Component Authoring Tool

User Tutorial for the Component Authoring Tool

May 2, 2014

1.0 Purpose

The Component Authoring Tool (CAT) is a collection of features designed to aid users in creating and editing components. The three main categories of features are listed below.

- **Construct:** These features help the user to created new components or add new objects to existing components. Importing objects from other tools such as Creo and Modelica make CyPhy a more robust tool.
- **Share:** These features allow users to export or share work done in CyPHy with other tools.
- **Publish:** These features are to help users push finished components to external locations such as websites.

The CAT is a dynamic structure allowing new features to be added in the future, and the dialog buttons will sort all features and keep the categories grouped together. So all the construct features will always appear first in the list.

2.0 Procedures

2.1 Adding a Modelica component

2.1.1 Assumptions/Conditions

This feature allows users to create Modelica Standard Library (MSL) components directly in CyPhy by accessing the MSL library. This feature requires you to have OpenModelica installed on your computer.

2.1.2 Instructions

Create a new component model by right clicking a component folder in the GME browser and click **Insert Model > Component**. A new model called "NewComponent" should now show up in the folder. Rename this component by double-clicking "NewComponent". For this example, rename your component "Mass" seen in Figure 1.

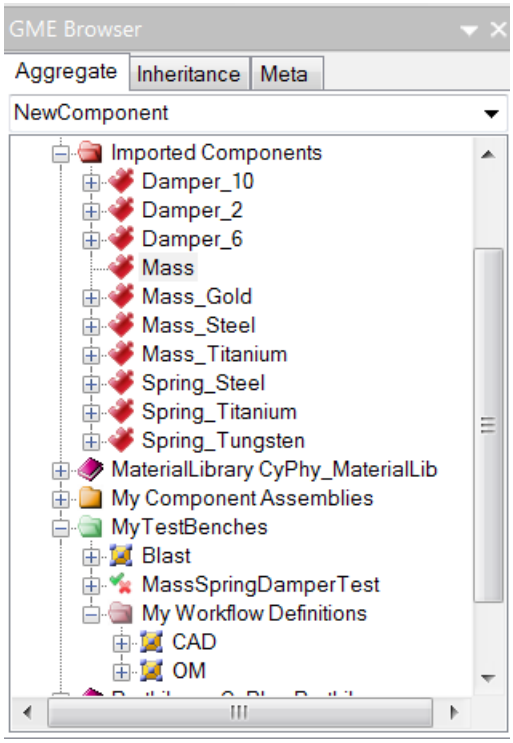

Figure 1: Creating a New Mass Component

Select the CyPhyComponentAuthoring button in the toolbar seen in Figure 2. A new window should open up.

Figure 2: CyPhy Component Authoring Icon in Toolbar

Click Add Modelica to open the Modelica Model Picker seen in Figure 3.

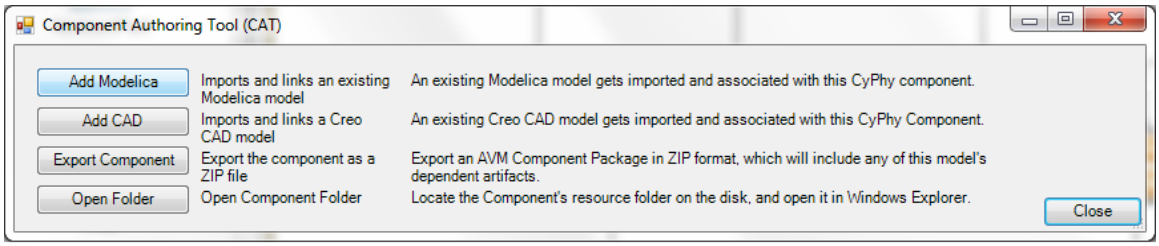

Figure 3: CAT Add Modelica

In the search for a model field, **type in "Mass" and click the Load Modelica Standard Library button** to bring all models with word "Mass" from the Modelica Standard Library to appear. You can also click Load Modelica Standard Library while the search bar is blank. This will bring up the entire Modelica Standard Library to scroll through and choose any Modelica model.

> **NOTE:**
> This search field is case-sensitive.

Select the model titled "Modelica.Mechanics.Translational.Components.Mass" as seen in Figure 4.

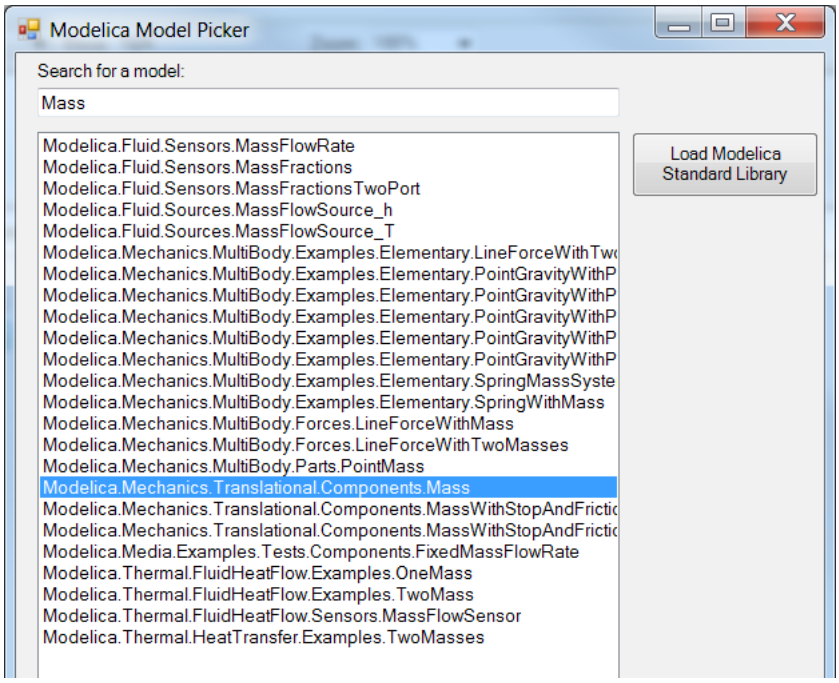

Figure 4: Selecting the correct mass model

Close the CAT window and the Mass from the Modelica Standard Library will now appear in the editing area as seen in Figure 5.

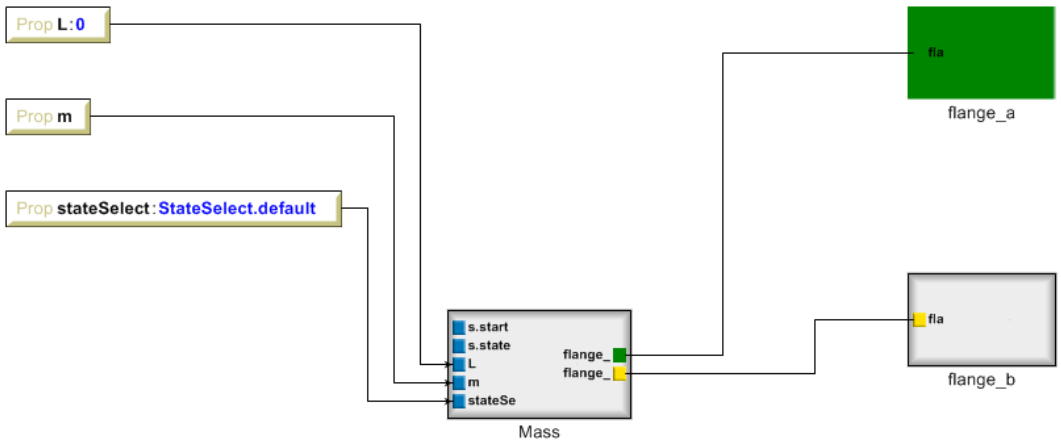

Figure 5: The Mass in GME Editing Area

2.2 Adding a CAD Model

This feature is used to import CAD objects into a component.

2.2.1 Assumptions/Conditions

- Useful for adding a CAD part or assembly that already exists on the disk drive.
- The CAT tool will copy the necessary file(s) into the CyPhy component directory back-end structure.
- The part or assembly object will be converted from Creo format and imported into native CyPhy XML style
- Creo Parametric must be installed on the working machine.

2.2.2 Instructions

Open a component.

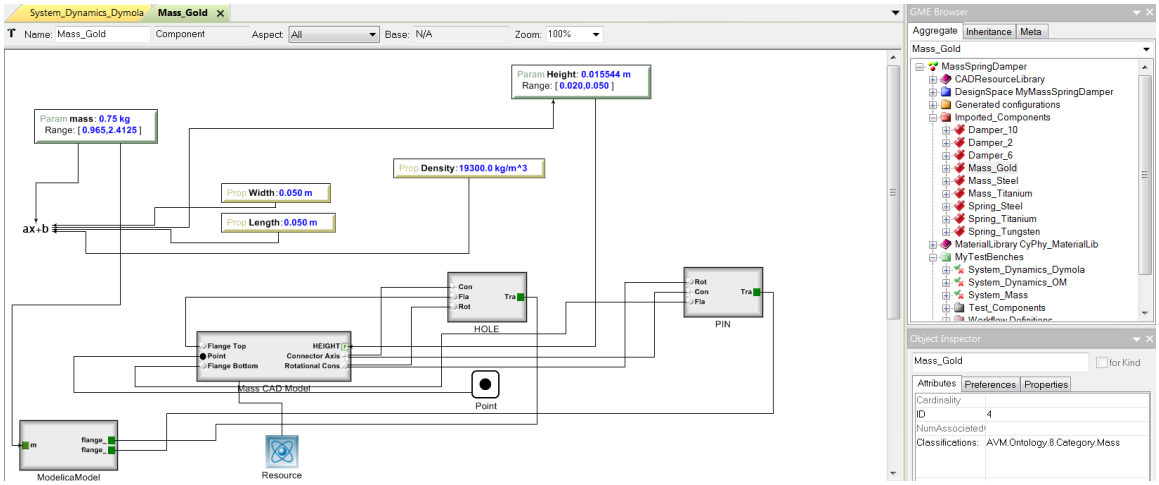

Figure 6

Click the CAT icon on the toolbar.

Figure 7

Click Add CAD.

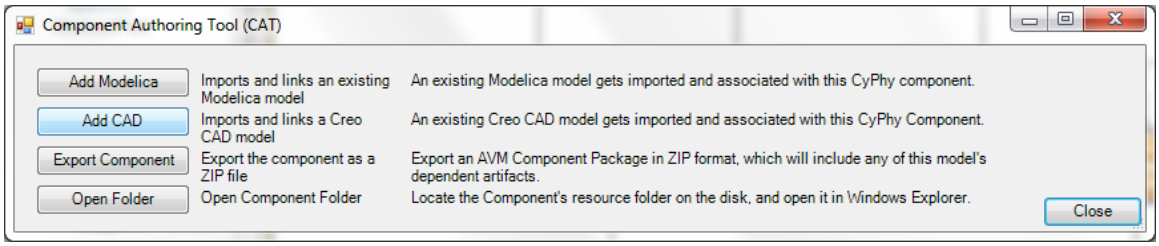

Figure 8

Go to the CAD Folder and select the desired part or assembly file.

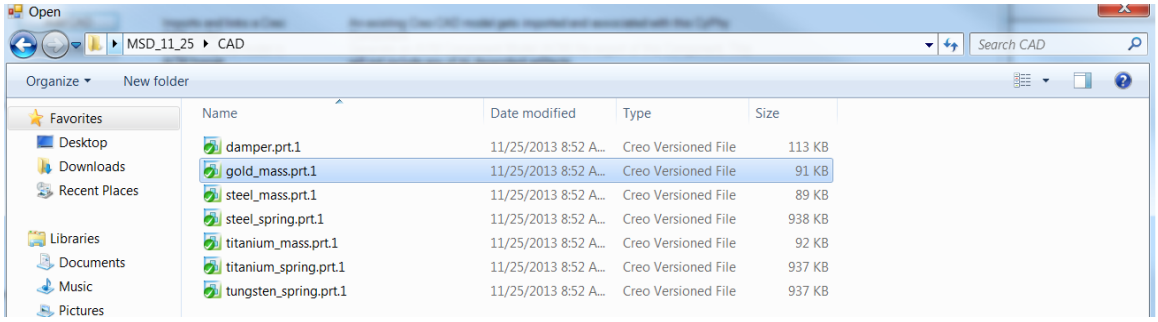

Figure 9

The following script should run. This converts the object into CyPhy readable XML format.

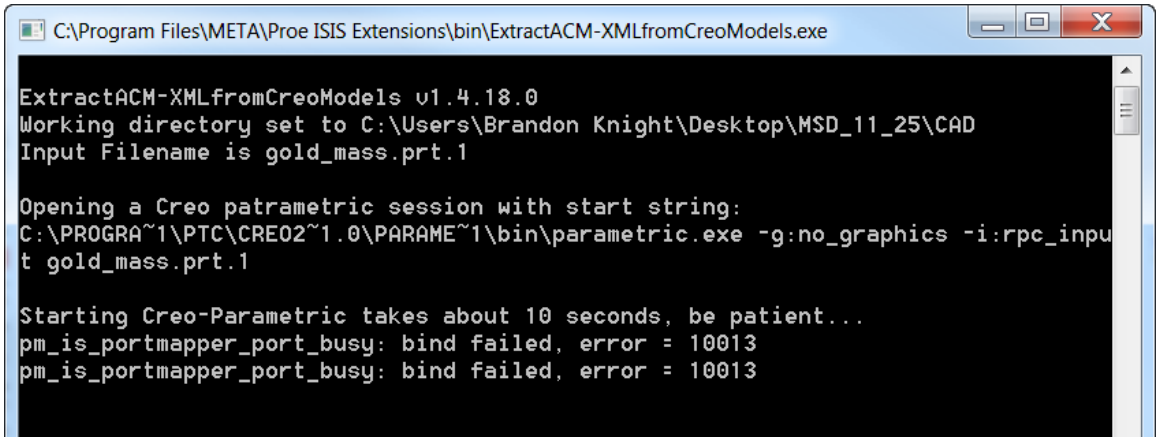

Figure 10

Hit close.

You should now see the following:

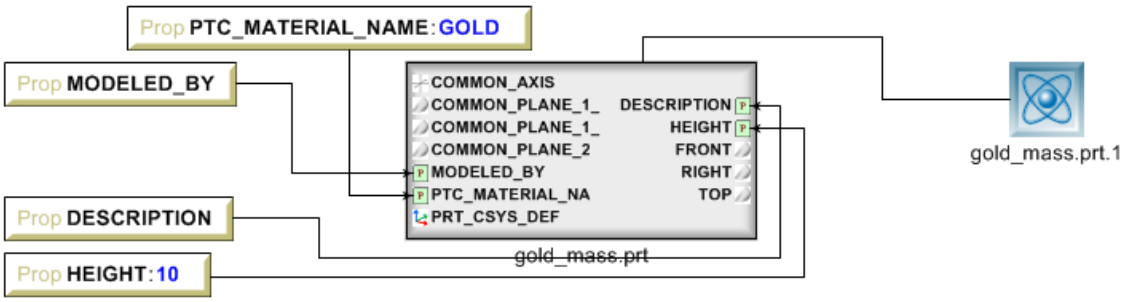

Figure 11

- The imported CAD model object now represents datums, coordinate systems, metrics, and parameters in CyPhy.
- Resource objects will be created for the represented files that are associated with the component package

2.3 Exporting a Component

This feature will export a component into a zip file in ACM format to share with other models or projects.

2.3.1 Assumptions/Conditions

- Call this feature from a component object
- A zip file is created containing an ACM file and all supporting resource files.

2.3.2 Instructions

Open a component.

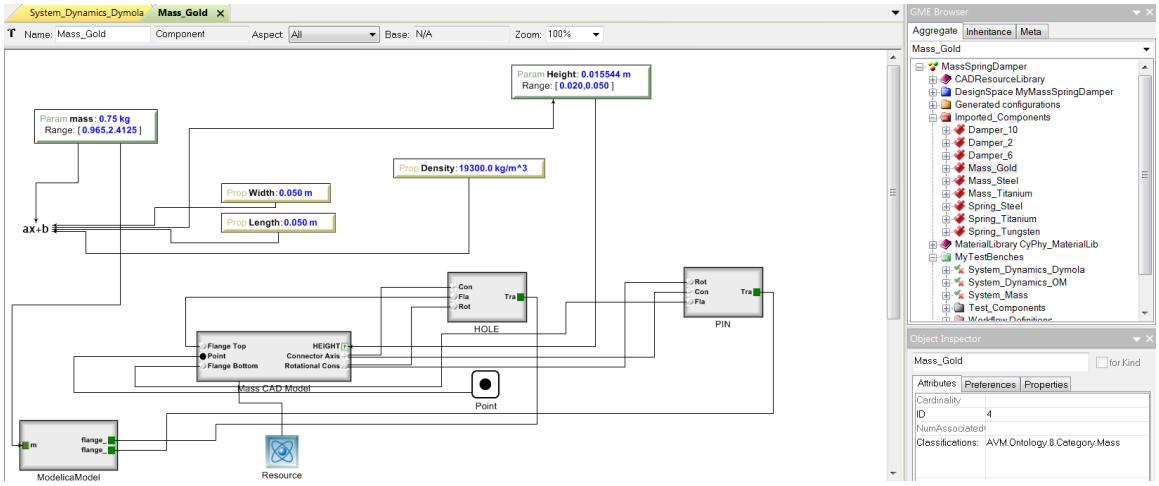

Figure 12

Click CAT icon.

Figure 13

Click Export Component.

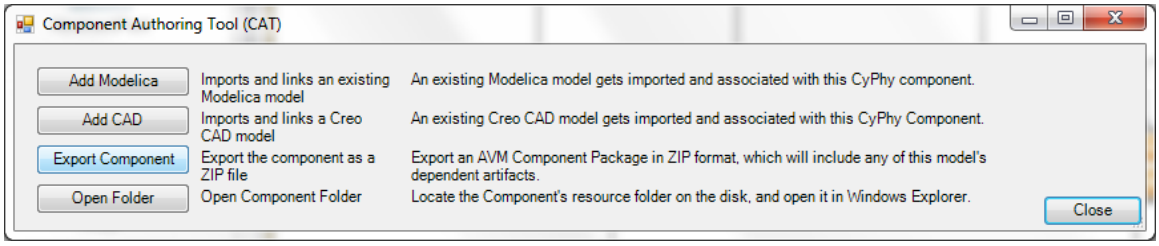

Figure 14

Select the Folder to export to.

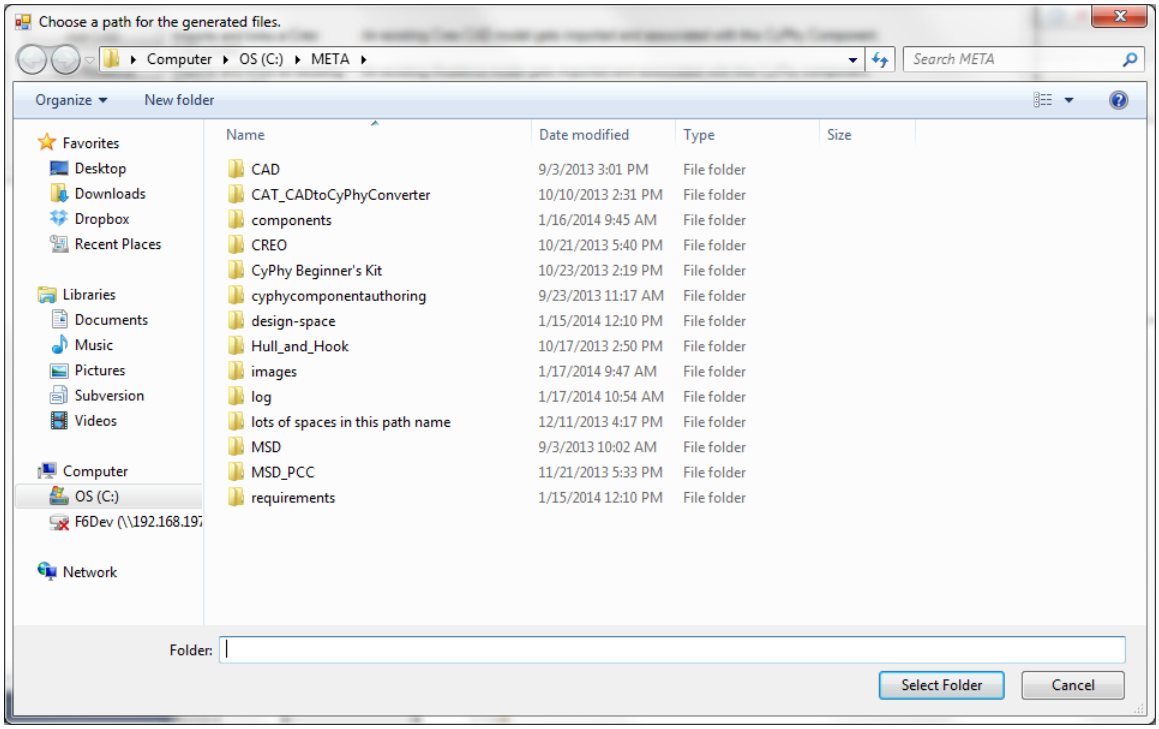

Figure 15

Hit close.
A zip file will be created in that folder containing the ACM file and the subfolder containing the source object files.

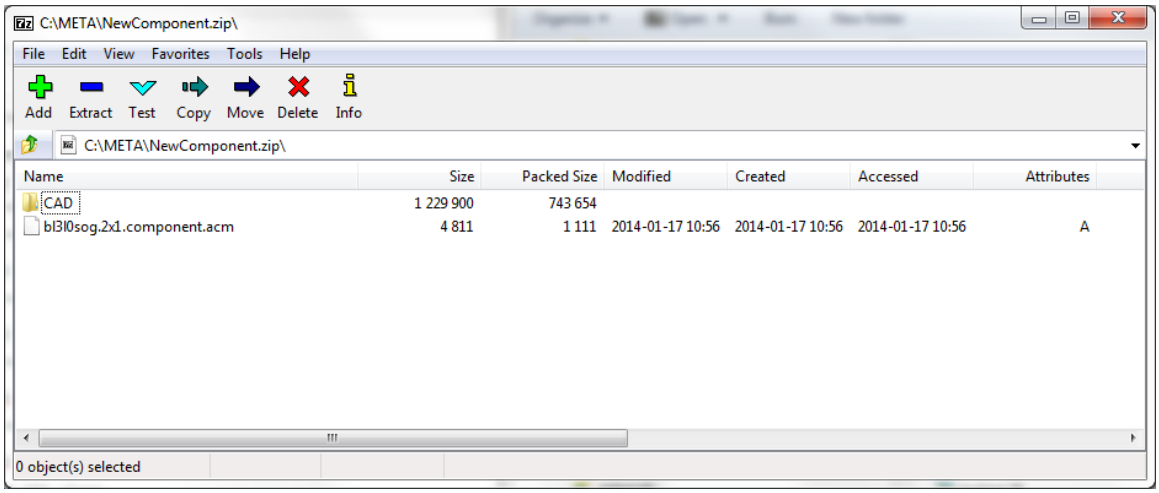

Figure 16

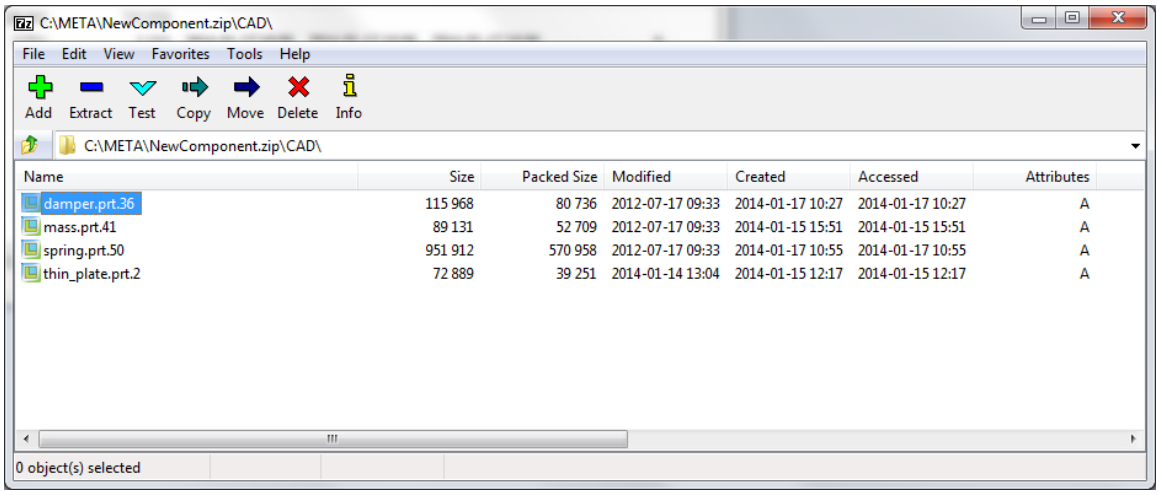

Figure 17

2.4 Opening a Folder

The feature is used to open a windows explorer box to view the back-end files for the given component.

2.4.1 Assumptions/Conditions

- Call this feature from a component object
- The Explorer Window opens in a new instance, CyPhy will not be blocked.

2.4.2 Instructions

Open a component.

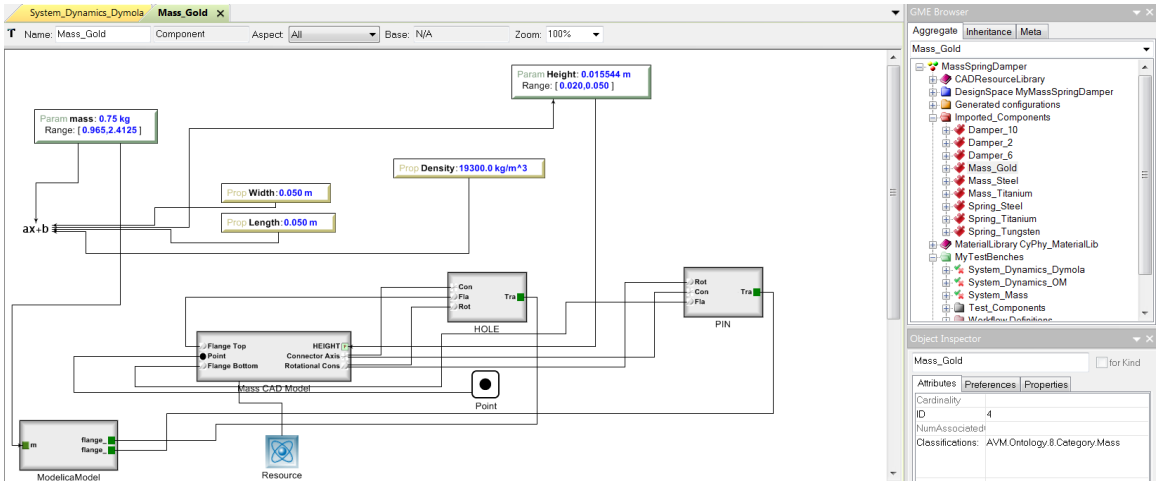

Figure 18

Click CAT icon.

Figure 19

Click Open Folder.

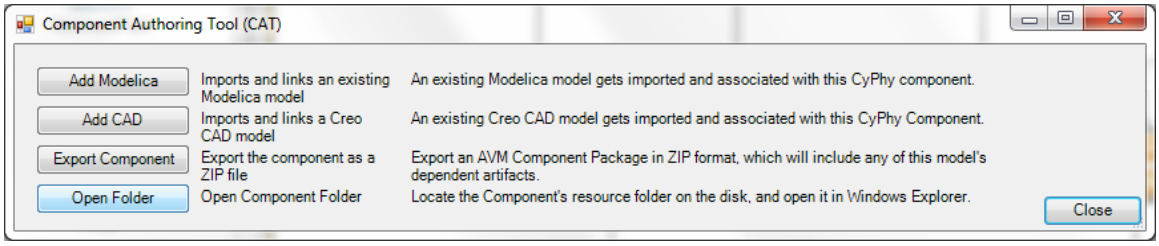

Figure 20

An Explorer window will open for that component.

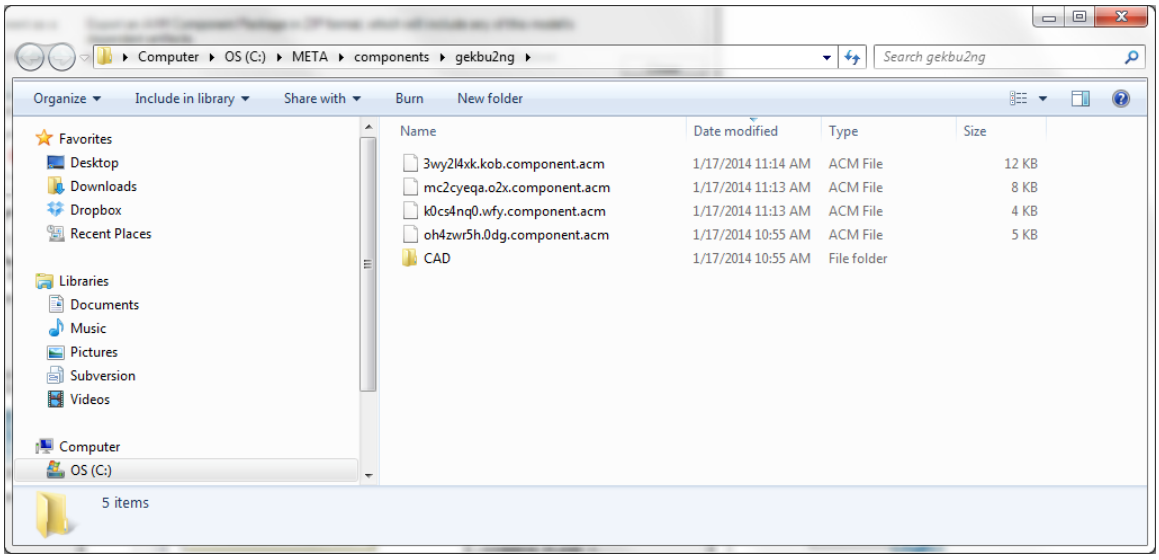

Figure 21