SysML Hands-On Exercises

Exercise 3.1
SysML Packages and Package Diagrams

MagicDraw

August 2018

OBJECTIVES

The objectives of this exercise are to

- Create a new MagicDraw project
- Apply the ParaMagic profile
- Import UAV Library model library
- Create a package structure
- Display the package structure in a package diagram

This process is intended to represent the initial step in creating a SysML system model for the UAV system.

PREPARATION

1. This exercise assumes the student has Cameo System Modeler 19.0 (or MagicDraw 19.0 with SysML plug-in) installed correctly on his or her machine with a valid license for use.
2. The student should load the Part 3 course materials onto the computer, including specifically Exercise 3.1 Final UAV.mdzip.
3. The student should view the video Introduction to SysML Part 3 Exercise 3.1 in its entirety before attempting the exercise.
4. At this stage, we also recommend installing the ParaMagic plug-in for MagicDraw (ParaMagic 18.0 or later). We will use this in step 1.1.5 of this exercise

NOTES AND CAUTIONS

We recommend that the student watch the video demonstration of this exercise in its entirety before beginning their own work. The video includes background and explanatory material that is not repeated in the written instructions.

We also recommend that the student read the material carefully. The most common source of error is confusion between blocks, packages and diagrams, some of which have similar names. When the student is not sure what an element is, either in the browser or in a diagram, select that element and look in the Properties tab for the gray label that identifies the element type. Also, be careful in reading the instructions in realizing when an instruction should be carried out in the browser or in a diagram.

EXERCISE

3.1.1 Start Cameo System Modeler

3.1.2 Create a new MagicDraw Project

- Left-click File in menu bar
- Select New Project
- In the New Project window (Figure 1), select SysML Project under Systems Engineering in the left section. Depending on whether Cameo System Modeler or MagicDraw is installed, other different options may appear.
- Enter Exercise 3.1 Starter UAV in the Name text box
- For Project Location, browse to the Part 3 folder (or any other desired location).
- Click OK.

3.1.3 Import ParaMagic Profile

This step is optional. It will only work if the ParaMagic plug-in for MagicDraw has been installed. We have included it here because installing additional profiles is a common step in creating a new project. If the ParaMagic profile is not available, go on to step **Error! Reference source not found.**.

- In the menu bar, select File → Use Project → Use Local Project…
- In the Use Project window (Figure 2), under Paths to used projects list, select <install.root>/profiles and then select ParaMagic Profile. Click Next.
- In the next window (Figure 3), check Read-Only under Accessibility and Always Load under Load Mode. Click Finish.
- MagicDraw may ask if you wish to show auxiliary resources in the Containment Browser. Click yes or no, as desired.

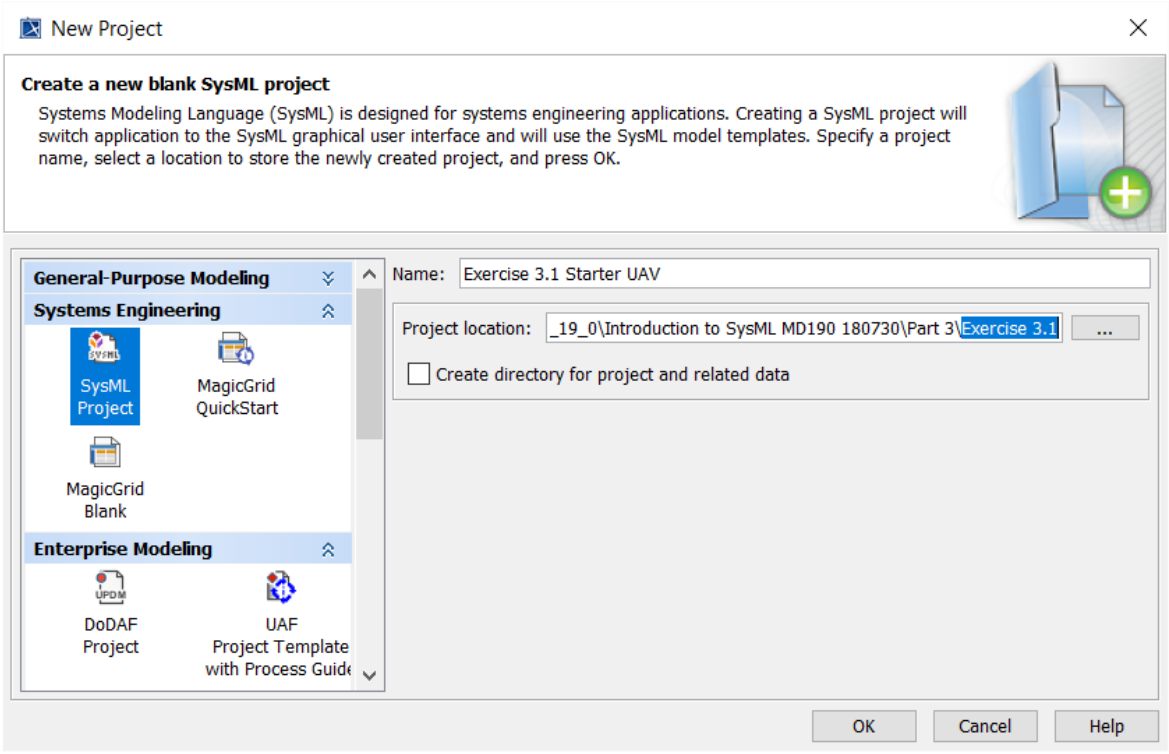

Figure 1 Creating a new MagicDraw SysML Project

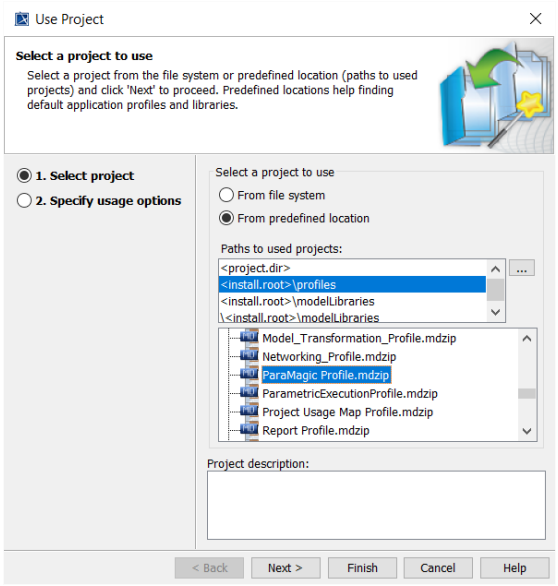

Figure 2 Installing ParaMagic Profile, Step 1

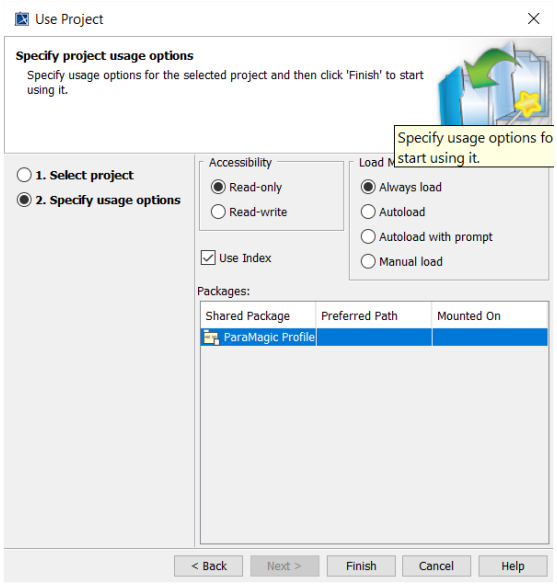

Figure 3 Installing ParaMagic Profile, Step 2

3.1.4 **Import Model Library**

- In the menu bar, select File → Use Project → Use Local Project…
- In the Use Project window, under Paths to used projects, select <project.dir> and then select **UAV Library**. Click Next.

- In the next window, check Read-Only under Accessibility and Always Load under Load Mode. Click Finish.
- MagicDraw may ask if you wish to show auxiliary resources in the Containment Browser. Click yes or no, as desired.
- The browser should appear similar to Figure 4 if auxiliary resources are being shown. To show auxiliary resources, click the options (gear) icon in the upper right corner and check Show Auxiliary Resources.

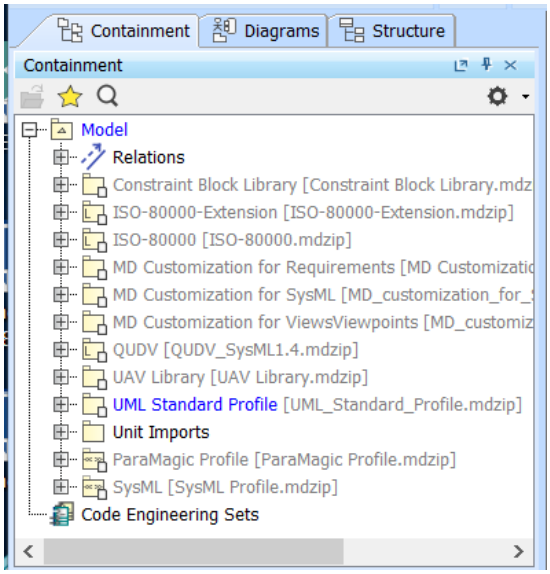

Figure 4 Browser contents with ParaMagic profile and UAV Model Library

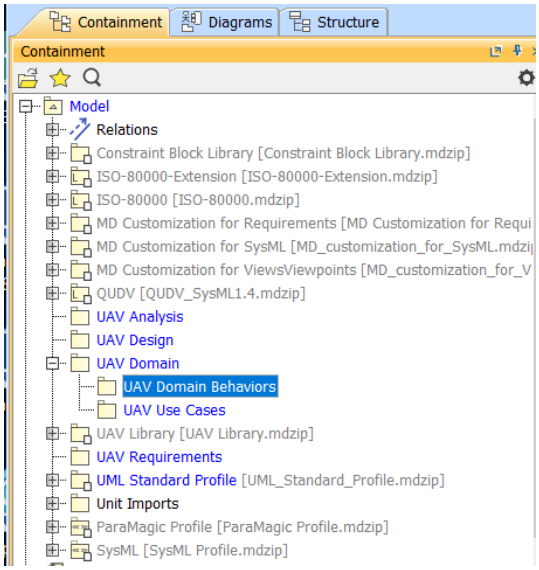

Figure 5 Browser contents with final package structure

3.1.5 Create Package Structure

- Right-click **Model** in the Containment Browser and choose Create Element → Package.
- Name the package **UAV Analysis**.
- Repeat the process for three more packages: **UAV Requirements**, **UAV Design** and **UAV Domain**.
- Right-click **UAV Domain** in the Containment Browser and choose Create Element → Package.
- Name the package **UAV Use Cases**.
- Repeat the process for another package, **UAV Domain Behaviors**.
- The Containment Browser should appear as in Figure 5.

3.1.6 Create a Package Diagram

- Right-click **Model** in the Containment Browser and choose Create Diagram → SysML Package Diagram.
- Name the diagram **UAV Model PKG**.
- Drag the following packages from the browser to the new diagram: **UAV Analysis**, **UAV Requirements**, **UAV Design**, **UAV Domain**, and **UAV Model Library**.

- Right-click the **UAV Domain** package in the diagram and choose Display → Display Inner Elements.
- In the Select Inner Elements window, make sure all items are checked and click OK
- Repeat this step for the **UAV Library** package.
- Rearrange and re-size the packages as shown in Figure 6.
- Save and close the project.

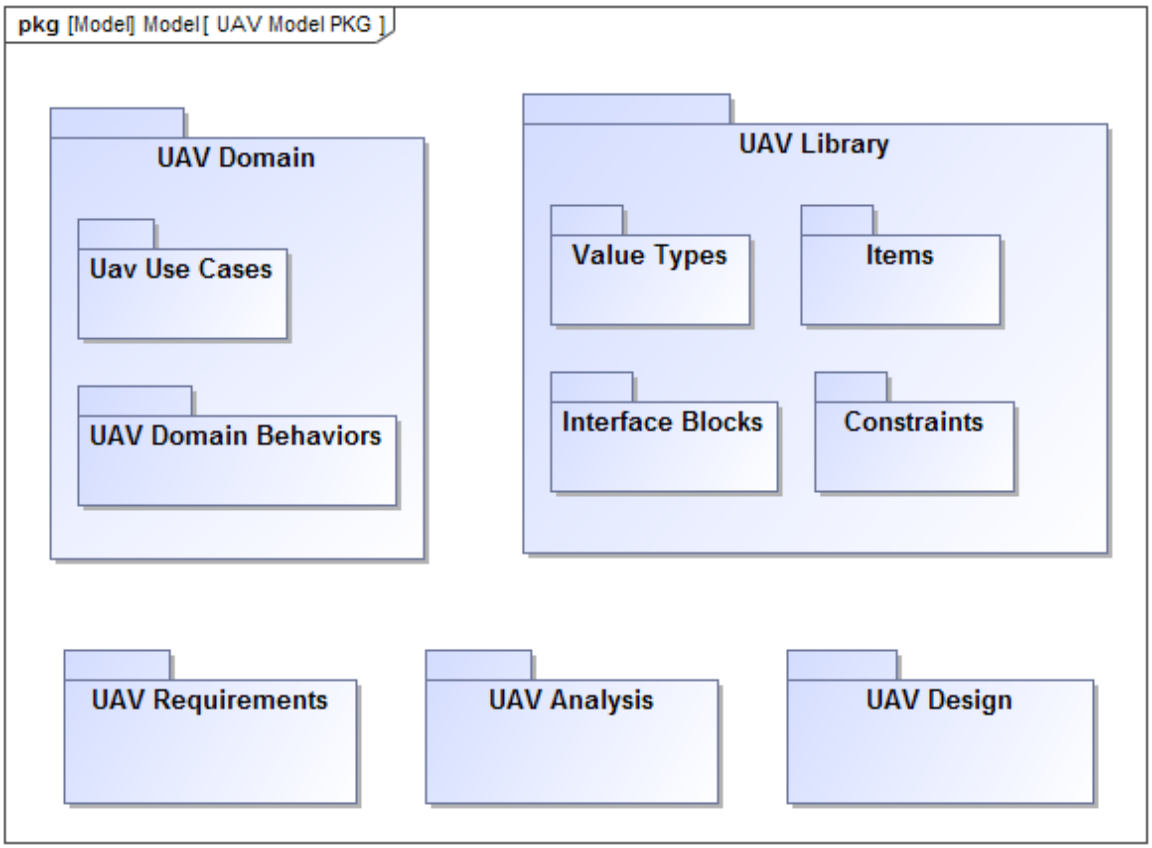

Figure 6 Final UAV Model PKG diagram