing, as shown in Figure 1.
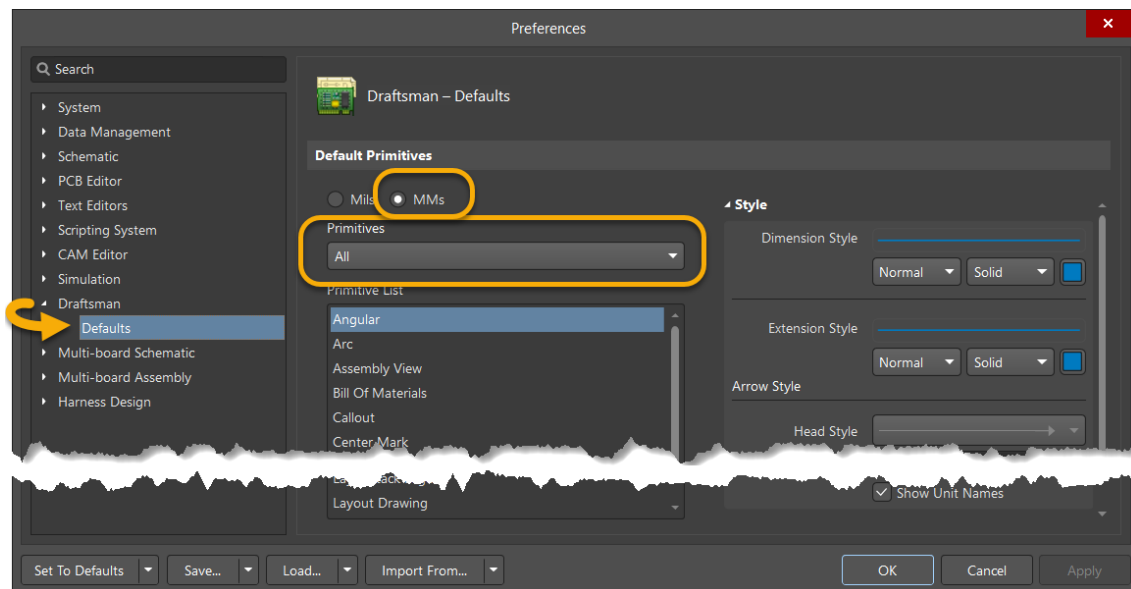
Figure 1. Draftsman Preferences - Default Primitive Drop Down menu

6. Ensure the drop-down menu is set to **All,** showing all the possible primitives that can be configured. Clicking on a primitive from the primitive list, opens its properties where you can modify them if needed. You won't change any of the primitives in the training.

5 Draftsman Templates Location

7. From the *Data Management* section, open the ***Templates*** page, as shown in Figure 2. This is the location in which Altium Designer shows all of the default templates from the workspace, and local templates added during the installation.
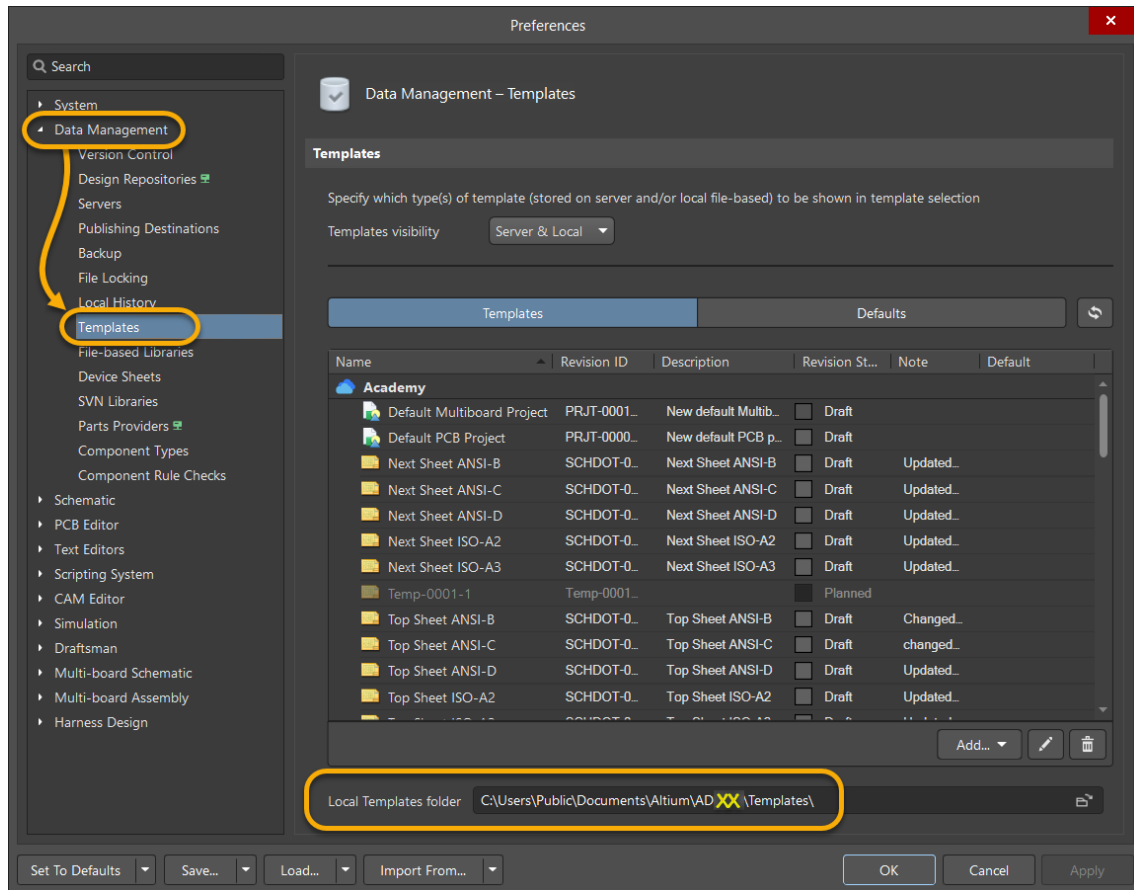
Figure 2. Template file location

Note: The Templates shown here may vary depending on whether you're connected to the Altium Training Workspace, Altium 365 company workspace, or not connected. Local Templates folder may also be pointing to your company shared folder where your local templates are stored.

8. Change the view from *Templates* to *Defaults*, Figure 3. The *Defaults* defines the templates that are used when creating a new document, for example, a new Schematic.
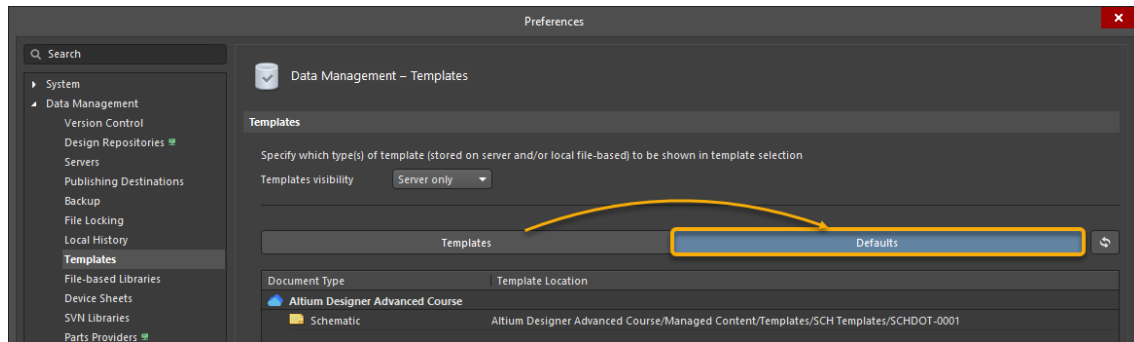
Figure 3. Default documents

> Note: The Defaults shown here may vary depending on whether you're connected to the Altium Training Workspace, Altium 365 company workspace, or not connected. Also, your local Altium Designer configuration affects the Defaults.

9. With the **Add** button, you can add Template files to the *Default* view. As you're working with a Workspace, you can see a dialog to select a Draftsman template instead of using the *Defaults*.

10. Close the *Preferences*.

6 Creating New Draftsman Template

11. Open the *Explorer* panel from the **Panels** button, or with the combination **K»R**.

12. Navigate to the branch *Managed Content – Templates - Draftsman Templates*. You can see two subfolders: *Document Templates* and *Sheet Templates*.

    a) The branch *Document Template* is for templates that define the basic layout for the Draftsman documentation, for example, Drill Drawing, Assembly Drawing, Layer Stack Table, and so on. Document Templates branch uses Sheet Templates for the page configuration.

    b) The branch *Sheet Template* is for templates that define and control the page configuration, like Page Size, Orientation, and Title Block of a Draftsman document.

13. You can start a new Draftsman template from scratch, or you can use an existing template, make a copy and modify it.

6.1 Creating New Draftsman Sheet Template

14. Let's create a new Sheet Template, using Figure 4 as reference.

    a) Select the branch *Sheet Templates*.

    b) Select the Command ⊕ Add Template from the upper right corner of the *Explorer* panel.

    c) Add name: `ISO A3 Portrait – [Your Name]`.

    d) Add as Description: `ISO A3 Portrait – [Your Name]`.

    e) Change Content Type to: **Draftsman Sheet Template**.

    f) Open the Advanced section and check that you see the default folder: `…\Draftsman Templates\Sheet Template`.

    g) If not ticked, activate the option **Open for editing after creation.**

    h) Create the new template with **OK.** In the **Explorer Panel**, you can see a new line `DFS-00xx – ISO A3 Portrait – [Your Name]`.

    i) If needed, close or move the Explorer panel to see the template activated for editing.
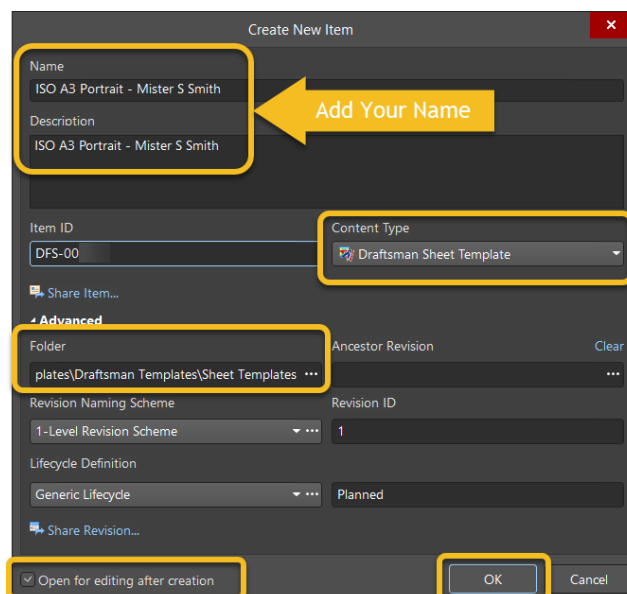
Figure 4. Create a new Draftsman Sheet Template

15. With the new document as an active document, open the *Properties* panel from the **Panels** button.

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16. Activate the tab *Page Options* in the *Properties* panel, Figure 5.

    a) Choose the *Custom* view from *Formatting and Size* section and add the following values:

        i) Width: 297mm

        ii) Height: 420mm

    b)   Margin and Zones: Change the Margin for all four sides to 5mm.
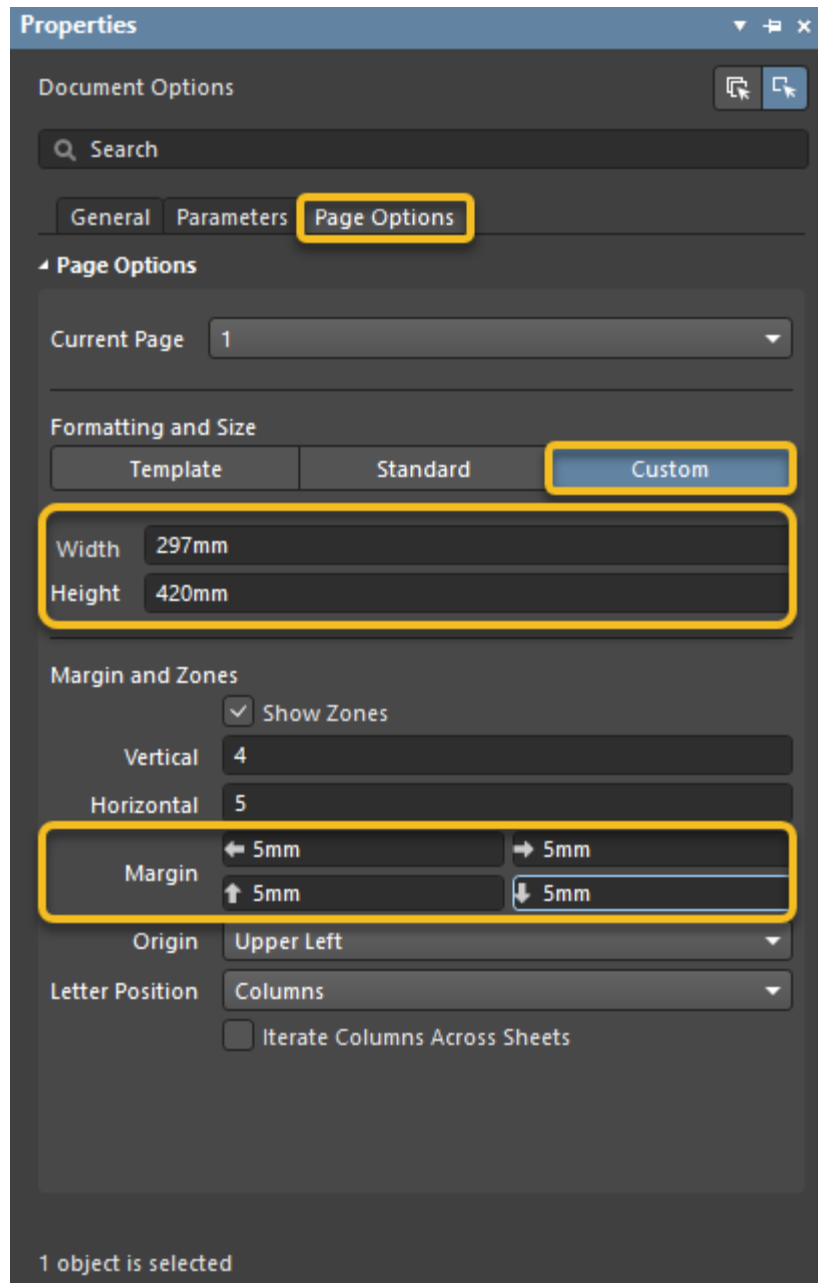
Figure 5. Setting the Draftsman document properties

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17. Place a rectangle, using **P»R** shortcut. Start at the lower right corner, moving your mouse to the upper left with the dimension Height: 10mm, Width 180mm, Figure 6.
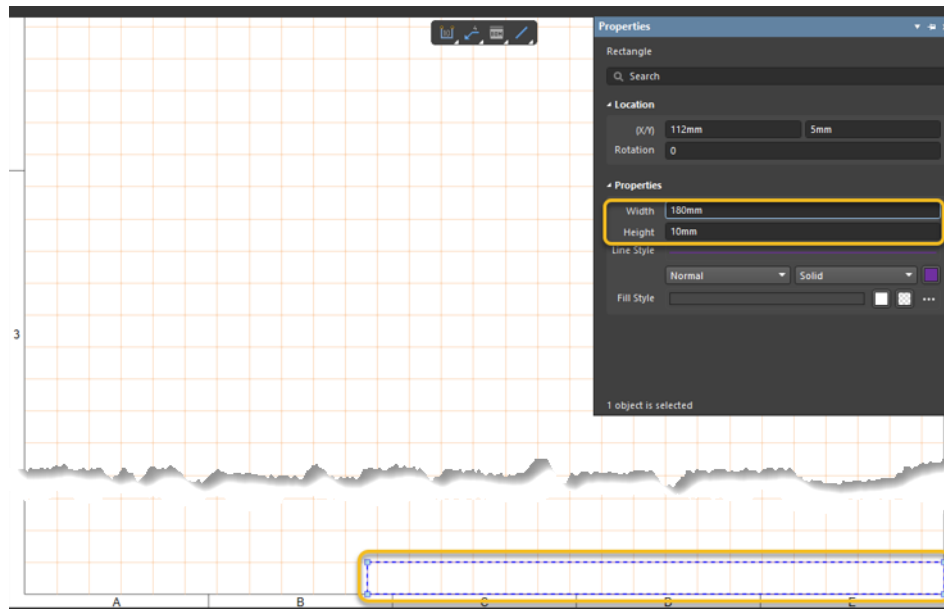
Figure 6. Placing a rectangle and setting its dimensions

Hint: It's not necessary to create the rectangle perfect the first time. After you placed the rectangle, feel free to open the *Properties* panel and update the *with* and *height* parameter with the required values. Reposition the rectangle after you updated the width and height.

18. Using **P»T**, place the string `Training Title` inside the rectangle, in the upper left corner. Use Figure 7 as reference.

   a) X: `113mm`

   b) Y: `10mm`

   c) Width: `23 mm`

   d) Hight: `5mm`

   e) Text: `Training Title`
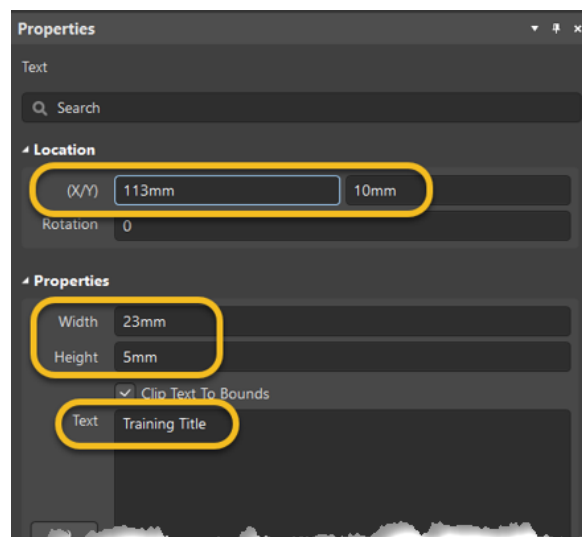
Figure 7. Parameters for first String

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19. Using **P»T**, place a second string in the center of the rectangle with the Text `=Altium Training`.
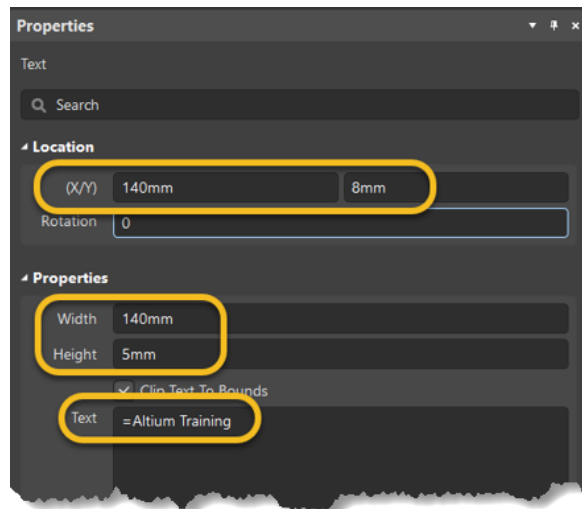
Figure 8. Parameter for the second string

20. Instead of creating the entire title block manually, you will copy an existing Title Block to speed up the template creation:

   a) Open the *Explorer* panel with **K»R.**

   b) Navigate to **Managed Content » Templates » Draftsman Templates » Sheet Templates**.

   c) Navigate to the Sheet Template `ISO A3 Landscape` and right-click its name. From the popup menu, select **Operations**, and then **Make a Copy…**

   d) In the `ISO A3 Landscape`, select the existing Title Block from the lower right corner and copy the Title Block into the Windows Clipboard, using **Ctrl+C.**

   e) After activating the copy command, your cursor will change, allowing you to choose the Reference Point. Select the lower right corner as Reference Point for the Copy command, Figure 9.
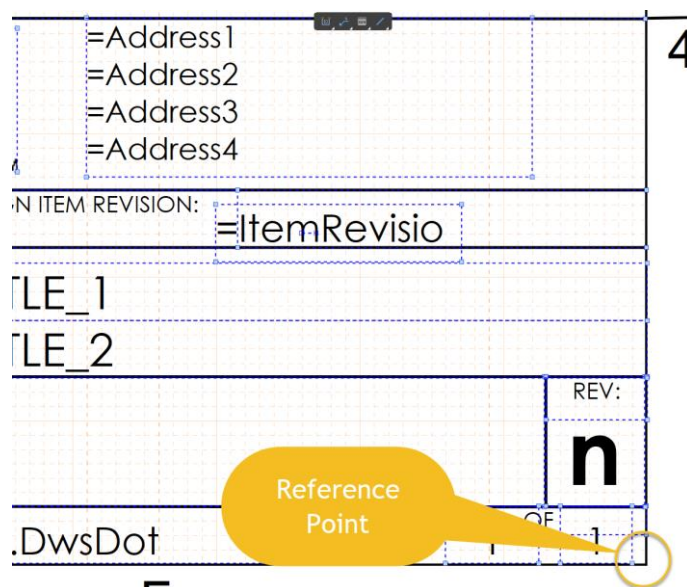
Figure 9. Reference point for Copy command

f) Change the focus back to the `ISO A3 Portrait – [Your Name]`.

g) Past **Ctrl+V** the Title Block and position it at the lower right corner, above the rectangle you created, Figure 10.

h) After the Copy-Paste of the Title block, close the `ISO A3 Landscape` template without saving.
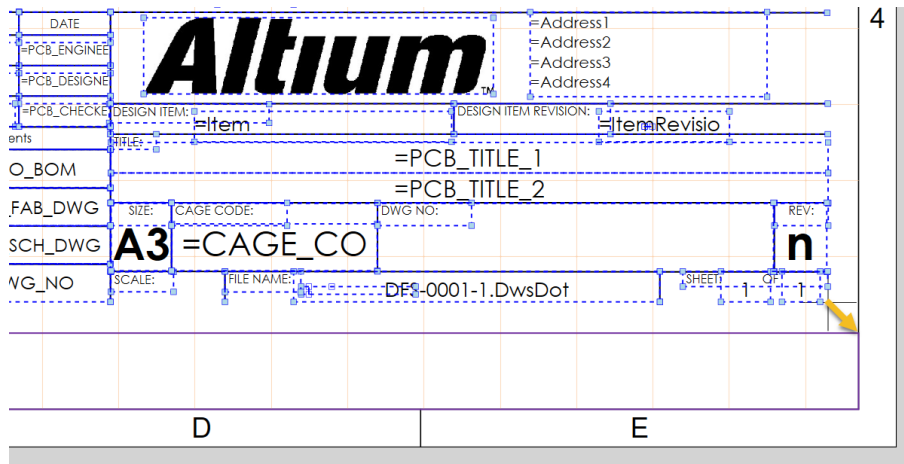
Figure 10. Position Title Block

21. Feel free to delete the existing Altium logo and place your own company logo:

    a) Delete the existing Altium Logo.

    b) From the **Place** menu, select the command **Graphic.**

    c) Draw a rectangle that has approximately the size of the image you plan to place.

   d) In the Windows Explorer, select your company logo (for example, *.PNG). If you don't have a company logo, feel free to place any image that is available (for example, from the default Windows Pictures folder).

    e) Chang the size of the image so the company logo fits into the Title Block.

    f) Position the image.

22. Now that you have created your Template for page orientation Portrait, save the Template.

23. Save the Template to the server:

    a) In the *Projects* panel, next to the Project name, you can find the command **Save to Server** `Save to Server  ○`.

    b) Select **Save to Server**.

    c) In the dialog *Release Notes*, add the comment `Initial Commit.`

    d) Select **OK.**

24. Open *Explorer* panel with **K»R** and check the branch *Managed Content - Templates - Draftsman Templates - Sheet Templates*. You will find your own template and templates from the other attendees in that branch.

6.2 Creating a New Draftsman Document Template

Instead of creating a new document, you can copy an existing document and modify it. Next, you will use this method for creating Draftsman Document template. The training document is a start point for a template. If you create your own Template, you can add additional objects or reposition the existing objects to create your own layout for the Draftsman documentation.

25. Open *Explorer* panel with **K»R** and navigate to the branch *Managed Content - Templates - Draftsman Templates - Document Templates*.

    a) Select the Item `DFD-0003 Default Fabrication Drawing`.

    > Hint: In your training workspace, the Item may have a different Index instead of DFD-0003.

    b) With **right click » Operations**, select **Make a copy...** or use **Ctrl+D**.

    c) The new document is opened for editing with the name `Copy of Default Fabrication Drawing`.

    d) Close the *Explorer* panel.

26. Next, you will change the Sheet definition for the new template, using Figure 11 as a reference. With `Copy of Default Fabrication Drawing` as an active document and nothing selected, open the *Properties* panel:

    a) Select the Tab *Page Options*.

    b) Check that the *Current Page* is set to **1**.

    c) From section *Formatting and Size* → Option *Templates*, select from the drop down your Sheet Template `ISO A3 Portrait – [Your Name]`, Page 1.

    d) Check Page 1 from `Copy of Default Fabrication Drawing`. The page is updated with a new size, orientation, and so on.

27. Repeat the previous step for Page 2 and 3.

    > Hint: To update Page 2 and Page 3, first go to the Section *Formatting and Size* settings, change the information to *Standard*, and then switch back to *Template* to select the new `ISO A3 Portrait template – [Your Name]`.
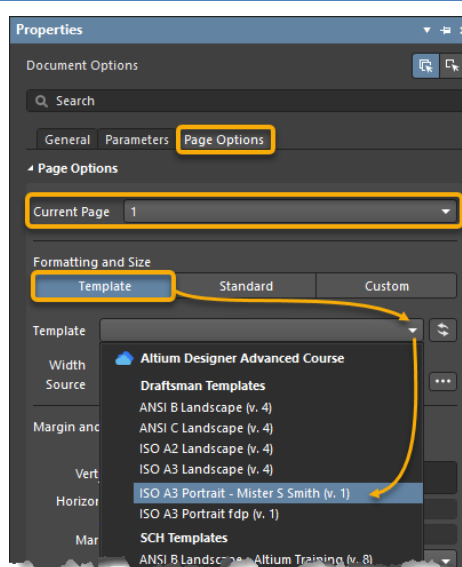

Figure 11. Select Sheet Template

28. With nothing selected, scroll to the bottom of the third sheet of the Draftsman document.

29. Right-click anywhere on the third sheet and select **Add New Sheet**. This will append a new sheet to the existing template document.

30. Scroll down a little to see the new sheet.

> Hint: If, by accident, you executed the **New Sheet** command on the 2nd sheet, instead of the 3rd, the new sheet is now Sheet 3 and Sheet 3 is now Sheet 4. If needed, you can change the order of the sheets with the Bookmarks panel.

31. Next, you will make some edits to the **Notes** and the *Drill Table*. Scroll up to the first page.

32. Start by left-clicking at upper left corner on the *Drill Table*.

33. When selected, drag it from its original location, and place it just above the *Drill Drawing View* section. Once you get close enough, the auto alignment guidelines will appear to help you align the top of the *Drill Table* with the *Drill Drawing* view, as shown in Figure 12. This isn't mandatory, but helps in achieving a clean and professional drawing.
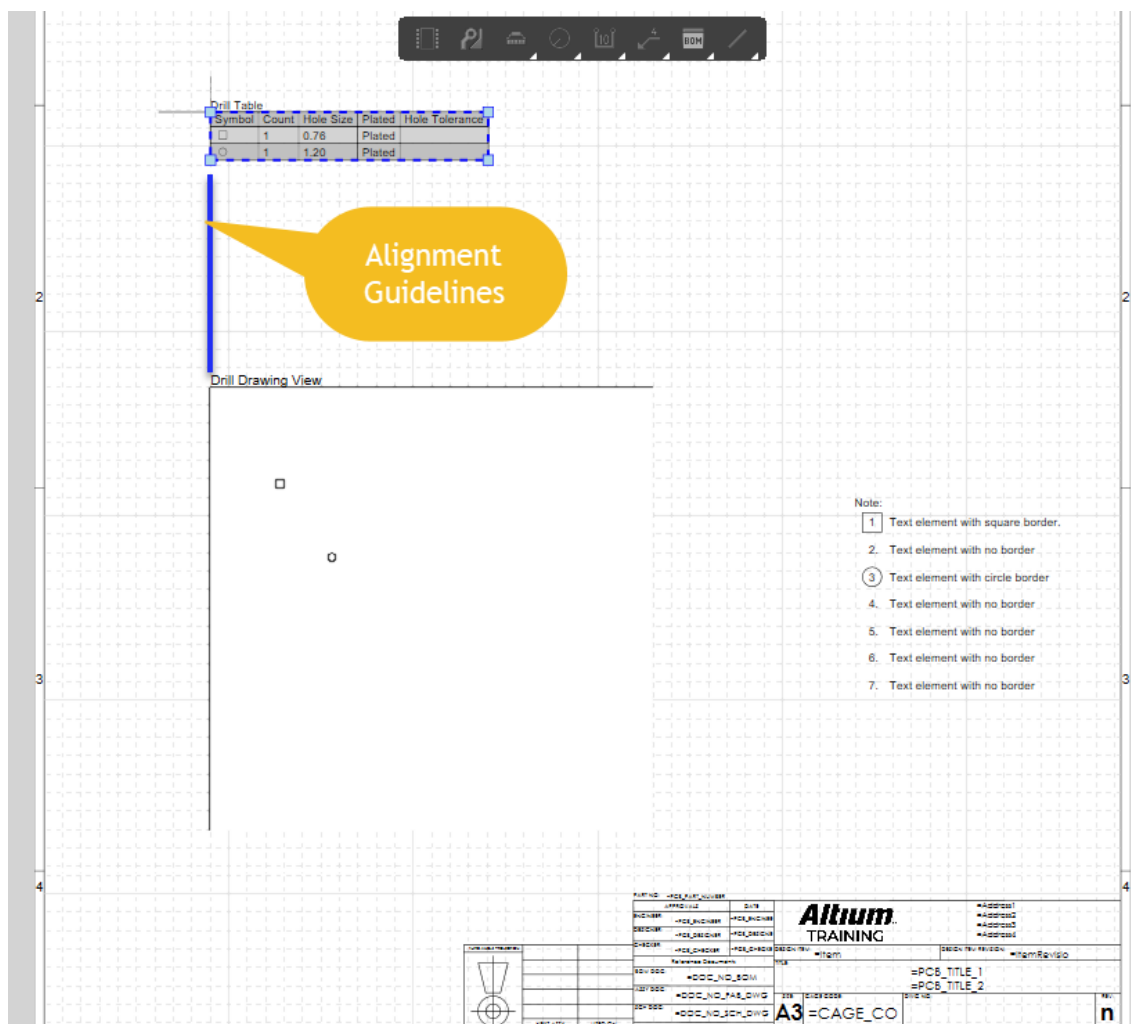

Figure 12. Auto Alignment guides

34. Using the same method, feel free to move the *Notes* to a new position.

35. With nothing selected, scroll to the bottom of the second sheet of the Draftsman document.

36. Using the same method as described for the first sheet, reposition the existing layer stack table to the top of the sheet.

37. Using **Place » Additional Views » Board Isometric View**, you can place a 3D View of the Board below of the Layer stack table. Position the view in the center of the remaining free space.

> Note: You can see a String **View from Top side (Scale 1:1)** attached to your cursor. Later this string will be replaced with the Board 3D View.

38. With nothing selected, scroll to the bottom of the third sheet of the Draftsman document.

At the Moment, you can see one Board Fabrication View – Top Layer (Scale 1:1). If needed, you can add additional Board Fabrication Views to the template, for example, Board Fabrication View – Bottom Layer (Scale 1:1), Board Fabrication View – Top Overlay (Scale 1:1), and so on. Like for other Items, you can place the Board Fabrication View from the **Place** menu and update the Item properties, for example, the Layer, from the *Properties* panel.

39. Save the `Copy of Default Fabrication Drawing` template document with **File » Save**.

40. Save the Template to the server:

    a) In the *Projects* panel, next to the Project name, you find the command **Save to Server**

          Save to Server .

    b) Select **Save to Server**.

    c) In the dialog *Create New Item:*

        i) Add the new name: `Fabrication Drawing – [Your Name]`.

        ii) Add the Description: `Fabrication Drawing – [Your Name]`.

        iii) Check that the *Content Type* is set to **Draftsman Document Template**.

        iv) Expand the Advanced area and Check that the folder is correct ...\ `Draftsman Templates\Document Templates`.

    d) Select **OK** to create the document. The document is automatically removed from your project window.

41. Open *Explorer* panel with **K»R** and check the branch *Managed Content - Templates - Draftsman Templates – Document Templates*. You will find your own template, and templates from the other attendees in that branch.

> Hint: Similar to the Steps used to update a Fabrication Drawing, you can Create and Update an Assembly Drawing, or any other document you need.

6.3 Using your Custom Template in a Design

Next, you will add a Draftsman document to a Project, using the created template. Additionally, you will learn how additional elements can be added to the documentation.

42. Close all existing projects and documents.

Next, you will create a Copy of the default Project `Kame FMU`.

43. Select **File » Open Project...** to open the *Open Project* dialog.

44. Enable the folder view button 🗗.

45. Navigate to the predefined Training Project Kame FMU `(Top\Projects\Default Sample Projects \Kame_FMU)`.

46. Select **Open Project as Copy...** Open Project As Copy... .

47. In the new dialog *Create Project Copy:*

    a) Add your name to the project name: `Kame_FMU - [Your Name]`.

    b) Add a description: `Kame_FMU - [Your Name]`.

    c) Open the *Advanced* section.

    d) Select the **Ellipsis Button** ⋯ from the *Folder* configuration to open the *Choose Folder* dialog.

        i) Select the folder with your name: `Project\For Attendees\[Your name]`.

        ii) Select **OK**.

    e) Change the **Local Storage** path if needed.

    f) Select **OK** to create the copy.

48. Wait until Altium Designer creates the copy of the project and opened the Project for you in the *Projects* panel. This may take up to 1 minute.

Hint: For details how to copy the predefined training project, see module *03 Getting started - Opening a Project*.

49. From the *Projects* panel, right-click on the project and select **Add New to Project » Draftsman Document**.

    a) From the *New Document* window, select the `Fabrication Drawing - [Your Name]` template that we just created, as shown in Figure 13.

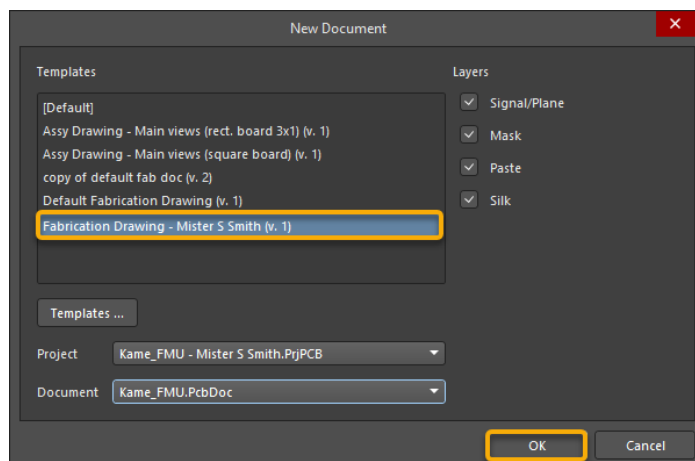   b) Click **OK**. As a result, the new Draftsman document will open.

Figure 13. New Draftsman Document using the Custom Fabrication Template

> Hint: If you don't see your template in this list, you may have saved it in the wrong location, or with wrong Name or Type. This window will only show templates from the Draftsman Document Template branch.

50. When the Draftsman document opens, you'll notice that the information from the template has been populated in your Draftsman document, as it pulls information from the project PCB document. You can now review and update it.
If not, all information is updated upon executing the command **Tools » Import Changes From [Board Name]**.

> Hint: You will also execute this command if you modify the PCB during a redesign step and want to refresh the Draftsman document with the latest modifications done in the PCB.

A template offers a good start point for the documentation. However, some adjustments are still necessary, for example, scaling or positioning. Moreover, you can still update the Draftsman document, if needed. You can add additional Views, place Dimensions, Detail Views, and so on.

51. A scaling of 4:1 for Page 1 is better for the Drill drawing view. To change the scaling:
    a) Select the Drill Drawing view.
    b) Open the *Properties* panel and select from the drop-down the 4:1 scale.

52. Scrolling down to Sheet 2 and follow the steps below:
    a) Reposition the Layer Stack table.
    b) Change the scaling for the Isometric View to 4:1.
    c) Reposition the Board Isometric View.

53. Scrolling down to Sheet 3, change the Scaling for the Board Fabrication View to 4:1.

54. Scrolling down to the empty Sheet 4, you can add a realistic view by right-clicking on the sheet and selecting **Place » Additional Views » Board Realistic View**.

55. Place the *Board realistic View* in the center if the page as shown in Figure 14.
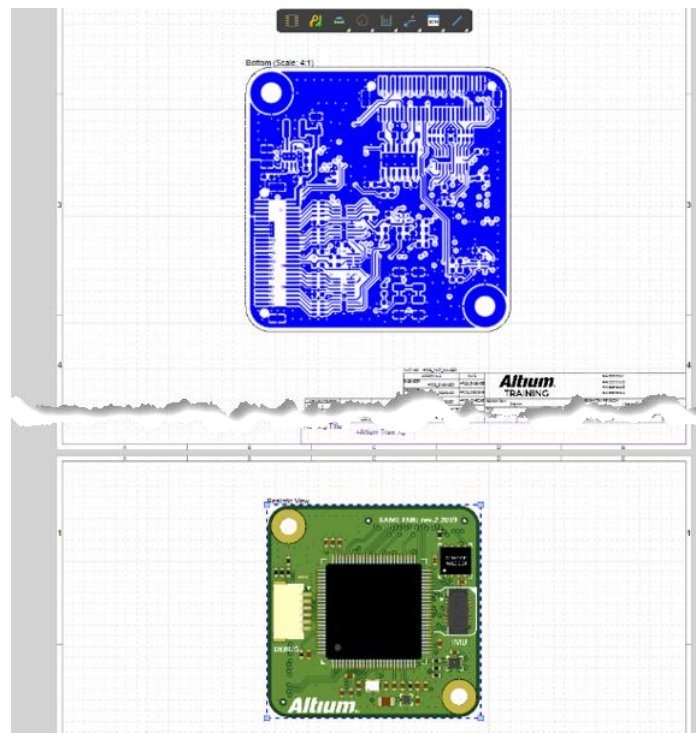

Figure 14. Fabrication View Page 3 and Realistic View Page 4

7 Using Parameter in a Template and Project

56. While creating a sheet template, you placed a string =Altium Training, see Step 19.

57. The string =Altium Training is a Special String, meaning that the system can replace the Special String with a proper Value, if available.

The selected project doesn't have the required Special String and its alue. You'll need to update the project by adding the Special String and its corresponding Value.

> Hint: The best solution for adding special strings for a Project is to create a project template that includes all the Special Strings you need. In the Module **Template – 2 Project Template**, you will learn how to create and add a template to the workspace.
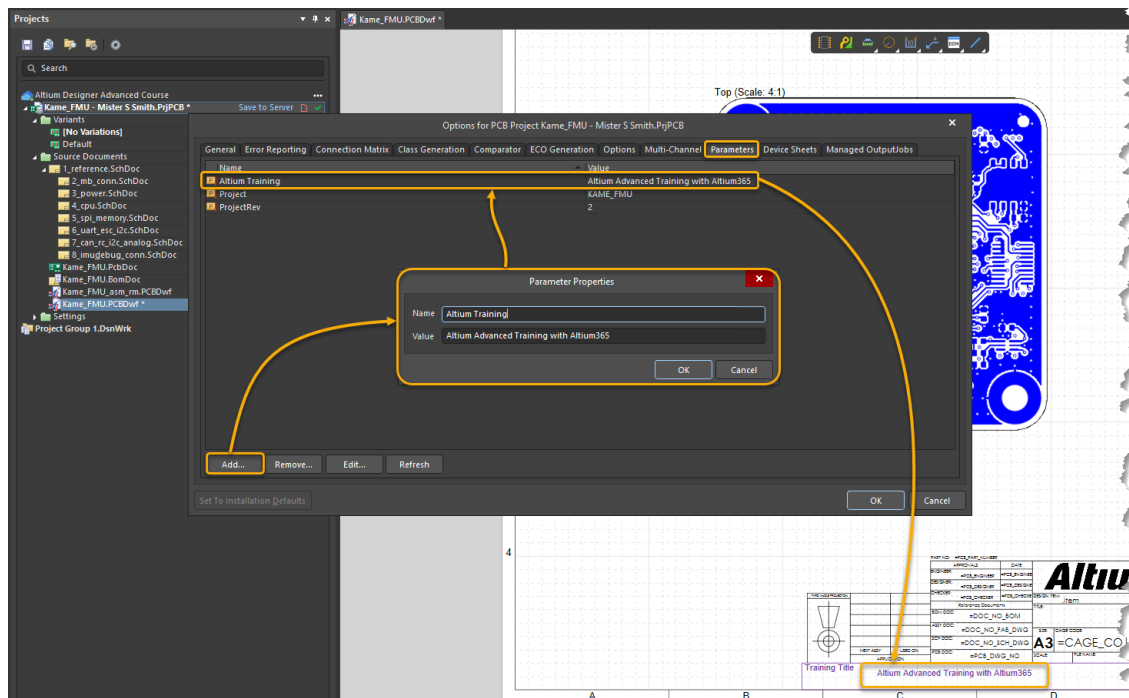

Figure 15. Project Options with Parameter View

58. By using Figure 15 as a reference:

   a) Open the Project Options by selecting **Project » Project Options…** or **C»O**.

   b) Select the tab *Parameters*.

   c) Select **Add…** to add the following information:

      i) Parameter Name: Altium Training

      ii) Parameter Value: Altium Advanced Training with Altium365

> Caution: The parameter name is case sensitive and should match exactly with the name provided in the instruction.
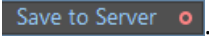
   d) Select **OK** to close the *Add* dialog.

   e) Select **OK** to close the Options for *Project* dialog**.**

59. By adding the project parameter and a value, the Draftsman document can now display the value added to the parameter.

60. Save all documents using **File » Save All**.

61. Save the modifications to the server:

    a) In the *Projects* panel, next to the Project name you find the command **Save to Server** `Save to Server ⊙`.

    b) Select **Save to Server**.

    c) In the dialog *Save [Project Name]:*

        i) Add the comment `Template 1 – Draftsman Templates – [Add Your Name] – Finished`.

        ii) Select **OK**.

62. When ready, close the project and any open documents, **Window » Close All**.

Congratulations on completing the Module!

Template 1 - Draftsman Templates

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