SysML Hands-On Exercises

Exercise 7.1
SysML Internal Block Diagrams

MagicDraw

August 2018

OBJECTIVES

The objective of this exercise is to

- Create an Internal Block Diagram with Connectors and Item Flows

This process is intended to represent informal modeling of connections at the domain level early during system development.

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 7 course materials onto the computer, specifically Exercise 7.1 Starter UAV.mdzip and Exercise 7.1 Final UAV.mdzip.
3. The student should view the video Introduction to SysML Part 7 Exercise 7.1 in its entirety before attempting the 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

7.1.1 Start Cameo System Modeler

7.1.2 Open Exercise 7.1 Starter UAV.mdzip

7.1.3 Create an Internal Block Diagram

- Right-click on the **Unmanned Aerial System Domain** block inside the **UAV Domain** package in the browser.
- Select Create Diagram → SysML Internal Block Diagram.
- In the Select Parts window, check the part properties as shown in Figure 1.
- Hit OK.
- Name the diagram **Domain IBD**.
- Rearrange the part properties in the diagram so that it appears similar to Figure 2.

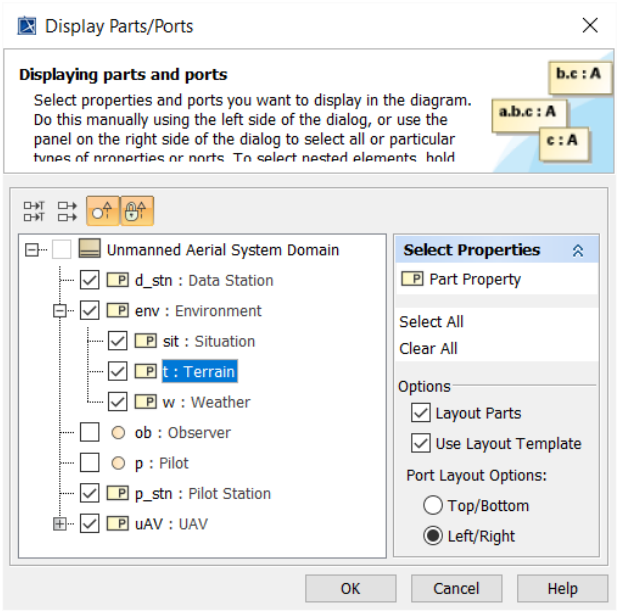

Figure 1 Select Parts for UAV Mass PAR

- Select **uAV:UAV** in the diagram so that the floating toolbar appears. Select the Connector icon (a bare line) and drag the end to **d_stn:Data Station**. Click to set.
- Repeat this process for five additional connectors as shown in Figure 3. In this diagram, the Symbol Properties: Path Style was set to Rectilinear for the two connectors between **uAV** and **p_stn**

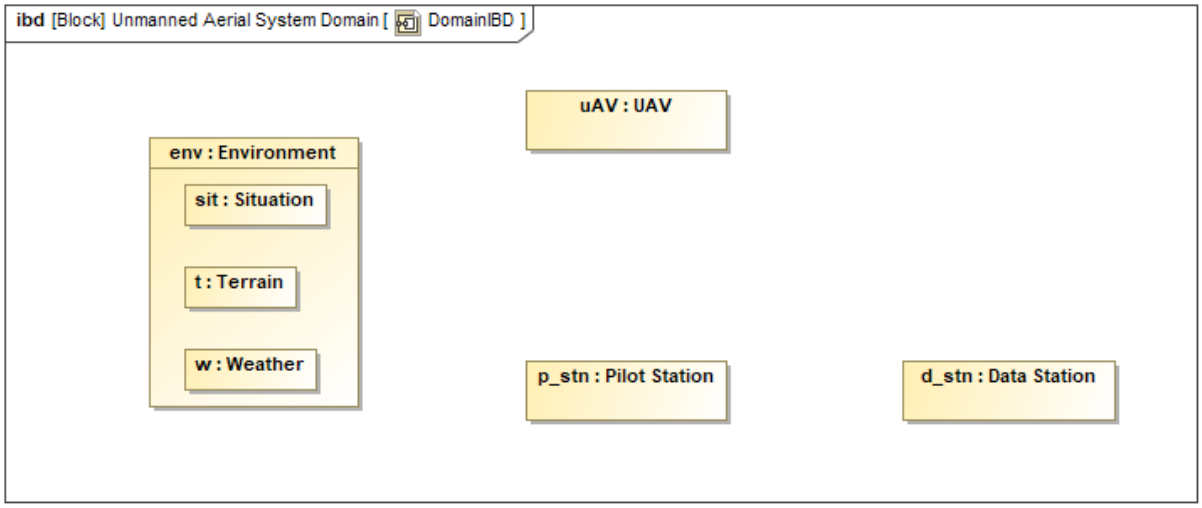

Figure 2 Domain IBD diagram, first stage

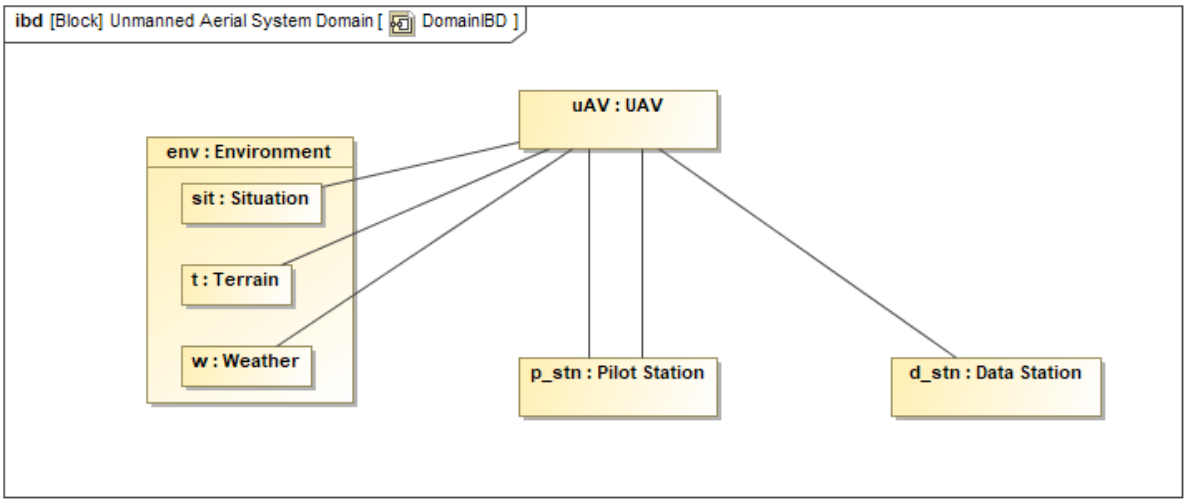

Figure 3 Domain IBD diagram, second stage

7.1.4 **Create Item Flows**

- Expand the **UAV Library::Items** package to show contents as in Figure 4.
- Drag the **Sensor Data** block from the Containment Browser on top of the connector between **uAV:UAV** and **w:Weather** in the diagram, so that the connector highlights in blue. Click to set.
- In the Item Flow/Item Property window (Figure 5), select the Direction, “From w to uAV” from the pull-down list.
- Repeat this process to put item flows on the remaining connectors so that the diagram appears similar to Figure 6.

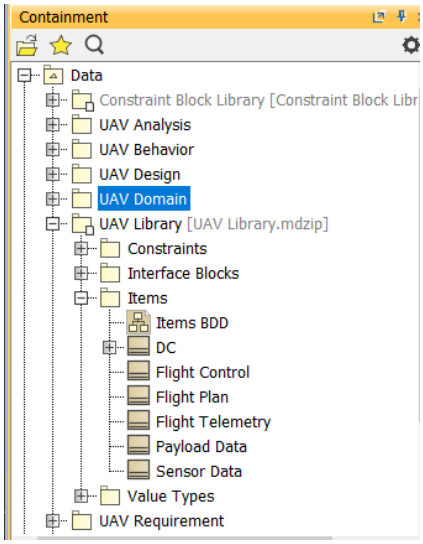

Figure 4 Items Library

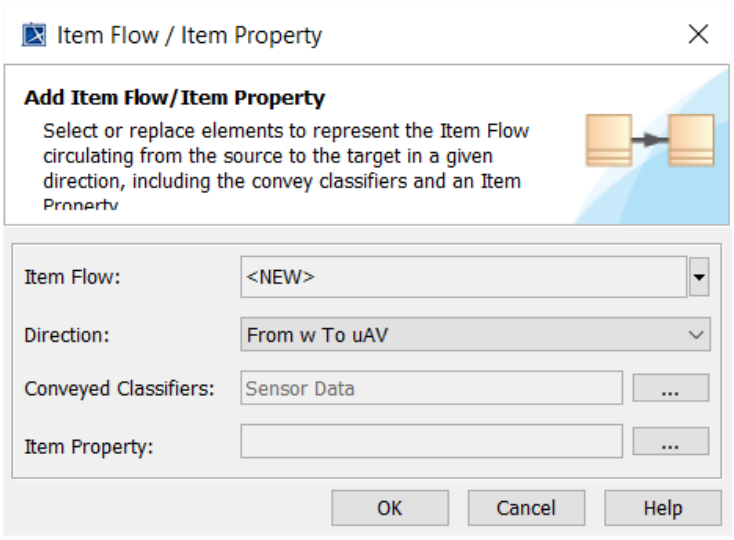

Figure 5 Item Flow/Item Property window

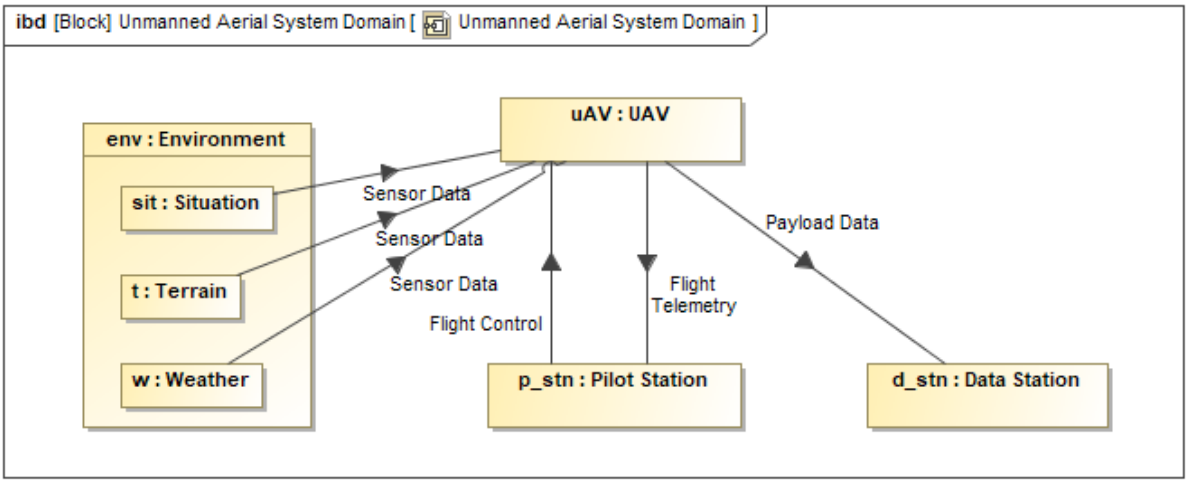

Figure 6 Domain IBD diagram, final stage