

# Beta 2 Resources Component Authoring Tool

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## Component Authoring Tool

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

- **Construct:** These features help the user to create 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.
- **Modify:** These features allow users to edit existing objects in existing components.
- **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.

## Component Authoring Tool: Adding a Modelica component

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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. 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.

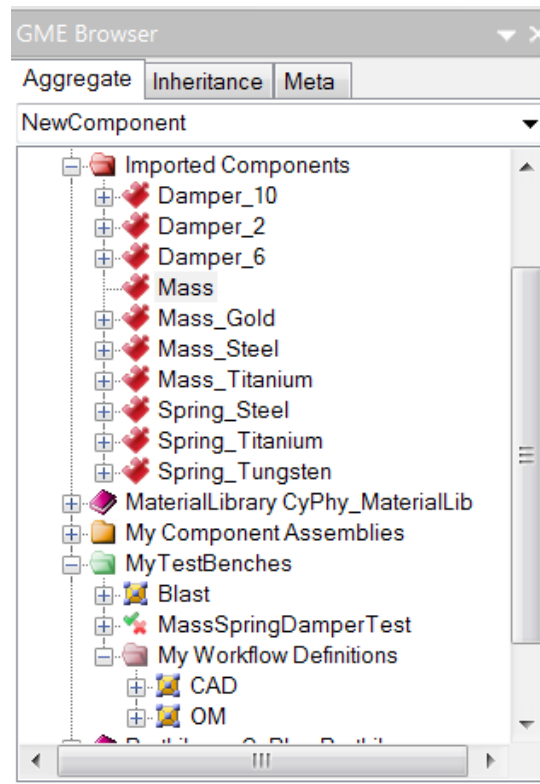


Figure 1: Creating a New Mass Component

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.

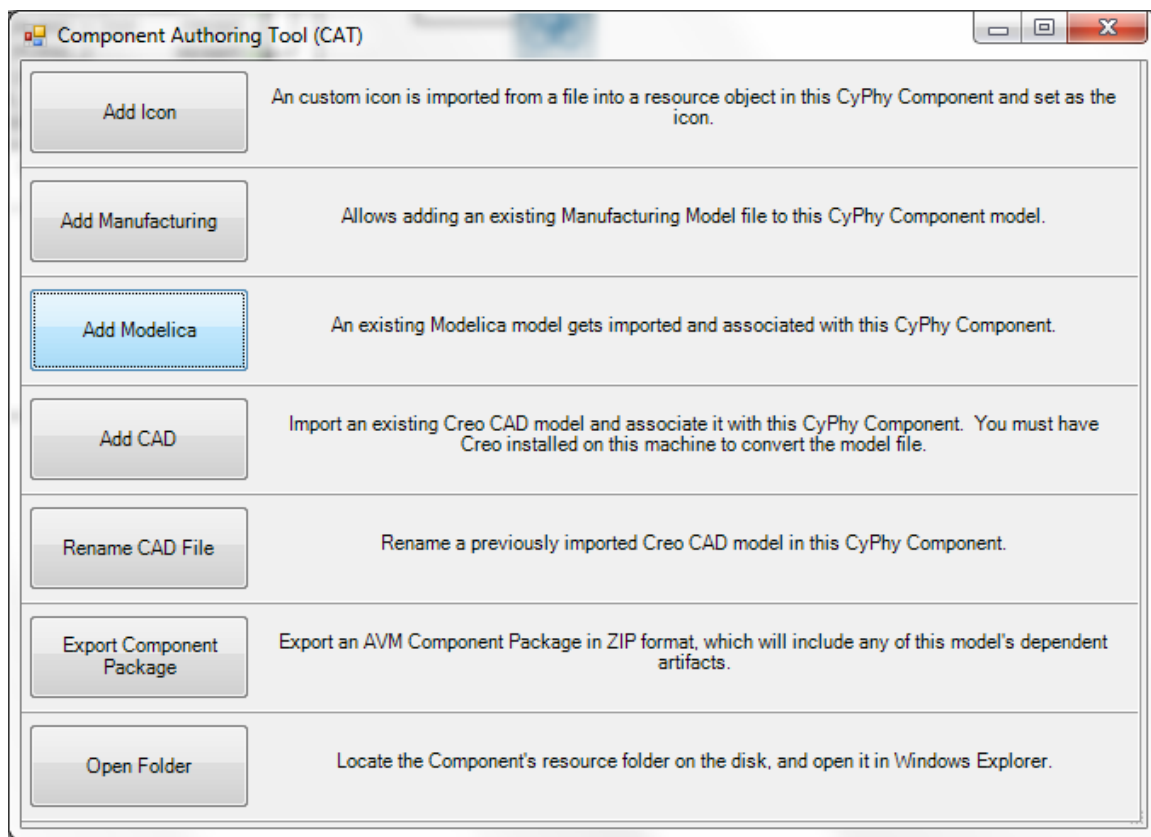


Figure 3: CAT Add Modelica

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.

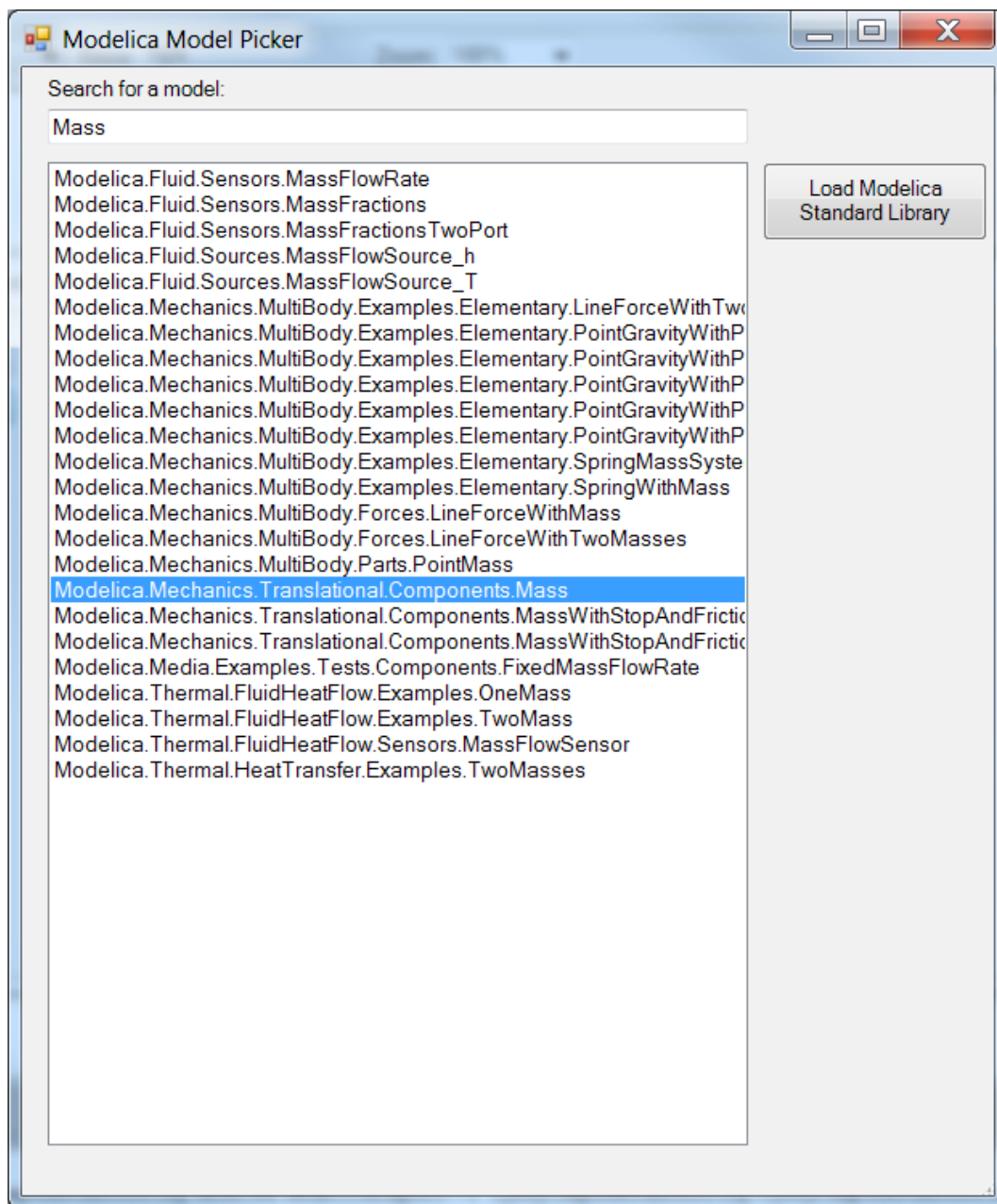


Figure 4: Selecting the correct mass model

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

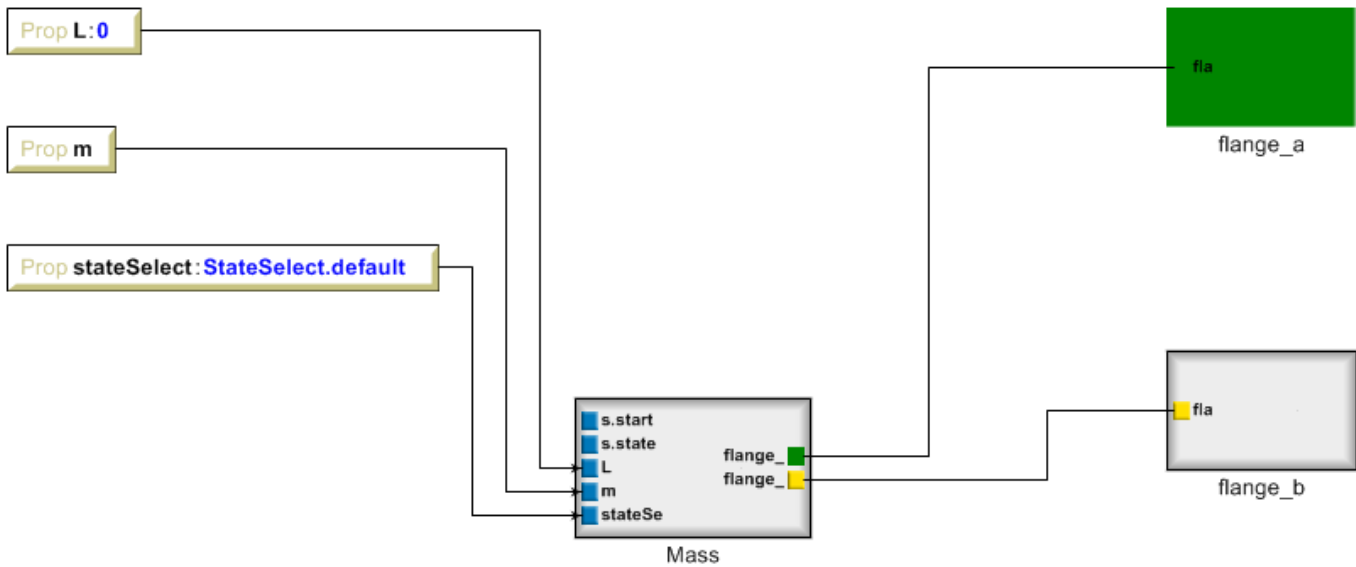


Figure 5: The Mass in GME Editing Area

## Component Authoring Tool: Adding a CAD Model

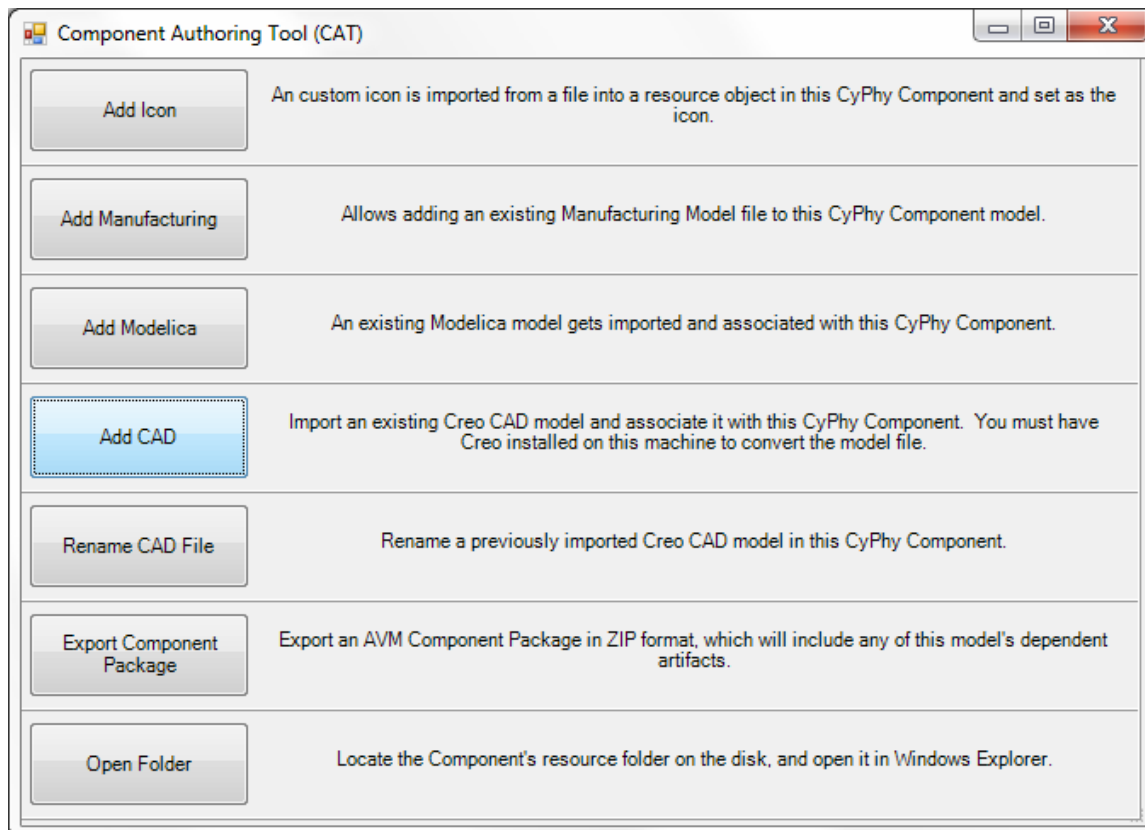
This feature is used to import CAD objects into a component.

### Assumptions/Conditions

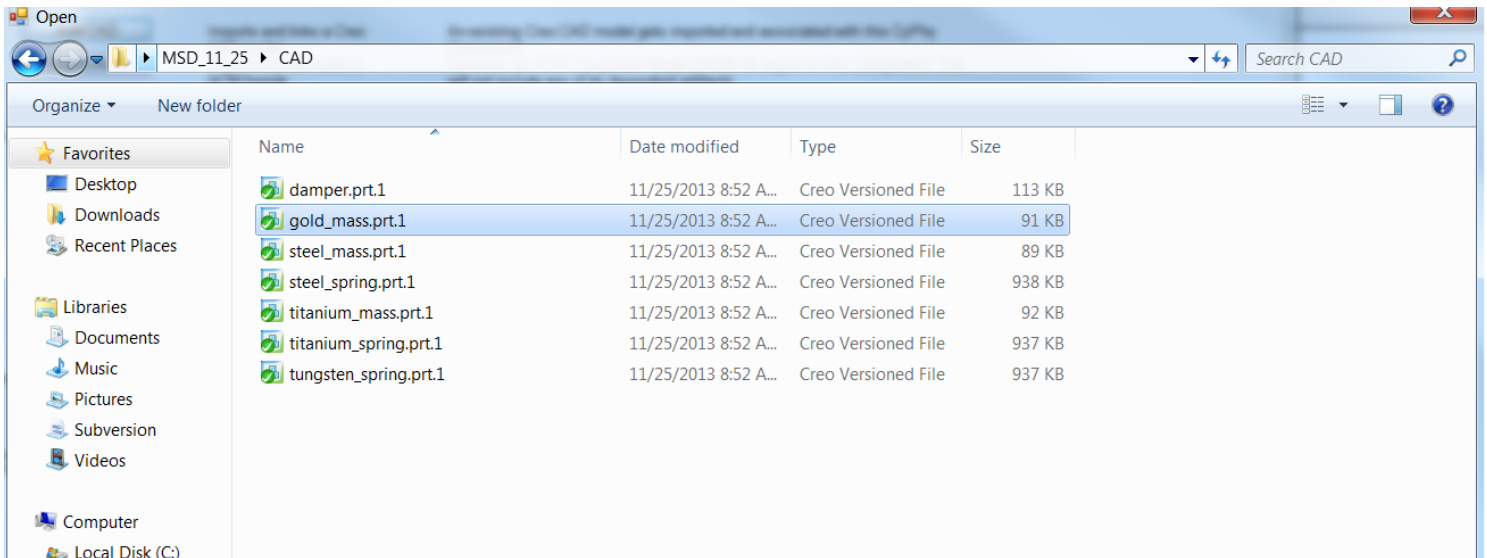
- Useful for adding a CAD part or assembly that already exists on the disk drive.
- The CAT tool will copy the necessary file(s) into the CyPhy component directory back-end structure.
- The part or assembly object will be converted from Creo format and imported into native CyPhy XML style
- Creo Parametric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

### Instructions

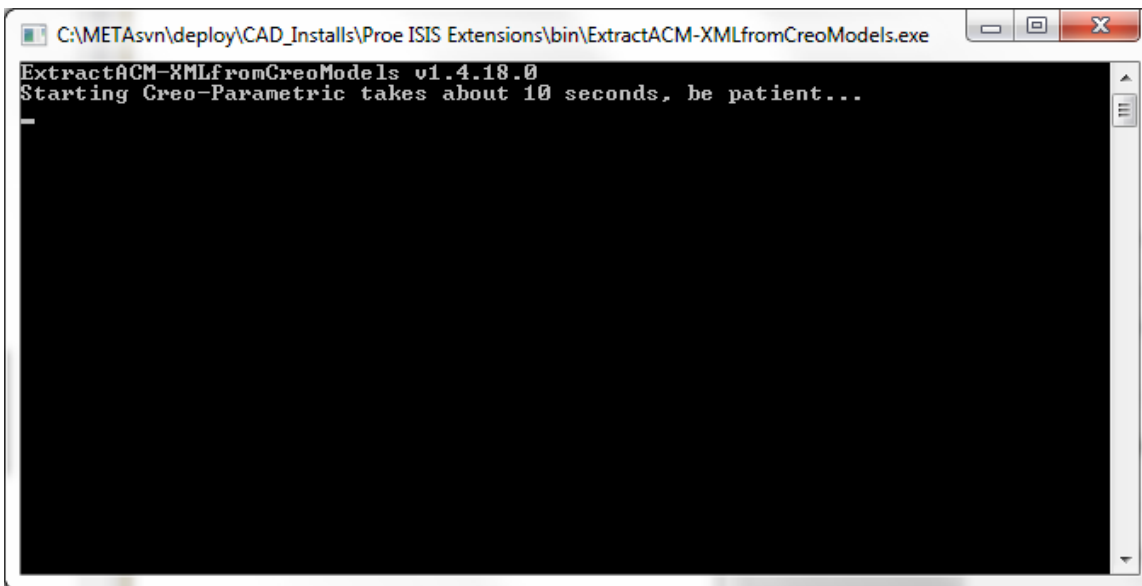
1. Open a component.



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

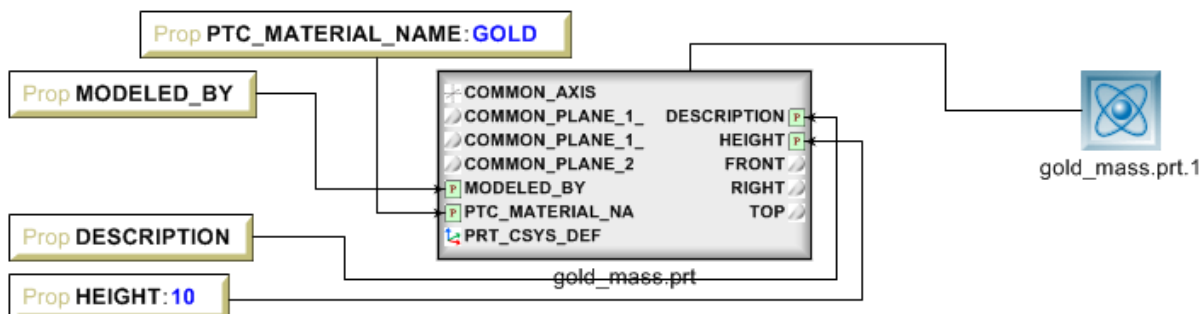


5. The following script should run. This converts the object into CyPhy readable XML format.



6. Hit close.

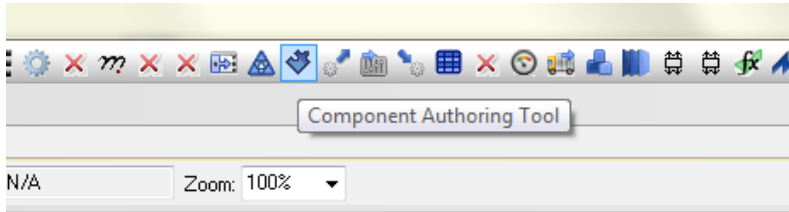
7. You should now see the following:



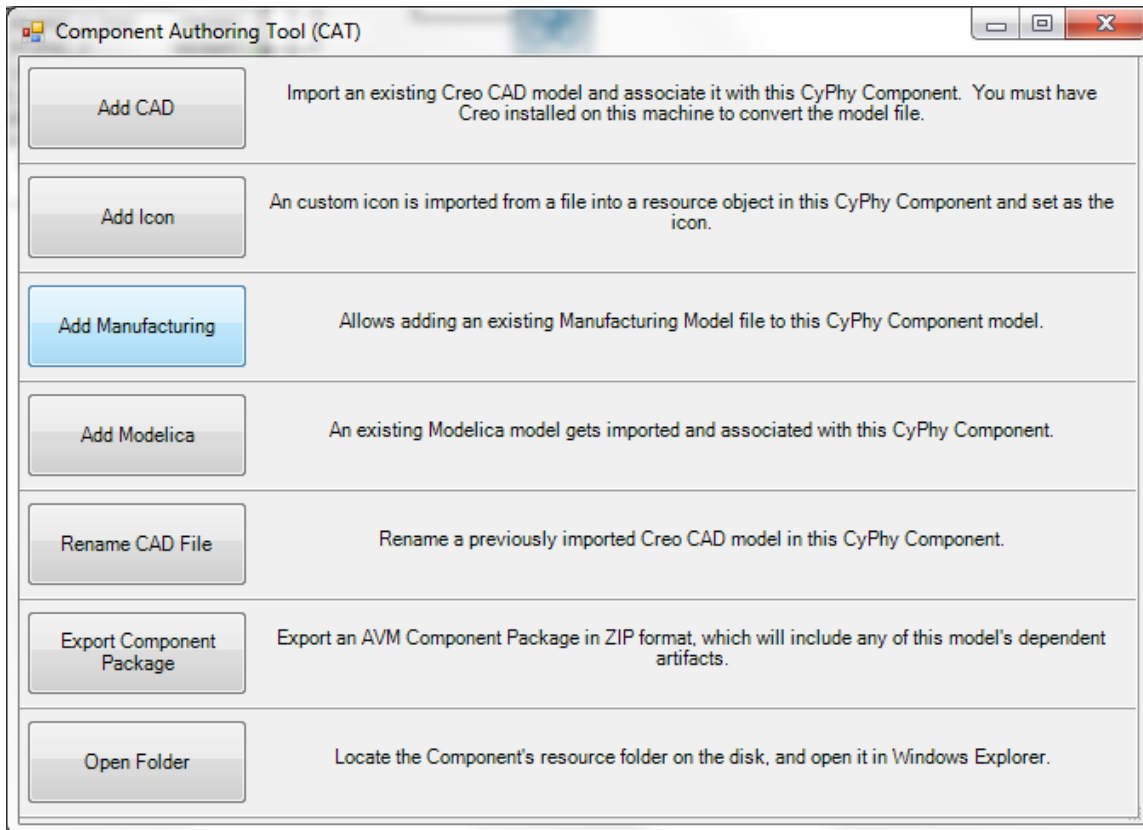
- The imported CAD model object now represents datums, coordinate systems, metrics, parameters in CyPhy.
- Resource objects will be created for the represented files that are associated with the component package

## Component Authoring Tool: Add Manufacturing Model

Adding a manufacturing model to a component is useful for associating manufacturing data with a component. Start by selecting the CAT tool from the GME toolbar while the CyPhy component is open in the editing window.

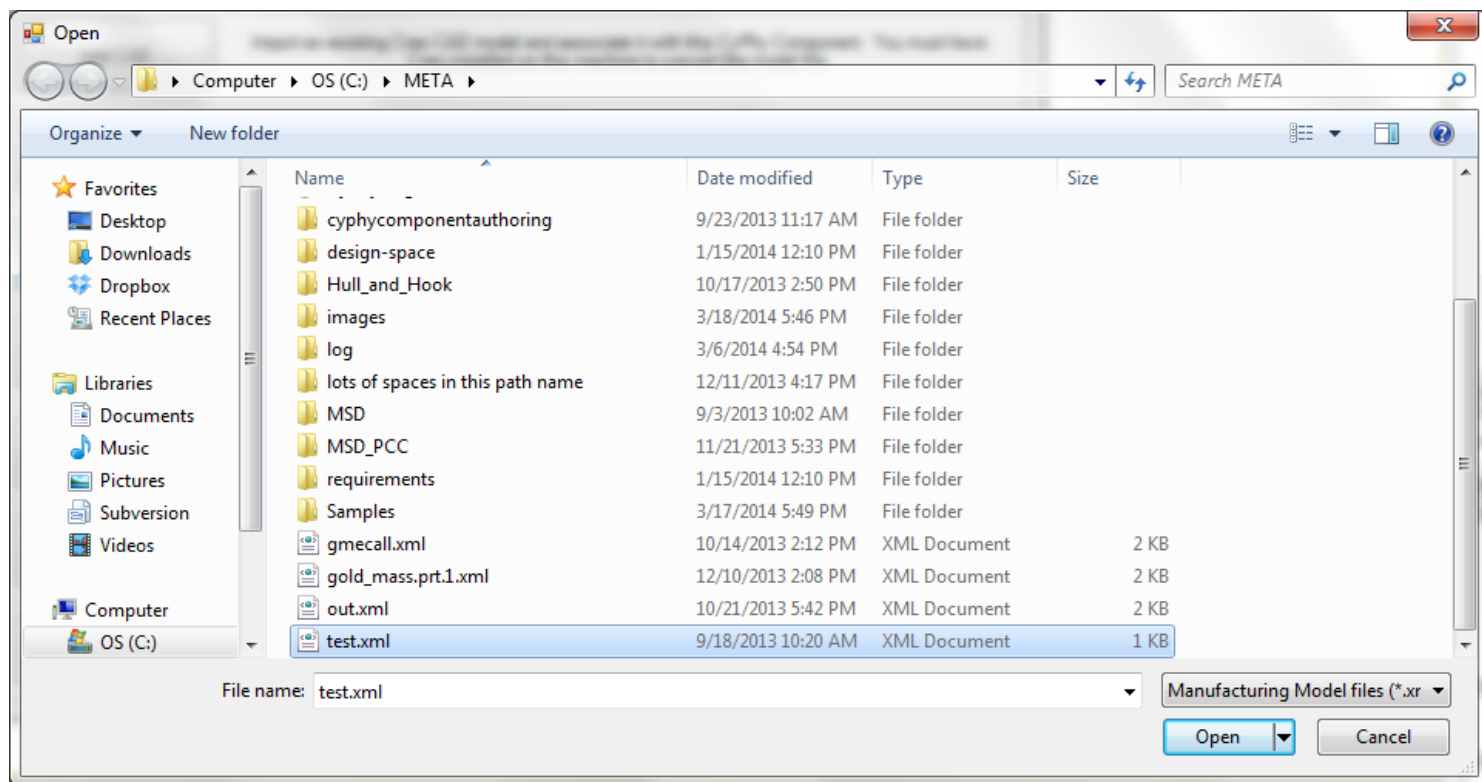


Choose the Add Manufacturing tool.

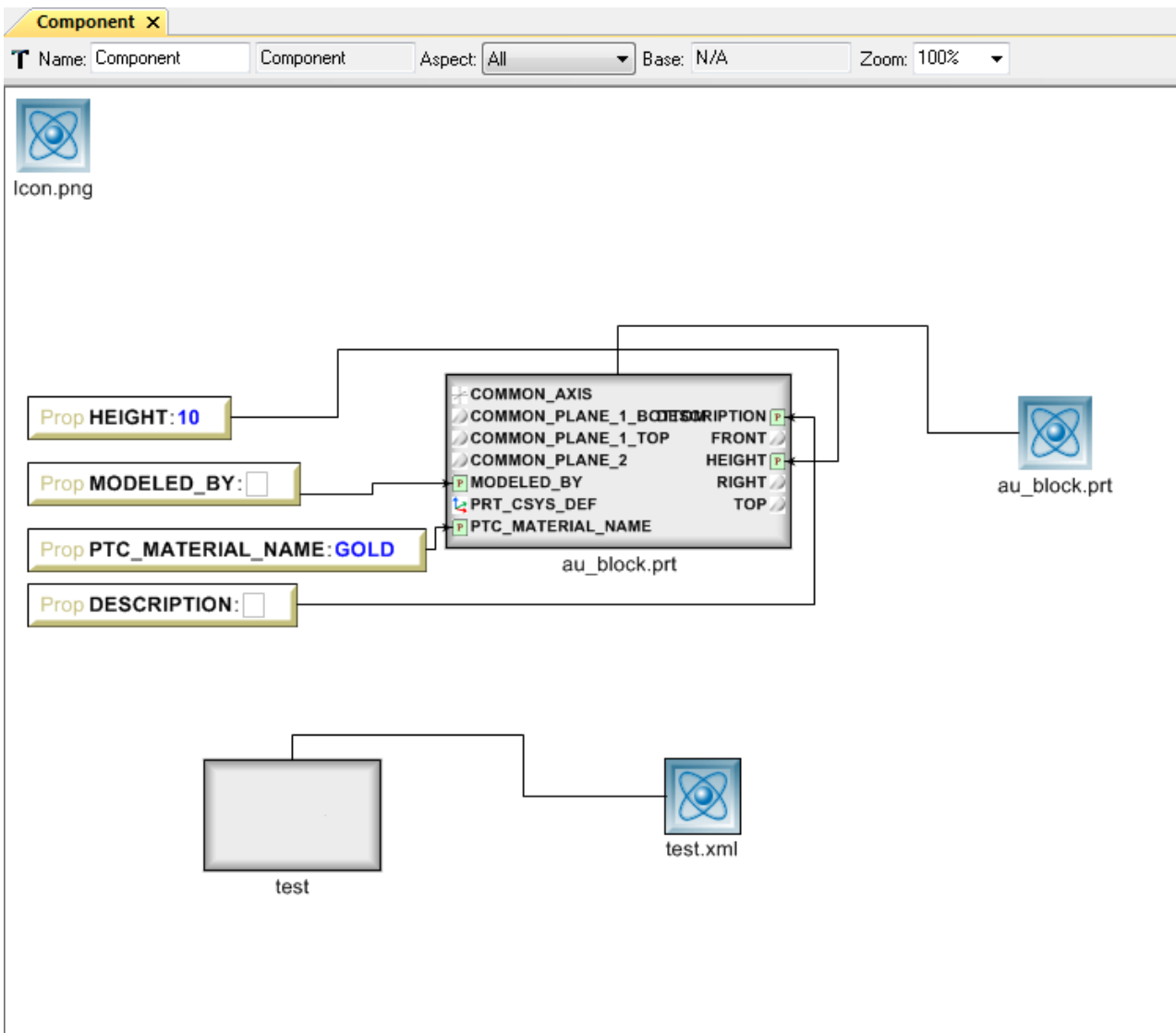


Select the manufacturing model file from the drive. The file should be of type XML. The file copied to the component's back-end directory in a folder called "MFG".





A manufacturing model and resource are created and added to the current component.



Object Inspector

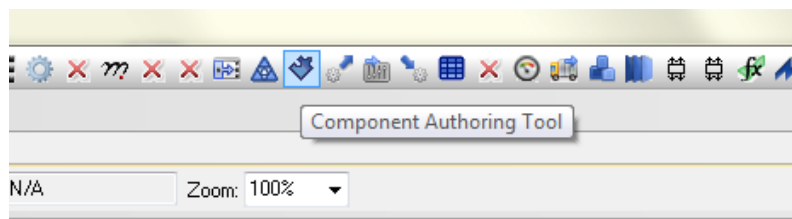
test ☐ for Kind

|                           |  |             |  |            |  |
|---------------------------|--|-------------|--|------------|--|
| Attributes                |  | Preferences |  | Properties |  |
| <b>General Properties</b> |  |             |  |            |  |
| Type                      | Model (Archetype)                            |             |  |            |  |
| Kind                      | Manufacturing Model                          |             |  |            |  |
| Object ID                 | id-0065-0000046a                             |             |  |            |  |
| Relative ID               | 0x00000000                                   |             |  |            |  |
| Meta ID                   | 26925  |             |  |            |  |
| GUID                      | {674bad6f-f3ed-4fa0-9ccb-ba8ed4d85ea9}       |             |  |            |  |
| <b>FCO Properties</b>     |  |             |  |            |  |
| Role                      | ManufacturingModel                           |             |  |            |  |
| Aspect                    | ManufacturingAspect (Primary); All (Primary) |             |  |            |  |
| <b>MARS Properties</b>    |  |             |  |            |  |
| Depends                   | N/A  |             |  |            |  |
| References                | N/A  |             |  |            |  |

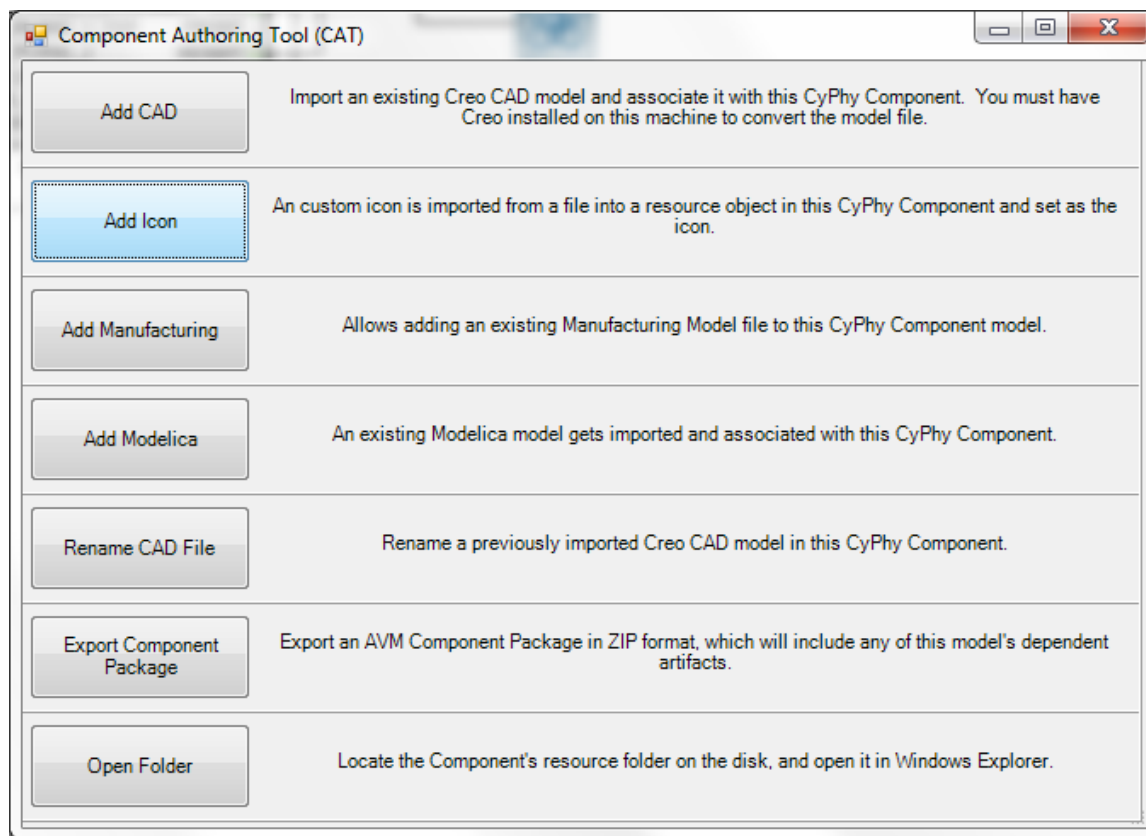
## Component Authoring Tool: Add a custom icon

An optional step in component creation is to add a custom icon to the component from an icon file. This will allow the user to select an icon image file from a hard drive and copy it into the components back-end storage.

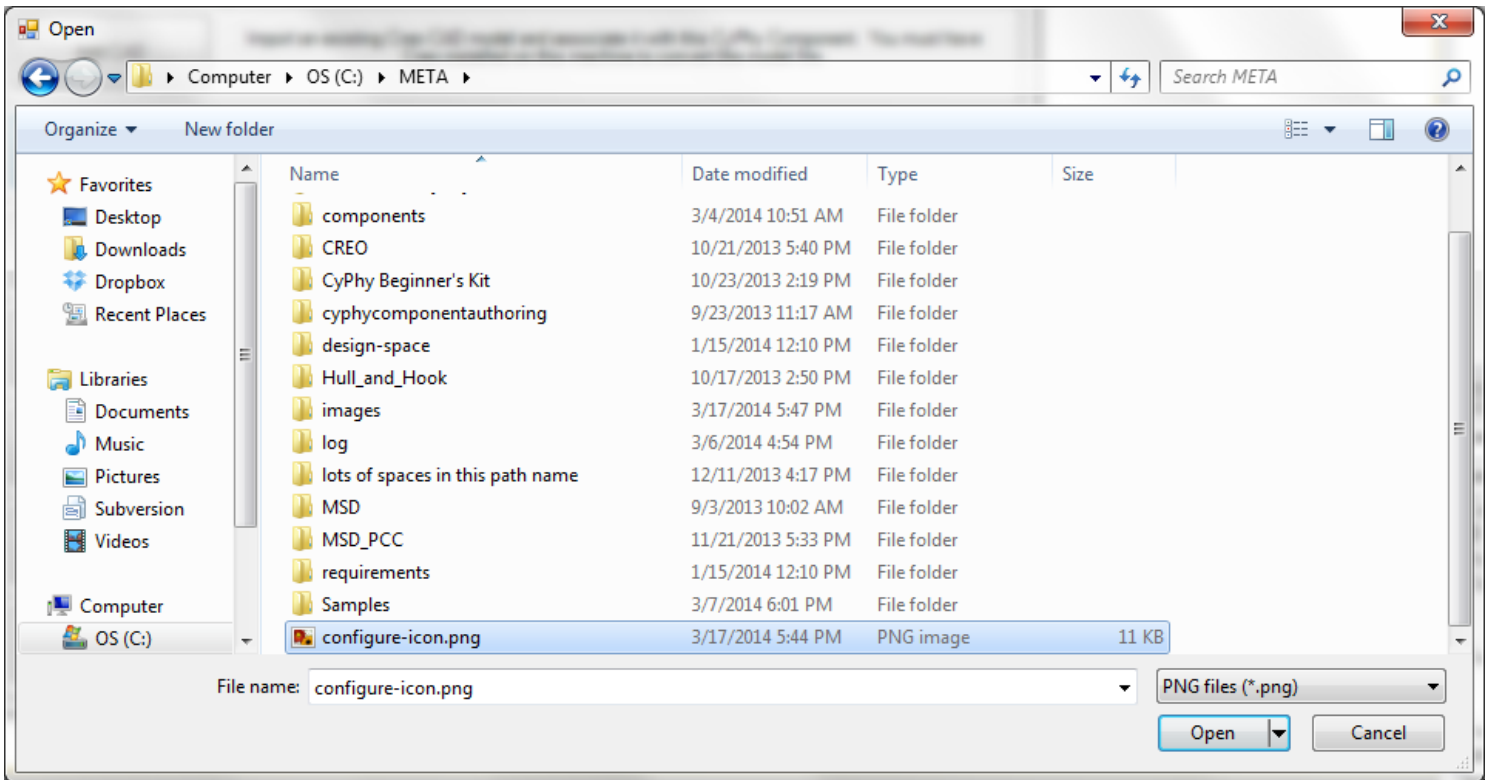
Start by selecting the CAT tool from the GME toolbar while the CyPhy component is open in the editing window.



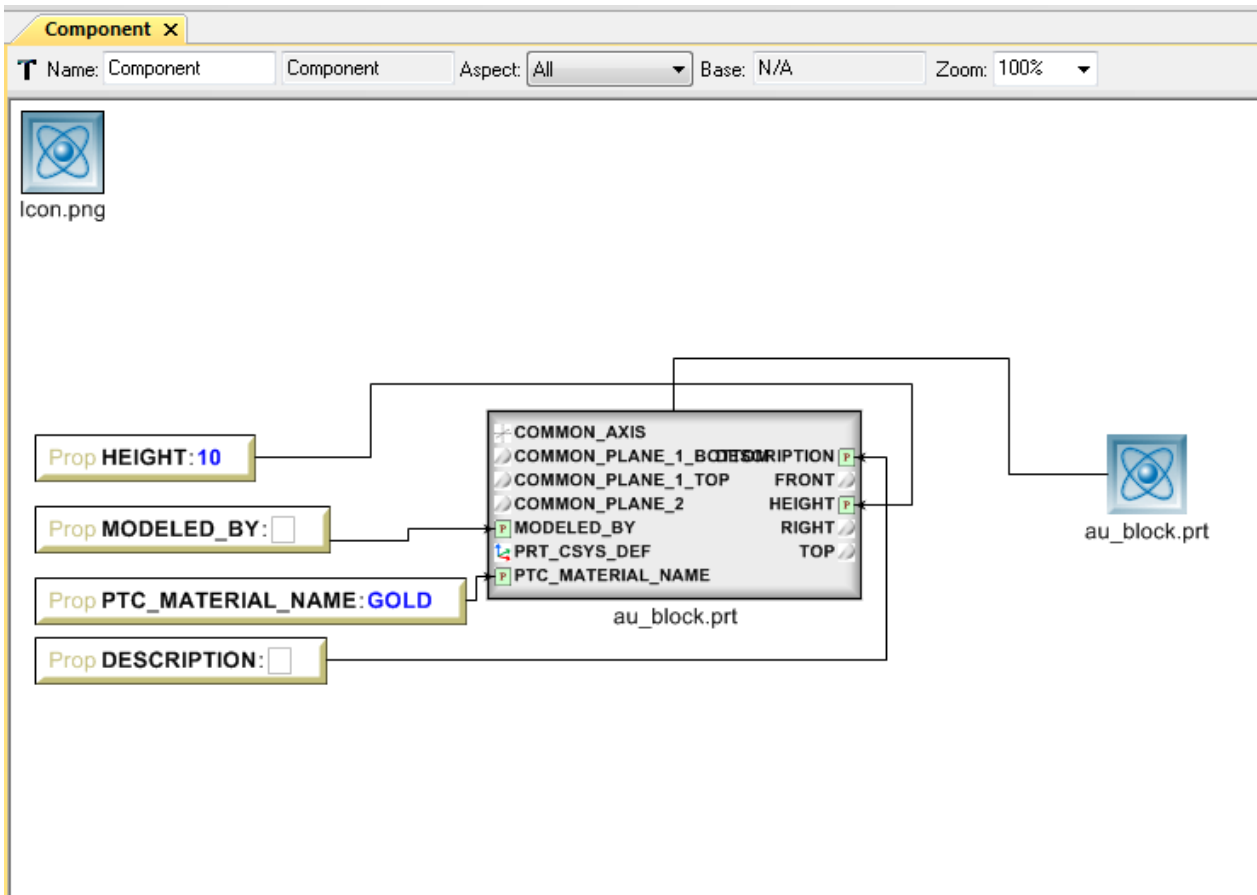
Choose the Add Icon tool.



Select the custom icon image file from the drive. A copy of the file will be renamed to "icon.png" and placed in the component's back-end folder.



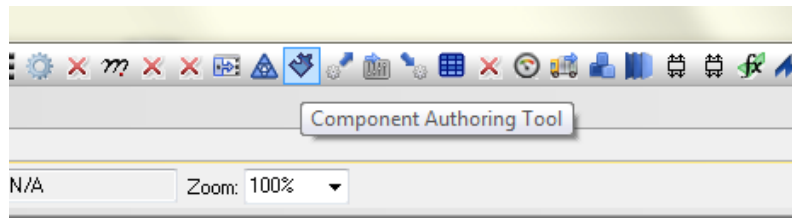
An icon resource is created and added to the current component. The resource is associated with the new copy of the chosen image file and registered with the registry.



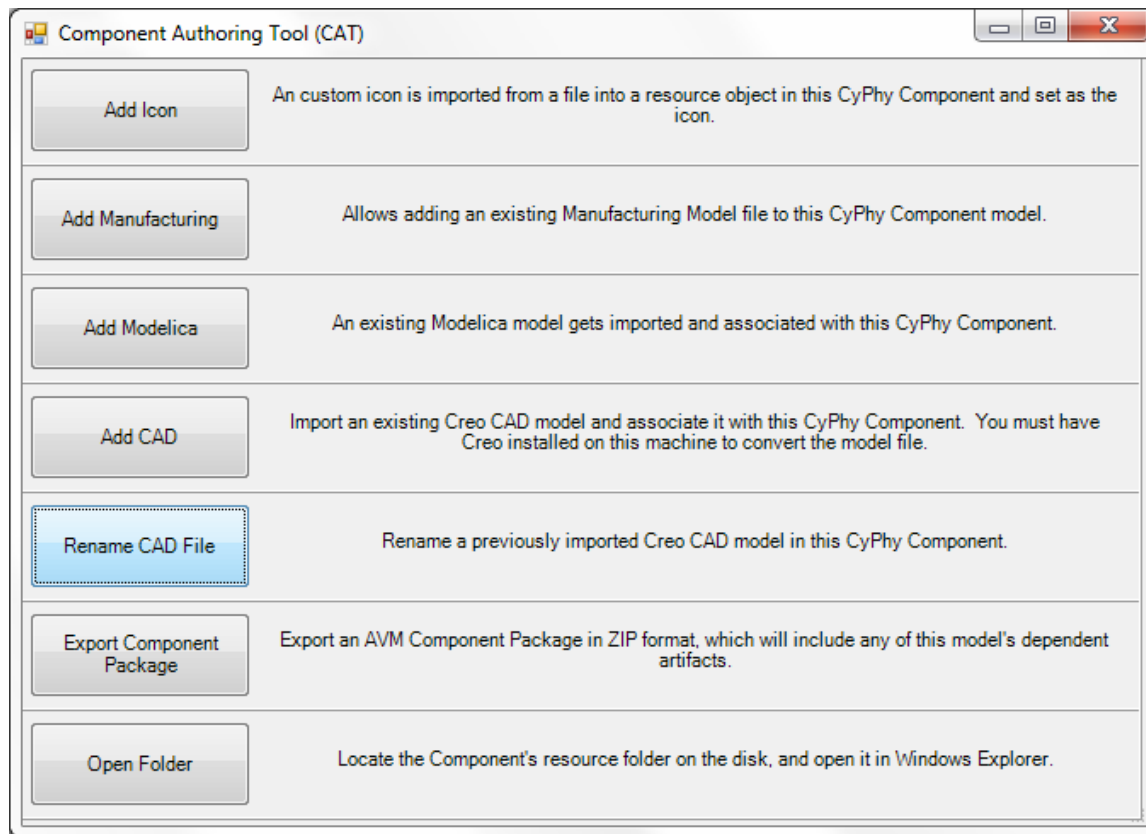
## Component Authoring Tool: Rename CAD File

This is an optional but very useful function for situations that anticipate reusing a high number of components. Once a CAD file is imported into a CyPhy component, this tool will allow the user to rename both the file in the back-end folder and the resource created in the CyPhy component.

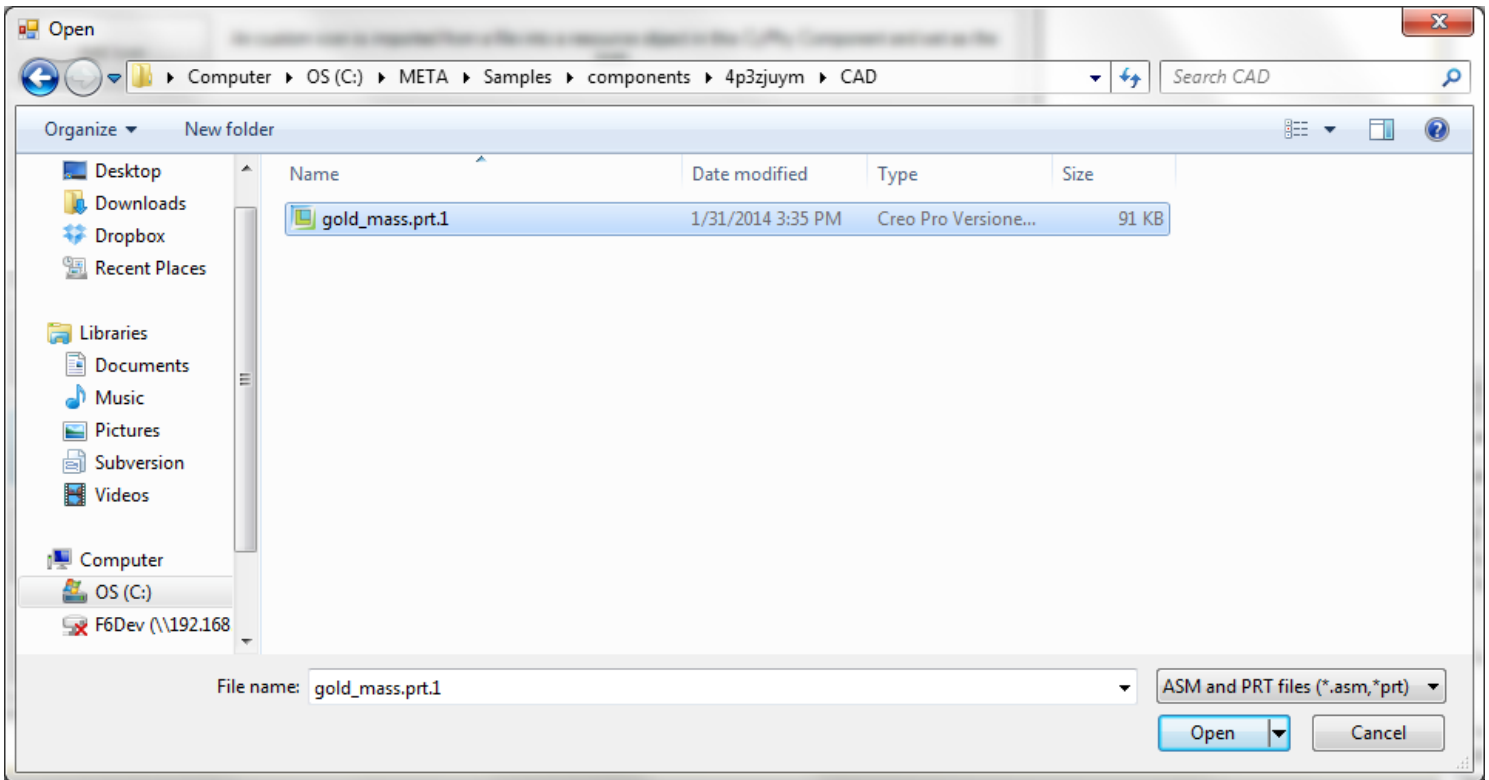
Start by selecting the CAT tool from the GME toolbar while a component is open in the editing window.



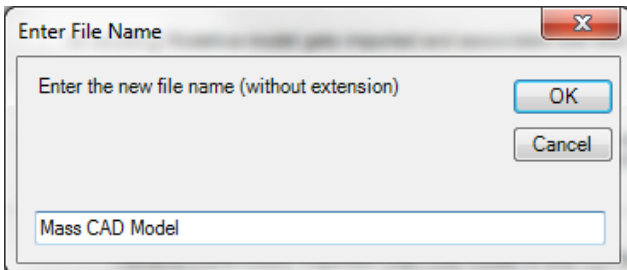
Choose the Rename CAD File option.



Select the desired CAD file from the back-end folder. *Hint, all CAD files imported with the Add CAD tool will reside in the CAD folder.*



Choose a new file name. Don't enter a file extension, it will be handled by the tool.



The resource (and component model if it is named the same as the file) will be updated to reflect the new name.

Mass\_Gold X

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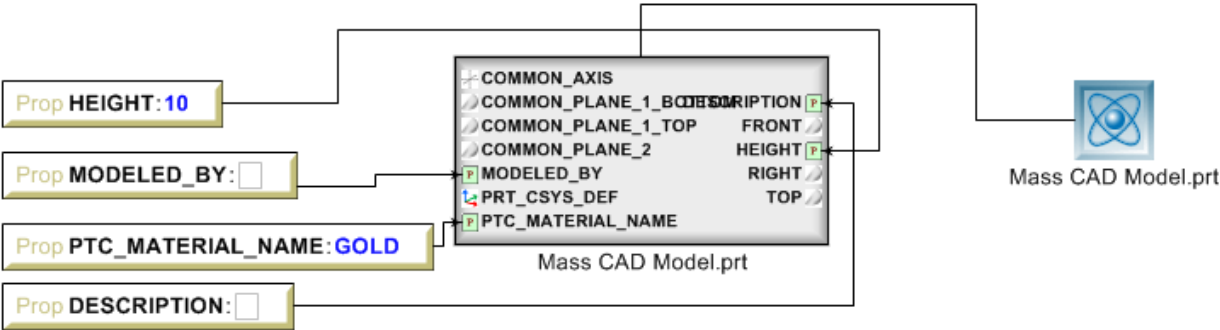
Name: Mass\_Gold

Component

Aspect: All

Base: N/A

Zoom: 100%



And the path to the back-end file will also be updated.

Object Inspector

Mass CAD Model.prt

☐ for Kind

Attributes

Preferences

Properties

Path (URI):

CAD\Mass CAD Model.prt

Hash:

Notes:

CAD Model Import tool added this resource object for the imported CAD

ID:

id-07cef709-2df6-4d85-965c-b95dca5cb582

## Component Authoring Tool: Export Component

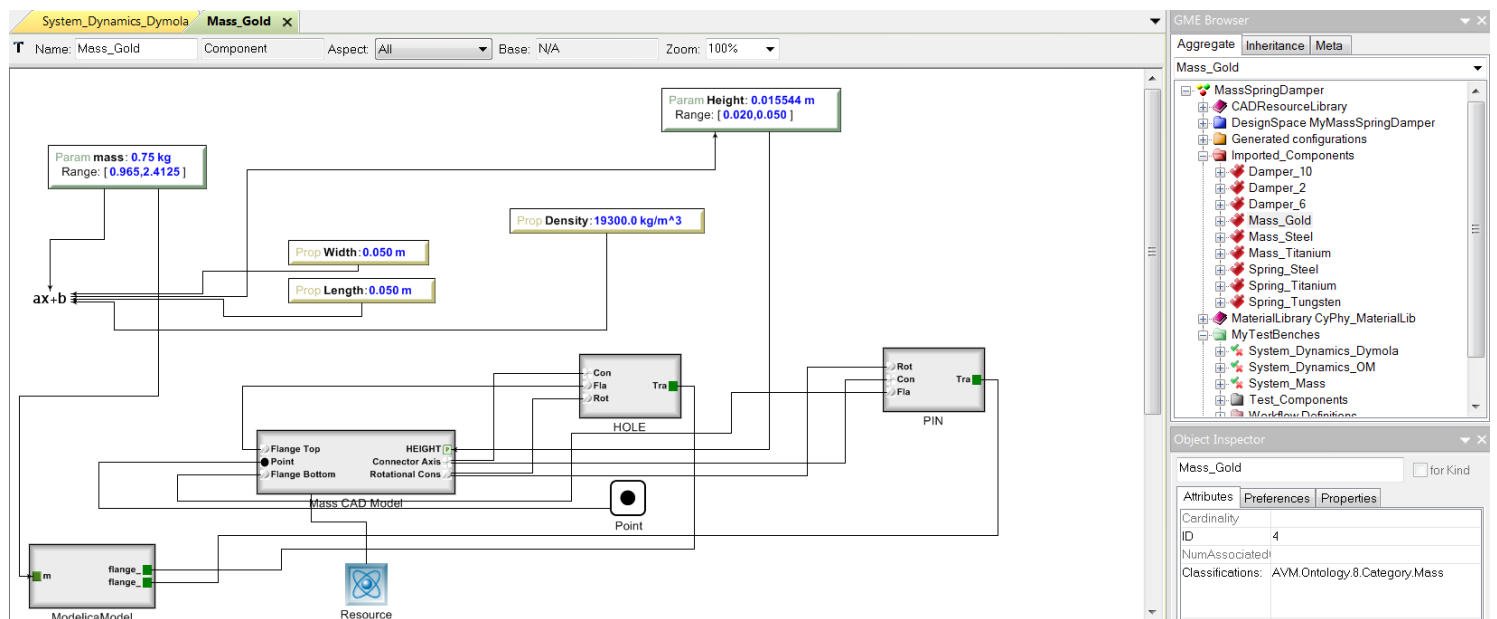
This feature will export a component into an Zip file in ACM format to share with other models or projects.

### Assumptions/Conditions

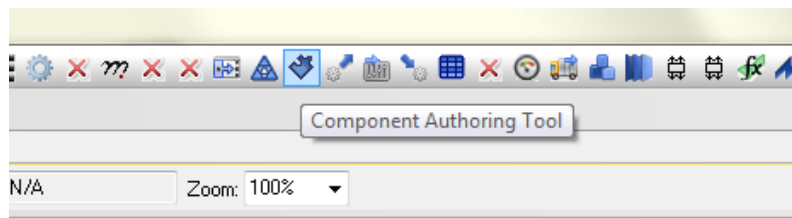
- Call this feature from a component object
- A zip file is created containing an ACM file and all supporting resource files.

### Instructions

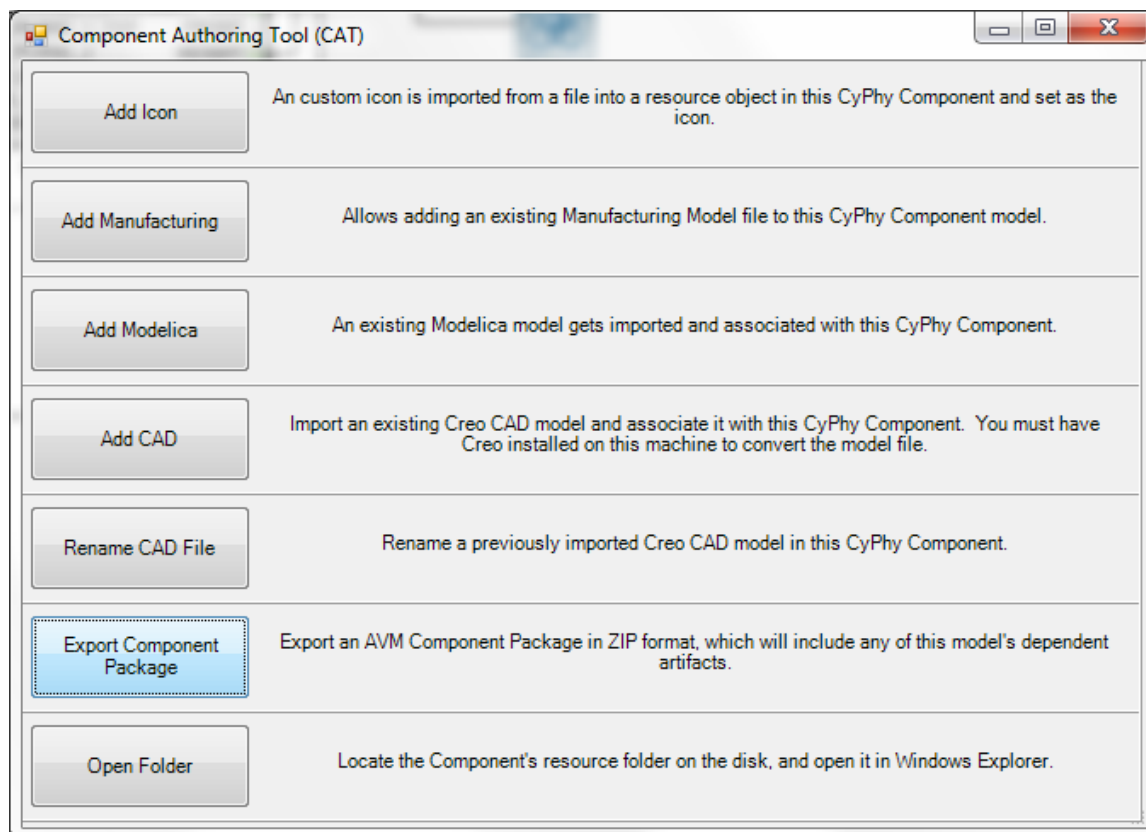
1. Open a component.



2. Click CAT icon.

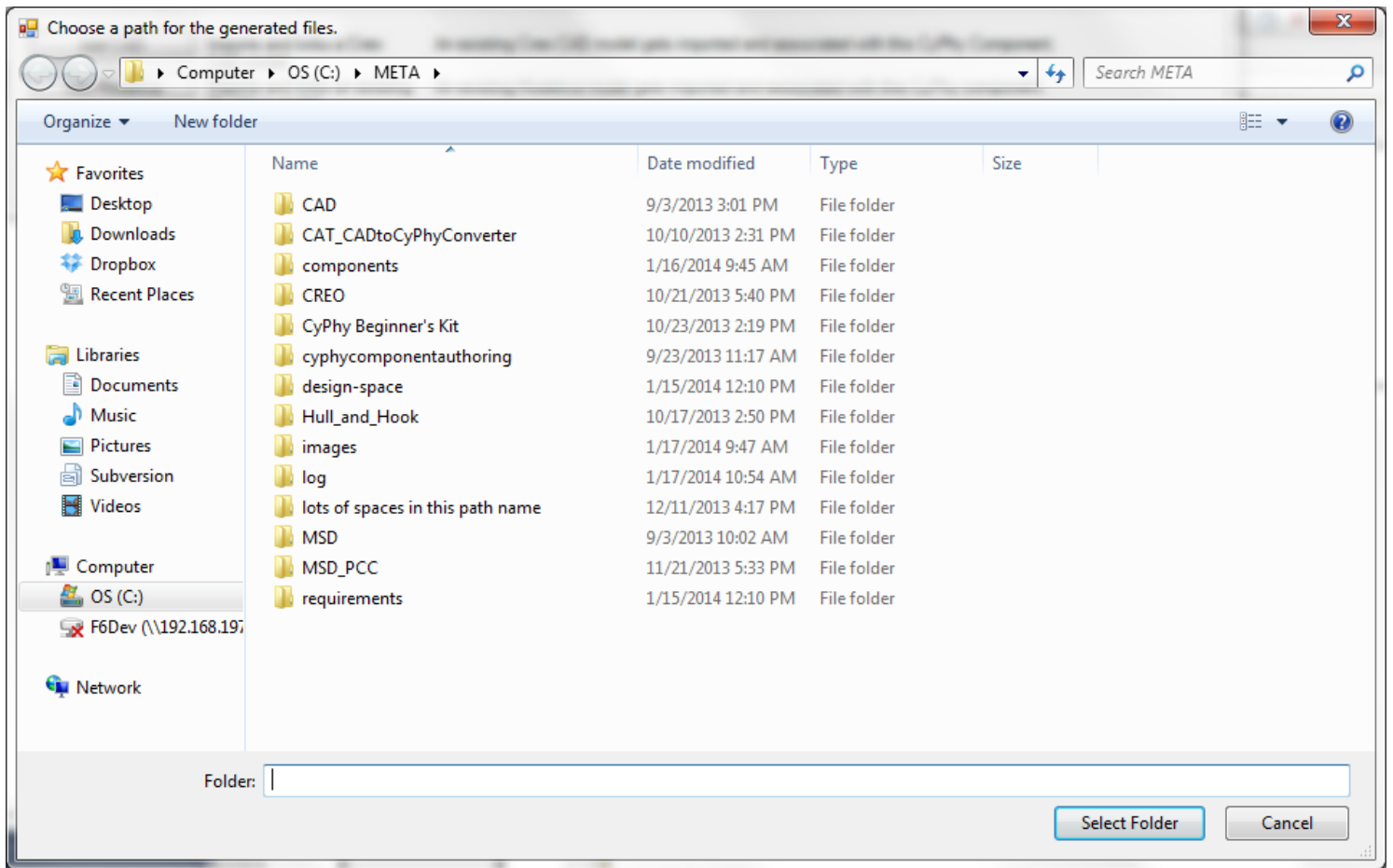


3. Click Export Component.



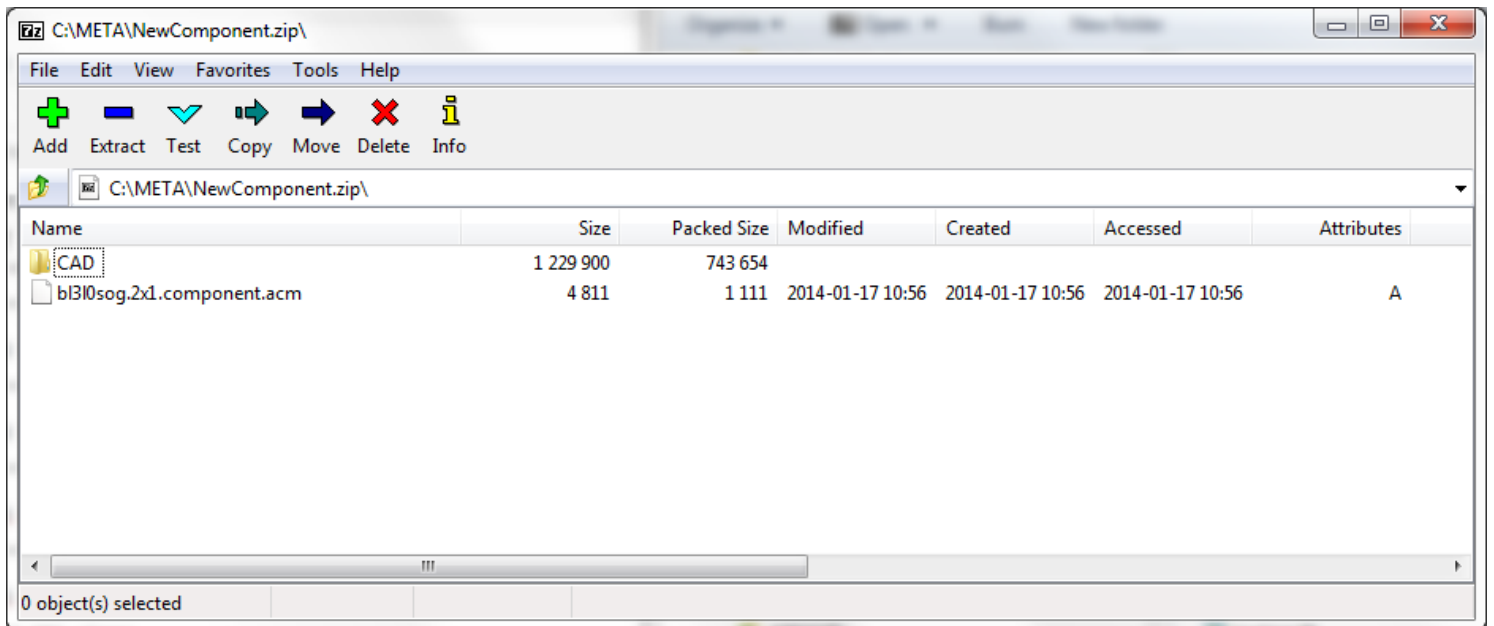


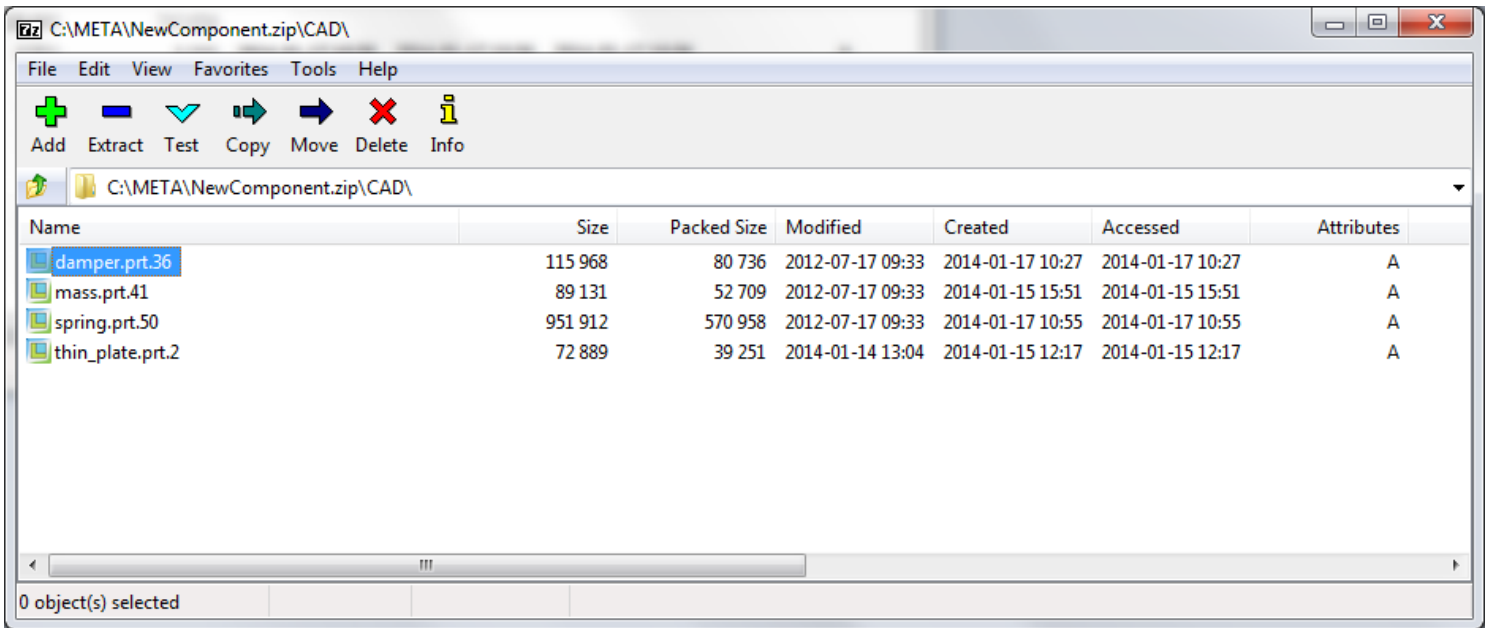
4. Select the Folder to export to.



5. Hit close.

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





## Component Authoring Tool: Open Folder

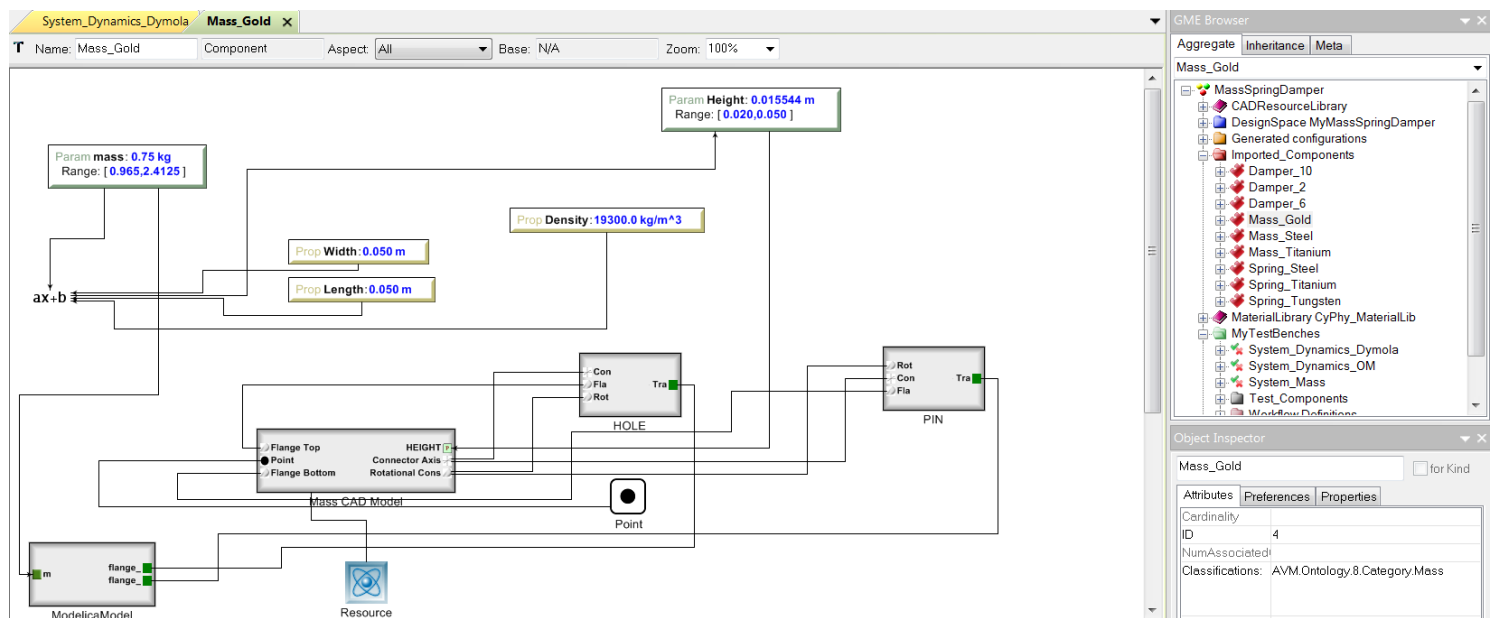
The feature is used to open a windows explorer box to view the back-end files for the given component.

## Assumptions/Conditions

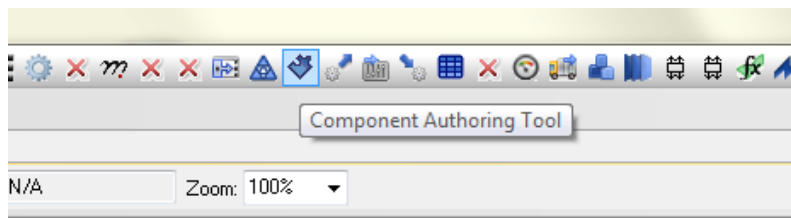
- Call this feature from a component object
- The Explorer Window opens in a new instance, CyPhy will not be blocked.

## Instructions

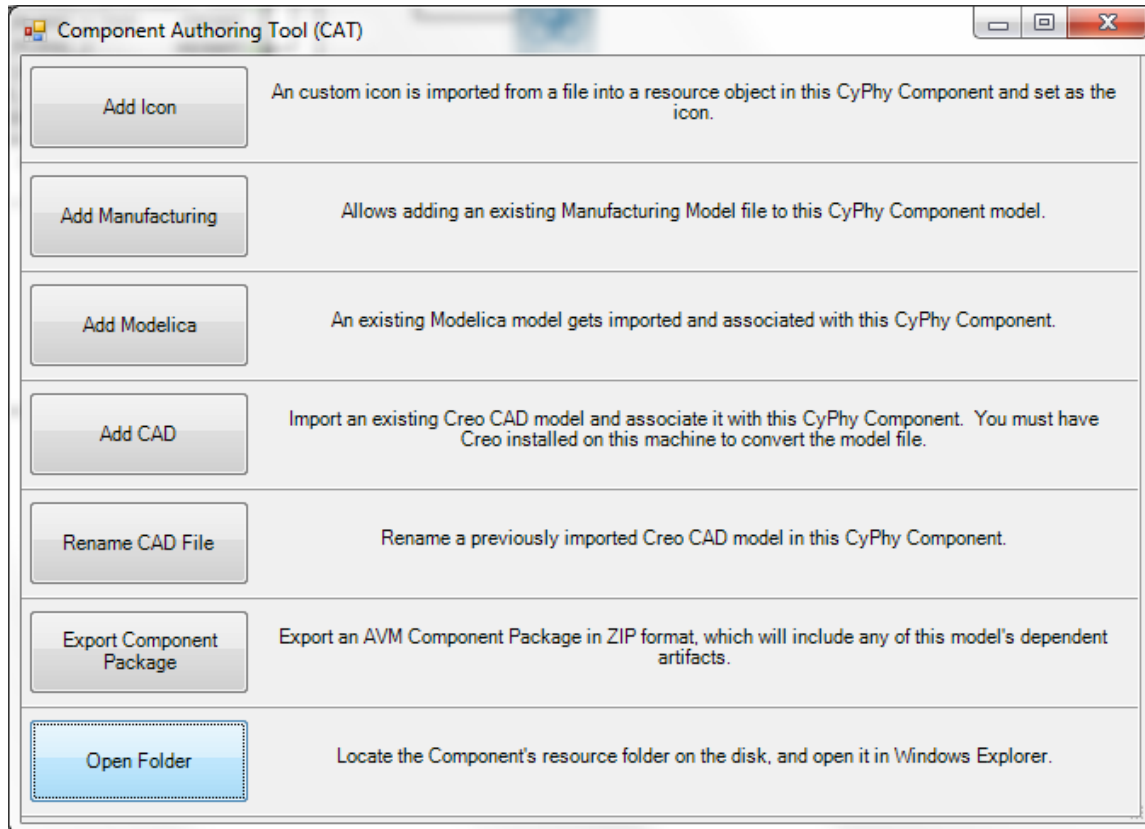
1. Open a component.



2. Click CAT icon.



3. Click Open Folder.



4. An Explorer window will open for that component.

