

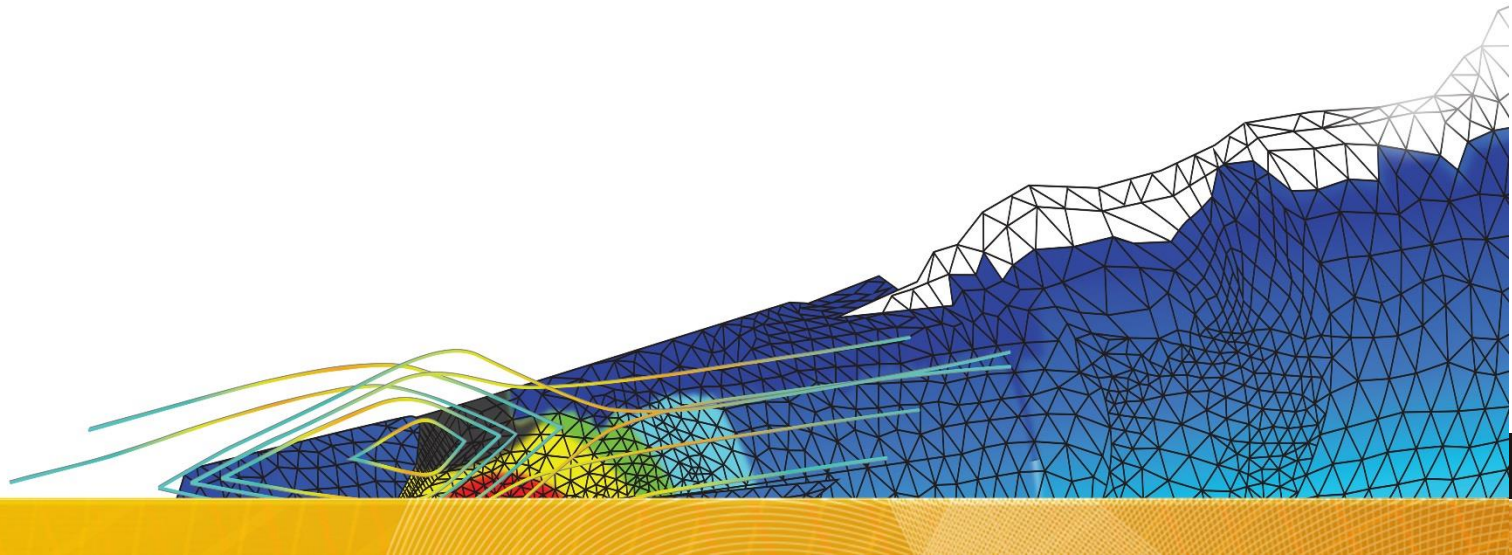
Realize Your Product Promise®

**17.0 Release**



## ***External CAD Bridge Version 1***

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# External CAD Bridge - Overview



- **Name of the app** : External CAD Bridge
- **Target application** : Project Schematic
- **Description** : Demonstrate how to create an application that integrates parametric study for non-ANSYS CAD Modeling programs

**The version of the App and the supported versions of ANSYS are the ones indicated on the App Store.**

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# ACT App Store



- [https://support.ansys.com/AnsysCustomerPortal/en\\_us/Downloads/Application+Library](https://support.ansys.com/AnsysCustomerPortal/en_us/Downloads/Application+Library)
- **Great place to get started**
  - A library of helpful extensions available to any ANSYS customer
  - New extensions added regularly
  - Applications made available in either binary format (.wbex file) or binary plus scripted format (Python and XML files)
  - Scripted extensions are great examples
  - Links to customization documentation and training material

# Information



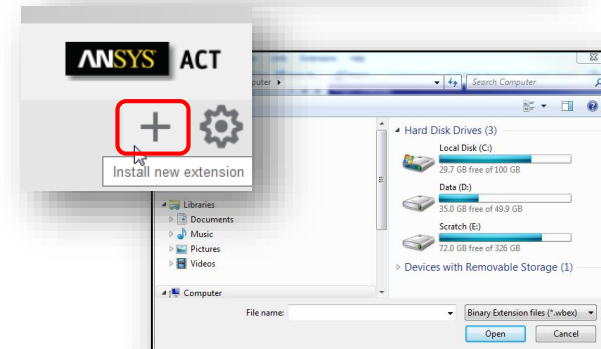
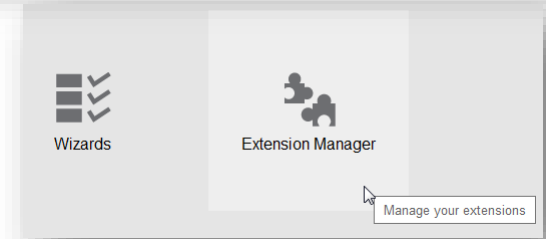
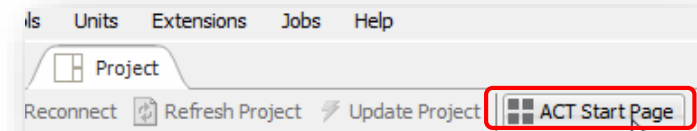
- Please pay attention to paragraph 9 of the **CLICKWRAP SOFTWARE LICENSE AGREEMENT FOR ACS EXTENSIONS** regarding **TECHNICAL ENHANCEMENTS AND CUSTOMER SUPPORT (TECS)**: “TECS is not included with the Program(s)”
- Report any issue or provide feedback related to this app please contact:

*Contact email address: [chris.butor@ansys.com](mailto:chris.butor@ansys.com)*

# Binary App Installation (1)

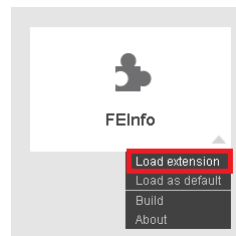
## Installing from the ACT Start Page:

1. From the project page, select the “**ACT Start Page**” option
2. Click on “Extension Manager”
3. Press “+” symbol in the top right corner
4. It will open a file dialog to select the appropriate “**\*.wbex**” binary file
5. The extension is installed



## Loading the extension:

1. From the Extension Manager, click on your extension and choose ‘Load Extension’
2. The extension is loaded



### Notes:

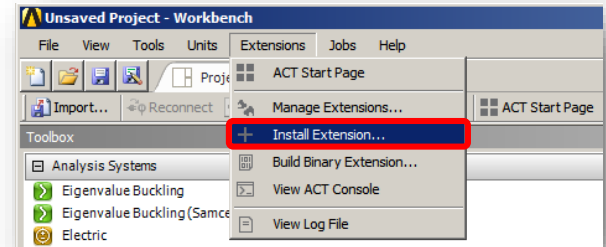
- The extension to be installed will be stored in the following location: %AppData%\Ansys\v170\ACT\extensions
- The installation will create a folder in this location, in addition to the .wbex file



# Binary App Installation (2)

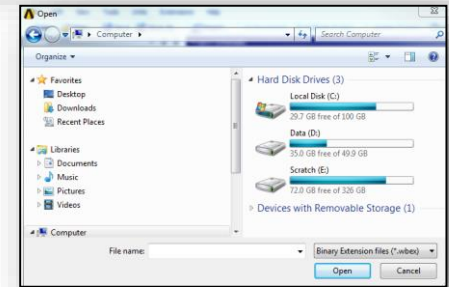
## Installing from the Extensions menu:

1. From the Extensions menu, select the “*Install Extension...*” option
2. It will open a file dialog to select the appropriate “*\*.wbex*” binary file
3. Click “*Open*” to install the extension



## Loading the extension:

1. From the Extension Manager, click on your extension and choose ‘Load Extension’
2. The extension is loaded

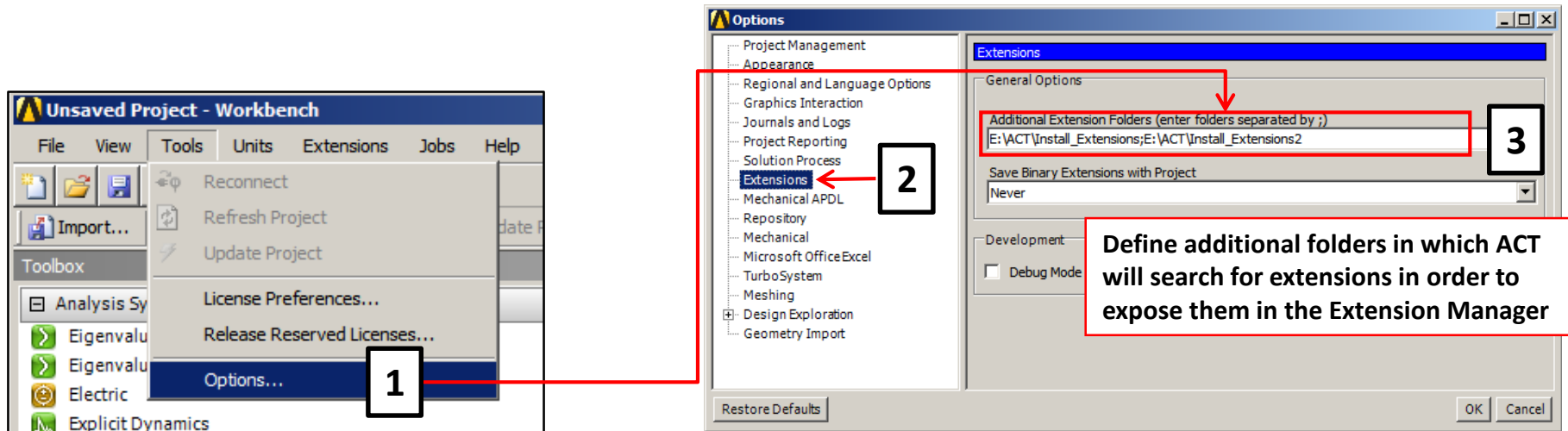


### Notes:

- The extension to be installed will be stored in the following location: %AppData%\Ansys\v170\ACT\extensions
- The installation will create a folder in this location, in addition to the .wbex file

# Binary App Installation (3)

- Once the binary extension is installed at default location, one can move the \*.wbex and the folder to any other location
  - Default path: `%AppData%\Ansys\v170\ACT\extensions`
  - New path: Any location on your machine, shared drive etc.
- All users interested in using the extension need to include that path in their Workbench Options
  - In the **“Tools”** menu, select the **“Options...”**
  - Select **“Extensions”** in the pop up panel
  - Add the path under **“Additional Extensions Folder ...”**



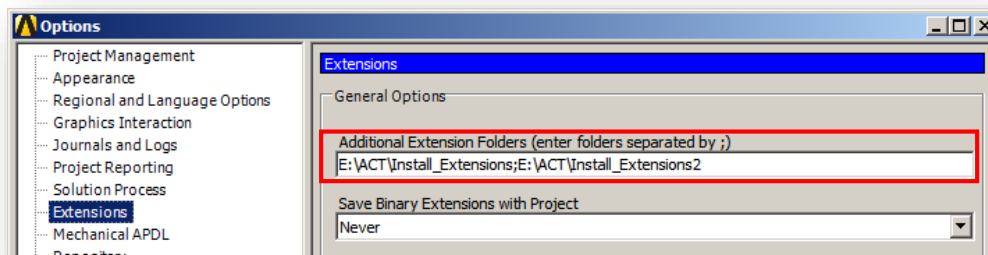
## Notes:

- During the scan of the available extensions, the folders will be analyzed according to the following order:
  - The application data folder(e.g. `%AppData%\Ansys\v170\ACT\extensions`)
  - The additional folders defined in the “Additional Extension Folders” property
  - The installation folder
  - The “extensions” folder part of the current Workbench project (if the project was previously saved with the extension)
- If an extension is available in more than one of these locations, the 1<sup>st</sup> one according to the scan order is used



# Scripted App Installation (source code)

- Paste the XML file and the corresponding folder on your computer. You can paste them either:
  - In the default path: `%AppData%\Ansys\v170\ACT\extensions`
  - In a user defined path: any location on your machine, shared drive etc.
- If the files are located in the default path, the extension is automatically available in the Extension Manager
- If the files are in a user defined path, it is required to define the “Additional Extension Folder” under Workbench menu (Tools → Options...) to make it available in the Extension Manager:



# Documentation (details 1)

This extension demonstrates how to use ACT workflows to leverage parametric study based on CAD geometry from a non-ANSYS modelling software (internal program/application that generates a CAD model; or any commercially produced CAD modelling software like CREO, NX, CATIA, Solidworks, Autodesk).

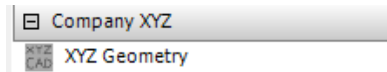
In this extension, the application launches a journal in Workbench which creates a washer in Design Modeler. The inner diameter of the washer is an input parameter for parameter set.

**Note:** Source code is shared with this application; the user can modify it to introduce his own CAD modelling software to engage parametric study in Workbench. Instead of running Workbench with a journal, the user would execute their CAD software.

# Documentation (details 2)

- **Important** : Open  
%AWP\_ROOT170%\Addins\ACT\bin\Win64\TransferTypeDirectPropertyAccessList.xml  
Add <TransferType>FEMSetup</TransferType>

- Insert a XYZ Geometry System

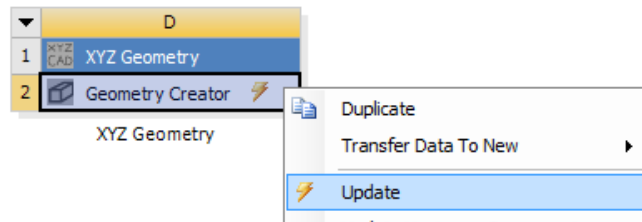


- Set inner diameter value

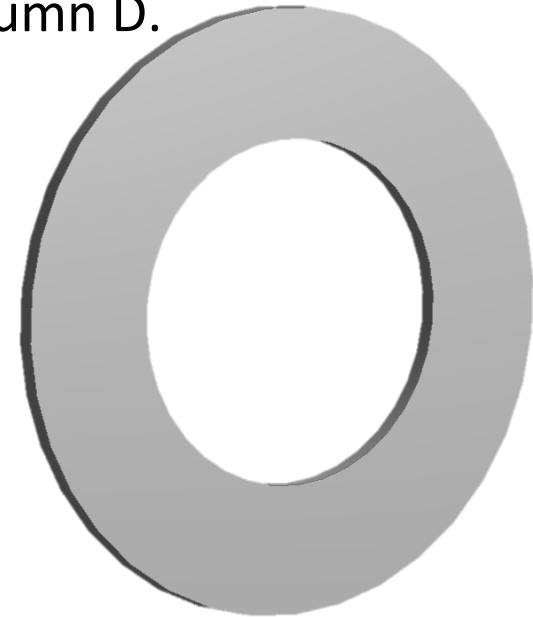


- For a parametric study, tick the box in column D.

- Update

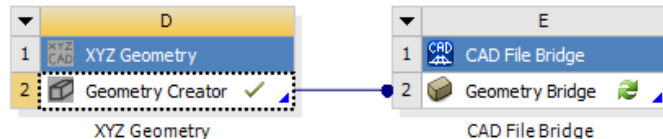


- The washer is created

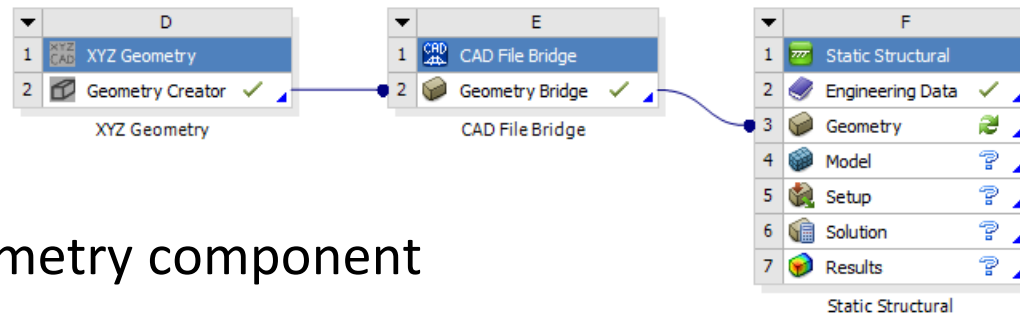


# Documentation (details 3)

- Link XYZ Geometry System to a new CAD File Bridge system



- Update Geometry Bridge task
- Link it to a Geometry in a Static Structural System, or in any Mechanical System



- Update Geometry component
- Define your model and start a parametric study

	A	B	C	D	E	F
1	Name	Update Order	P2 - InnerDiameter	P1 - Equivalent Stress Maximum	<input type="checkbox"/> Retain	Retained Data
2	Units		mm	Pa		
3	DP 0 (Current)	1	20	1602.5	<input checked="" type="checkbox"/>	✓
4	DP 1	2	10	1370.3	<input checked="" type="checkbox"/>	✓

# Documentation (details 4)

## Integrating external CAD designer

### From Source Code (src folder) :

- In XML file ExternalCADBridge.xml new parameters for your geometry can be defined in the `propertygroup` : `Inputs`
- In order to integrate your CAD designer open python file `CADGenerator.py`
  - In function `updateGeometry`, `softwareDir` defines the path to the software to be used.
  - In the function `buildjournal` you can refer to a scripting file that defines the geometry. The parameters for geometry are changed here.

# Thank you

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