Installing the Adventium FUSED META-Language Demonstrations

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This release includes all of the free tools needed to install and run the demos on a Windows platform[1]. These tools have been preconfigured as much as possible, but you will need to perform some installation steps on your machine. If you have any problems, please send email to one or more of the above addresses.

The only two commercial tools used are Excel (hopefully already installed on your machine) and Creo (the demo includes copies of the analysis files generated using this tool, so unless you want to edit the solid model you can still run the demos without Creo). Also, although Trade Space Visualizer is free, you will need to register with Penn State University and receive a license key for your machine.

To install the demonstration, please perform the following steps. (In a trial run on a slow Windows XP laptop, the elapsed time spent nursemaiding all copies and installs and two test cases was about two hours.)

1. Move or copy the demo folder to a location on your machine that does NOT have any spaces or other unusual characters in the path name.
2. Following the directions on the web site http://www.atsv.psu.edu/download.html, send email to gms158@psu.edu indicating that you accept the Trade Space Visualizer License and asking for a license key. (You can find the name of your computer by going to the Windows Control Panel, selecting System and Security, and selecting System to view basic information about your computer.) You will receive a license file by return email that should be placed in the Installed/TradeSpaceVisualizer_v4.8.2beta/lic folder.
3. There are a set of Windows install files in the ToBeInstalled folder. Install all of these using the default settings except for cygwinSetup. You will need to be connected to the internet to install cygwin. When cygwinSetup executes, click on Next until you reach the Select Packages window (you may have to explicitly select a download site in the Choose a Download Site window before reaching the Select Packages window; any should work). In the Search box, enter m4. The Interpreters category should appear in the list of tool categories. Click on the + sign to open that category and then click on the Bin? Box to have the m4 macro processor package included in your cygwin install.
4. Restart your computer to make sure all installs are entirely completed.

[1] Most but not all of these tools are available for MacOS and Linux as well as Windows platforms. Most but not all of the demos could also be run on MacOS or Linux platforms. Windows is the only platform on which all demos have been exercised end-to-end, so that is what the current demo runs on. Please contact us for assistance if you want to try and install the tools on another platform and run some subset of the demos.

5. Navigate into the folder Installed/Topcased-4.3.0 and launch the eclipse application. (You may want to create a shortcut to this application in a convenient place, such as your desktop.)
    a. When the Select a workspace window appears, use the Browse… button to navigate to the DemoWorkspace folder and press OK. (Do not necessarily select the path shown, as this is the path on the machine on which the demo image was created.)
    b. If at any time you see an eclipse message that a file or editor window is out of sync with the file system, select the project in the eclipse Navigator that contains the out-of-sync file and then select Refresh from the eclipse File pull-down menu. You may need to do this in the next few steps and to make files generated by the FUSED demo scripts appear in the eclipse Navigator window.
    c. If the only project that appears in the Navigator window on the left is Plugin_Resources, go to the "Files" menu pull-down, select Import…, select General -> Existing Projects into Workspace, use the Browse button at the top to navigate to the DemoWorkspace folder, select it as the root directory, and then add all those project folders. (This shouldn't be necessary, but just in case…)
    d. Using the eclipse Navigator window, go to fused_lib and then double-click the install.properties file to open that file in an editor window. Make sure all of these properties point to the install folders of the various toolsets on your machine. (You will probably need to edit the first three. The rest of them are default install locations for the other toolsets.) Be sure to use the Save button on the eclipse Files pull-down menu to save your changes.
    e. In the eclipse toolbar menu along the top, select Projects and make sure Build Automatically is unchecked. (The TOPCASED/OSATE AADL builder occasionally gets itself and eclipse in a confused state if allowed to run fully automatically.)

Now test the installation using the following steps to execute two demo FUSED model composition specifications. These two specifications will exercise almost all the installed tools. (See the companion white paper "Running the Adventium FUSED META-Language Demonstration Models and Scenarios" for a more detailed overview of the demonstrations.)

Using the eclipse Navigator window, navigate to the workflow/models folder. Double-click on the first file, abstract_tradeoffs.fused, to open it in the FUSED composition specification graphical editor. Now click on the red swirly button in the eclipse toolbar along the top (when you hover over this button for a few seconds, the text "FUSED command to auto-generate all composition and wrapper scripts" should appear). After a second, a pop-up should appear telling you that it generated some wrapper models and scripts (if both numbers are 0, call us; this indicates eclipse has become confused about its plugin configurations). Select Yes to run the generated composition specification.

1. An eclipse console window should appear and show a log of the execution sequence.
2. After a few seconds, an Excel spreadsheet should open.
3. After a few more seconds, Trade Space Visualizer should open.

4. After a few more seconds, a small Trade Space Visualizer toolbar window will open, followed by a window labeled “Engine Frame: Excel Application.” Press the Start button at the bottom of the engine frame window. You should see numbers changing in the Excel spreadsheet.
5. In the Trade Space Visualizer toolbar window, use the Plot pull-down menu to select a desired way to display the collected set of trade space sample points.
6. Close all Trade Space Visualizer windows and the Excel spreadsheet to end the demo (eclipse does not allow multiple demos to be running at the same time, so you must always end a demo before starting another). Changes will have been made to the spreadsheet, but you do not need to save these changes.

In the eclipse Navigator window, double-click on the solid_aero_and_dynamics.fused model. Press the red swirly FUSED button to generate scripts for this. After selecting Yes to run the generated script, select No in the second pop-up and Yes in the third (to use only the short wing design configuration for now). This demo will take several minutes to run the first time because it must perform AVL CFD analyses at a set of trim points (subsequent runs will be faster because the FUSED scripts know how to cache analysis results). After several minutes, a Modelica plot window should open showing a simulation trace of roll, pitch, and yaw. Close this window to end the demo.