Advanced iCopy Part Development in Autodesk® Inventor®-Complex Adaptive Geometry

Cortney Sieben
Curtainwall Designer - Post Sale

Class summary

- iCopy can streamline your complex part development in Autodesk Inventor.
  - 6200 hrs projected actually took 3700 hrs = 40% Time Savings
- Create an adaptive frame model, icopy part, and icopy assembly template.
- Create a calculated hole pattern feature that adjusts hole quantity and # of spaces, to match across a variety of parts with differing lengths and end cuts.

Class Expectations

- Working knowledge of Autodesk ® Inventor®
- Advanced Class
- Not a programming class
- Get the most out of your time in Inventor ®

Is This Class For You?

Introduction

Cortney Sieben

- Curtainwall Designer at Enclos Corp
- In the Curtainwall Industry for 6 years
- Hotel and Residence at LaLive, Wynn Encore, Javits Convention Center Remodel and 250 West 55th street Office building in New York, The World Trade Center Transportation Hub.
- Using Autodesk ® products for over 7 years

Introductions - Lab Assistants

Bill Graham

- Technical Project Manager (Resident Inventor Guru) - Enclos Corp

Michael Schumacher

- Senior Software Developer (Resident Autocad Guru)– Enclos Corp

Stan Wile

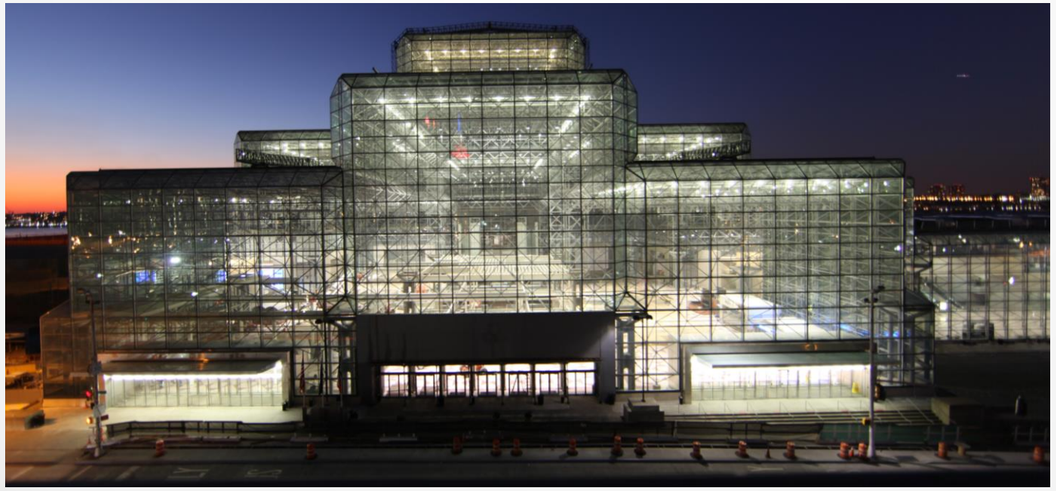
- Solutions Consultant –Imaginit Technologies

Introductions

Enclos Corp

- Expert in the design, engineering, fabrication, assembly and erection of custom facade systems.

- Specializes in Blast, Hurricane, Green, Medical, Earthquake, etc.



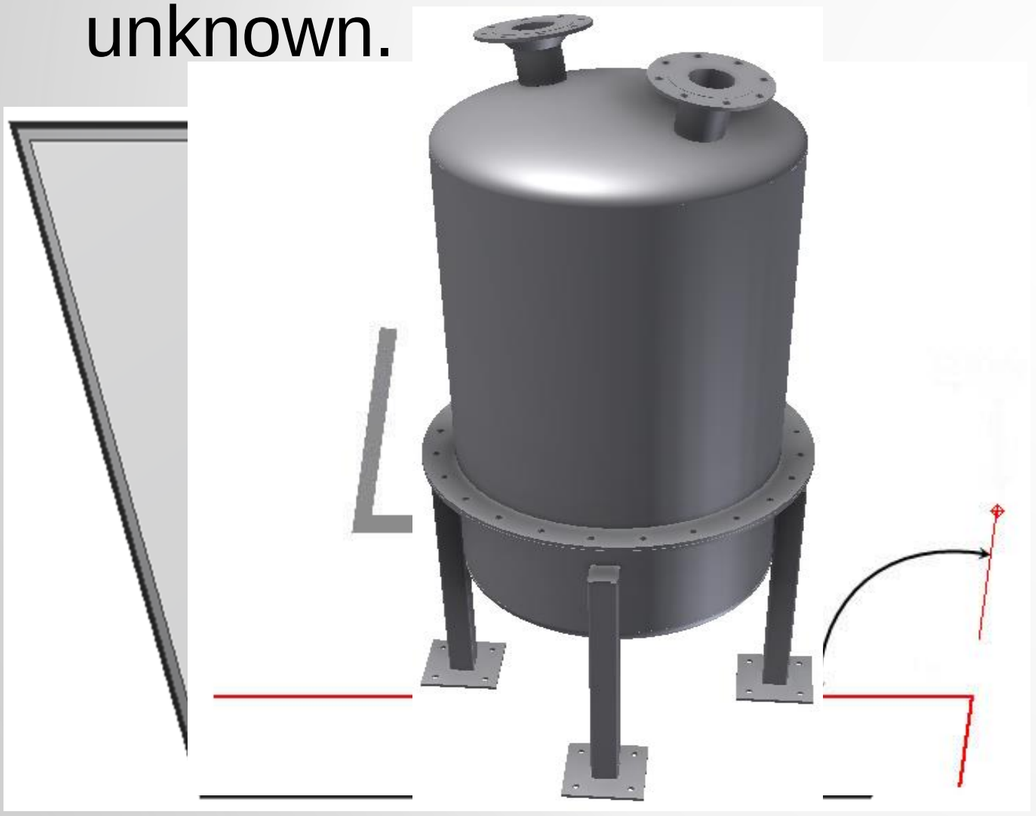
Learning Objectives

At the end of this class, you will be able to:

- Determine when iCopy templates are efficiently used.
- Create an adaptive frame model to use in an iCopy template.
- Create an aligned hole/notch pattern feature that will align between two separate components.
- Streamline parts development to meet tight project schedules.

iCopy - Introduction

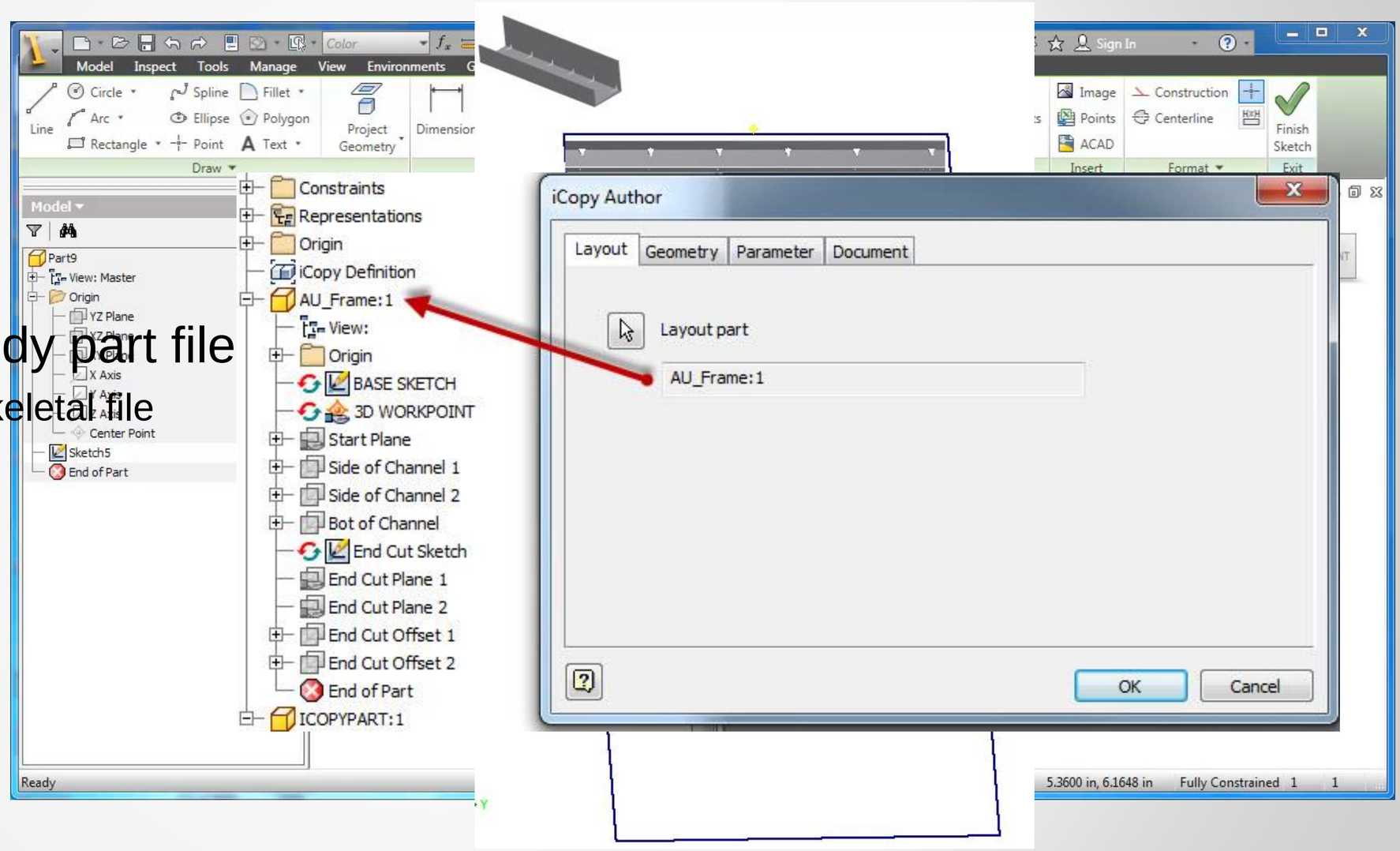
- Building products are similar, but different.
- Assemblies that stretch
- Configurable Assemblies have set values, iCopies values are unknown.



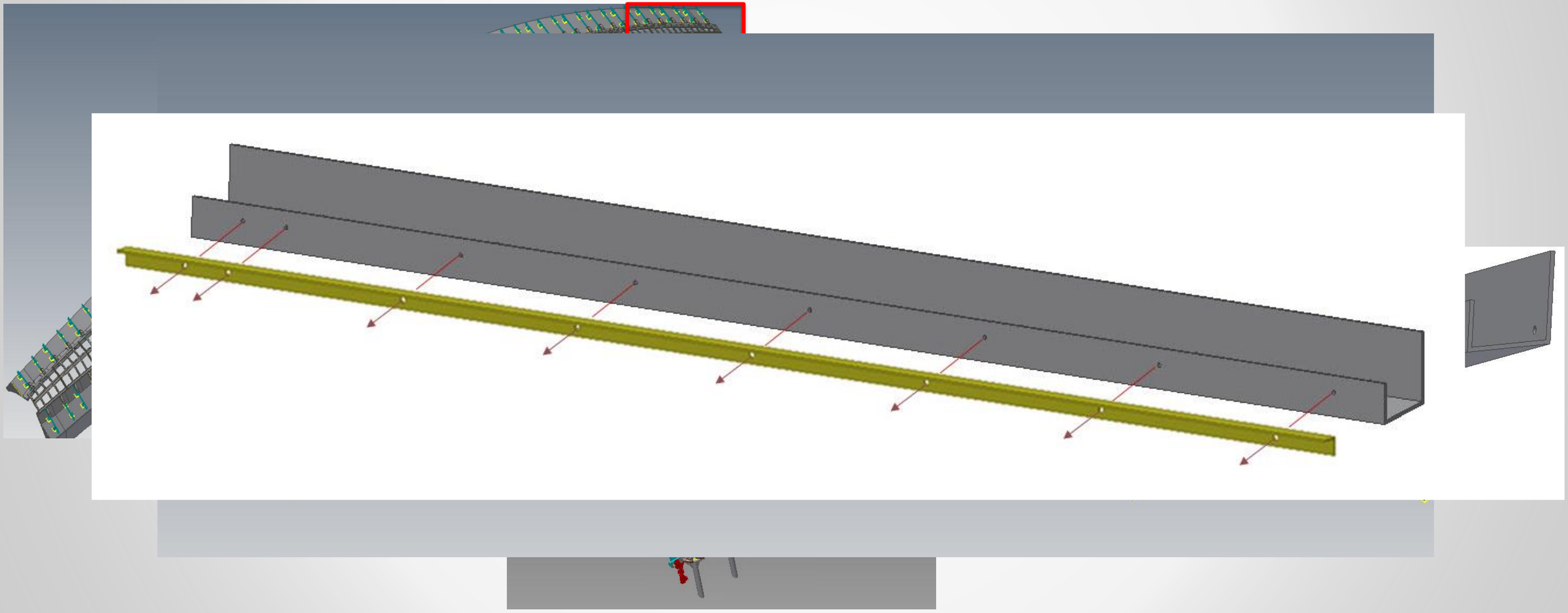
iCopy - Introduction

iCopy requires:

- Skeletal file
- At least 1 solid body part file
  - Derive adaptive skeletal file in components
- Assembly file
  - Skeletal File
  - Solid body part file
- iCopy Definition

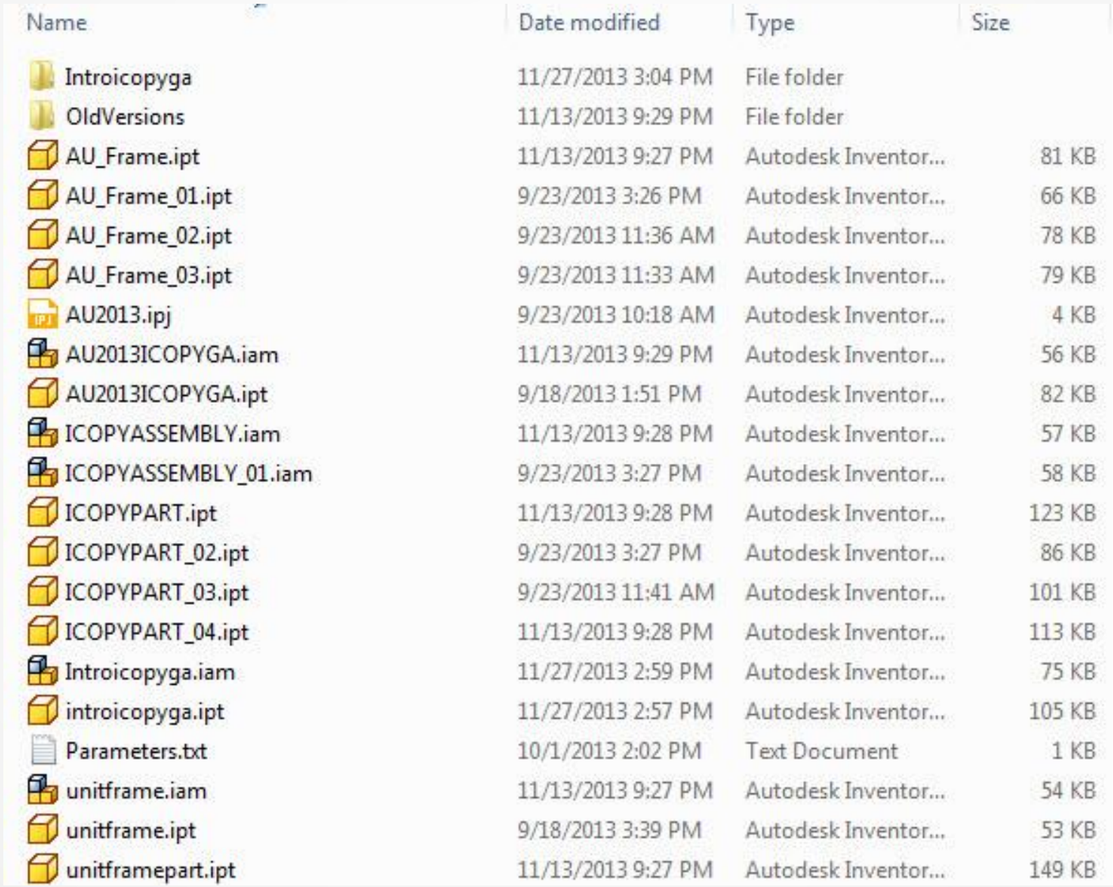


What are we doing here?



That’s a Lot of Files

- There are catch-up files in your workspace



Name	Date modified	Type	Size
Introicopyga	11/27/2013 3:04 PM	File folder	
OldVersions	11/13/2013 9:29 PM	File folder	
AU_Frame.ipt	11/13/2013 9:27 PM	Autodesk Inventor...	81 KB
AU_Frame_01.ipt	9/23/2013 3:26 PM	Autodesk Inventor...	66 KB
AU_Frame_02.ipt	9/23/2013 11:36 AM	Autodesk Inventor...	78 KB
AU_Frame_03.ipt	9/23/2013 11:33 AM	Autodesk Inventor...	79 KB
AU2013.ipj	9/23/2013 10:18 AM	Autodesk Inventor...	4 KB
AU2013ICOPYGA.iam	11/13/2013 9:29 PM	Autodesk Inventor...	56 KB
AU2013ICOPYGA.ipt	9/18/2013 1:51 PM	Autodesk Inventor...	82 KB
ICOPYASSEMBLY.iam	11/13/2013 9:28 PM	Autodesk Inventor...	57 KB
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Parameters.txt	10/1/2013 2:02 PM	Text Document	1 KB
unitframe.iam	11/13/2013 9:27 PM	Autodesk Inventor...	54 KB
unitframe.ipt	9/18/2013 3:39 PM	Autodesk Inventor...	53 KB
unitframepart.ipt	11/13/2013 9:27 PM	Autodesk Inventor...	149 KB

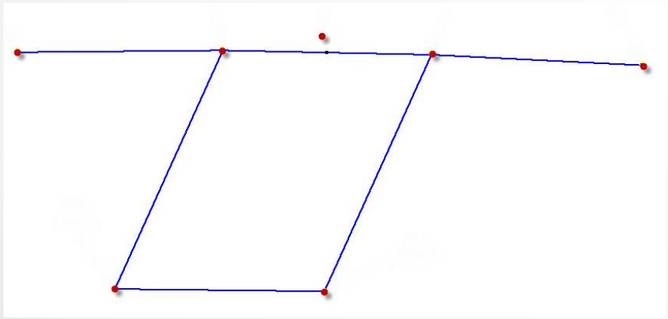
Set the Project File

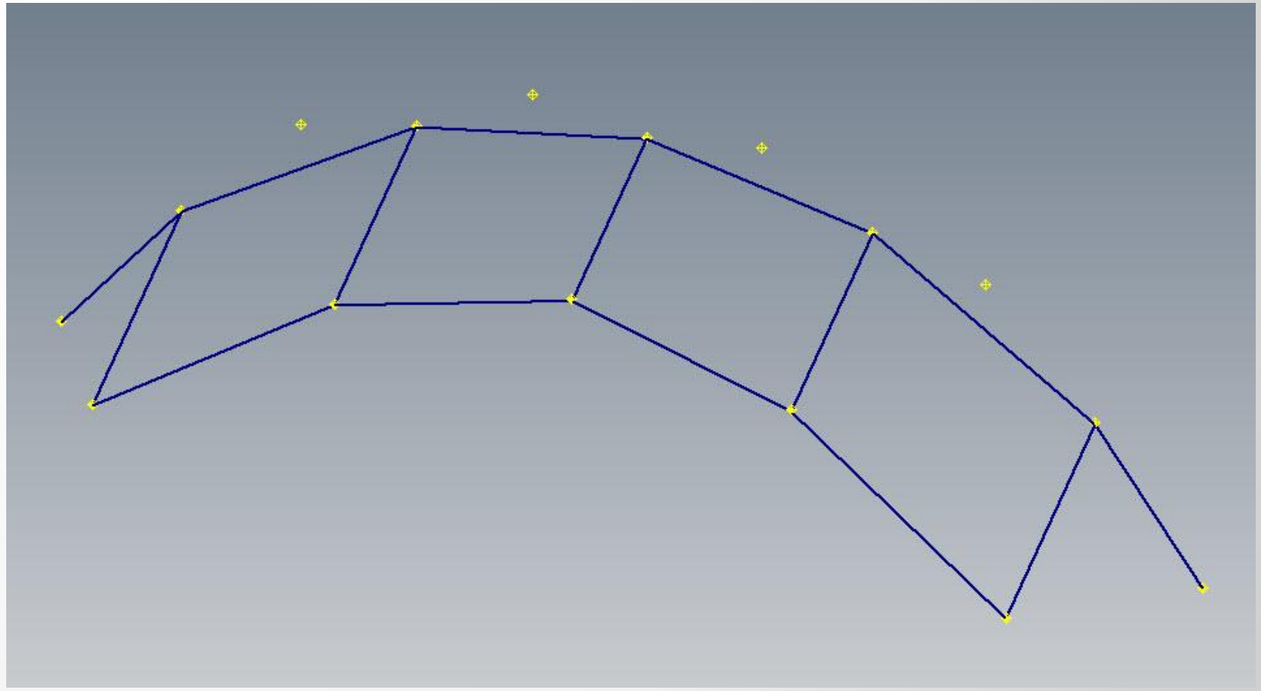
C:\Datasets\Thursday\FB2864-L Advanced iCopy Part Development in Autodesk® Inventor®-Complex Adaptive Geometry\ **AU2013.ipj**

Lab Process

Create a Skeletal Frame → Create Orientation Work Planes → Create End Cut Workplanes → Create iCopy Channel Part → Create Calculated Hole Pattern → Author iCopy → Place iCopy

- An Adaptive Sketch
- The Basis For How iCopy Part Models are Built
- Adapts to the Space it is Constrained

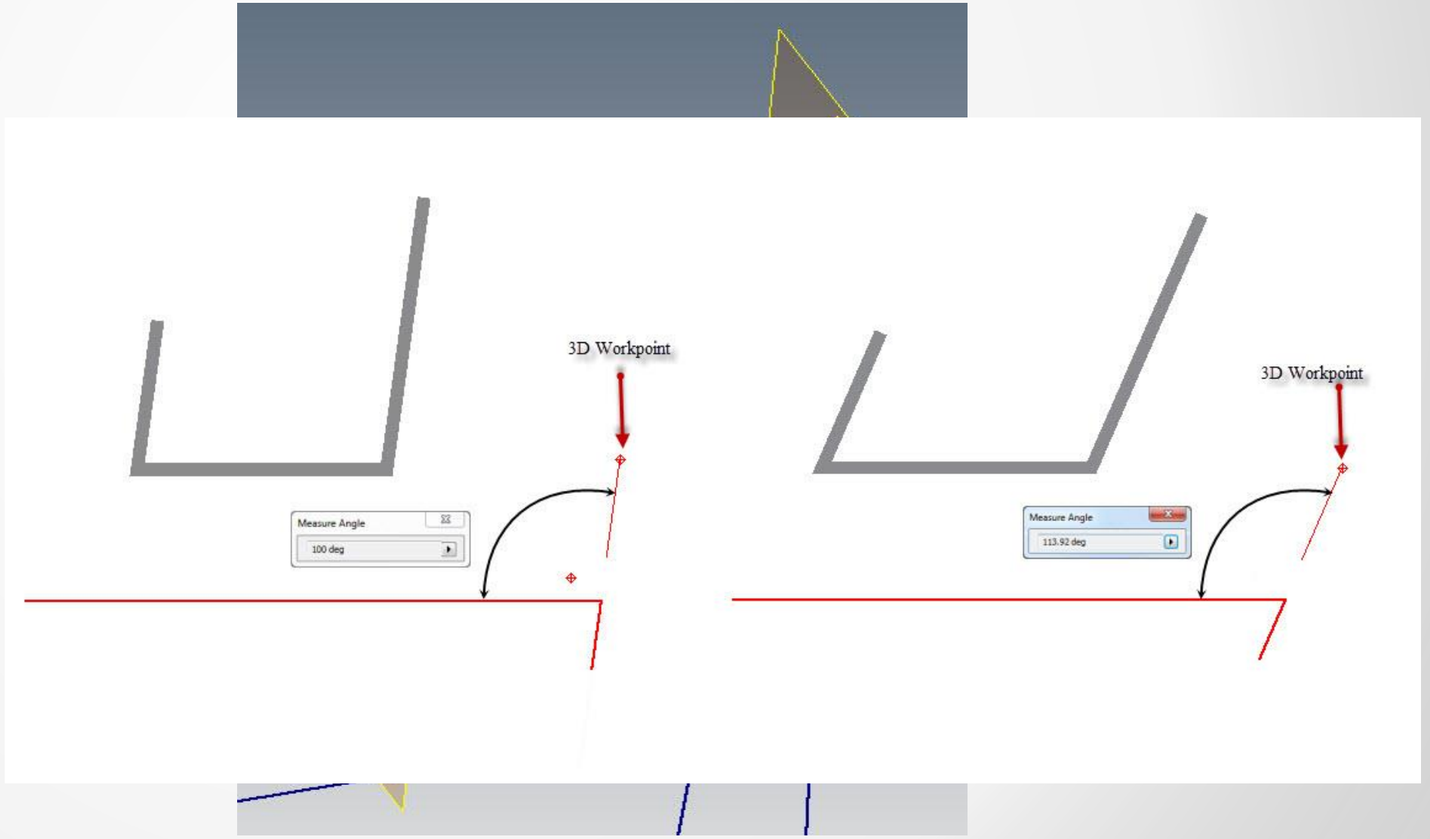




Lab Process

Create a Skeletal Frame → **Create Orientation Work Planes** → Create End Cut Workplanes → Create iCopy Channel Part → Create Calculated Hole Pattern → Author iCopy → Place iCopy

- Set a Base Plane
- 3 Point Plane Sets the Orientation of the Channel Legs
- Offsets of the 3 Point Plane sets the Position of the Channel Legs



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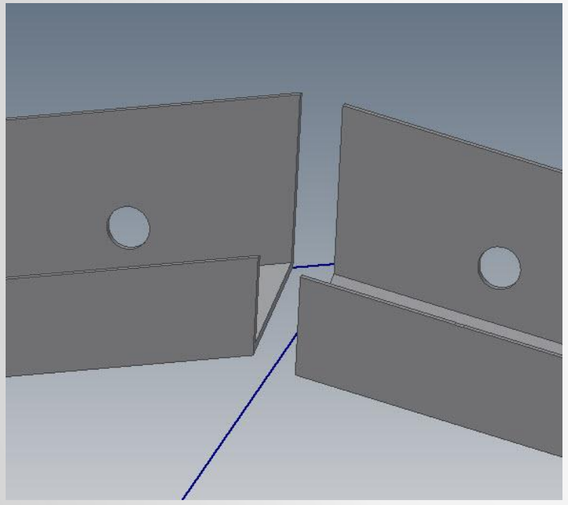
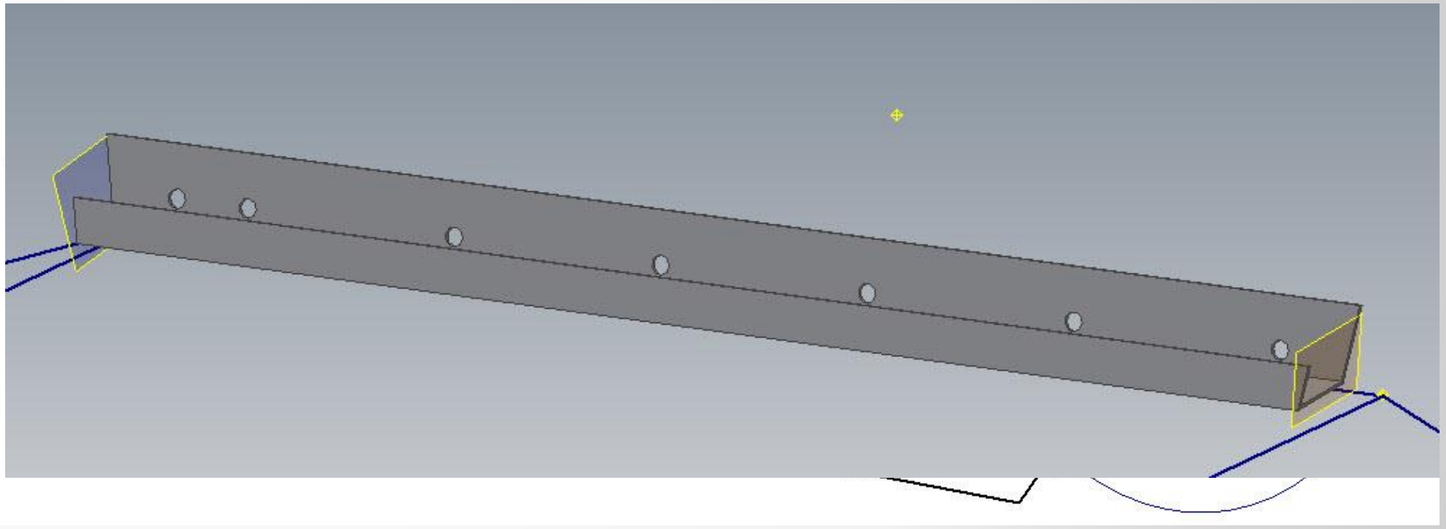


- Determines the end cuts of the Channel Part
- Miter the End Cuts of Parts Together by Splitting the Difference Between Two Faces.
- Create an Offset Parameter to allow for variable end cut offsets.



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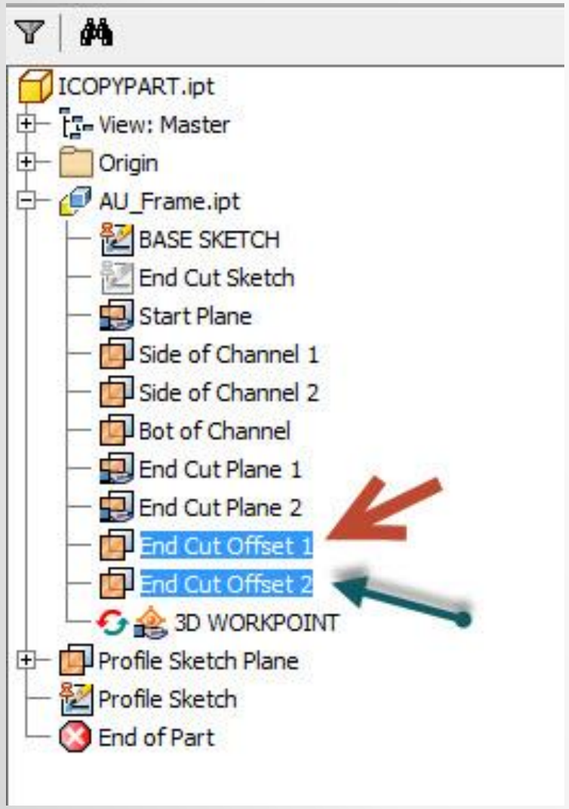
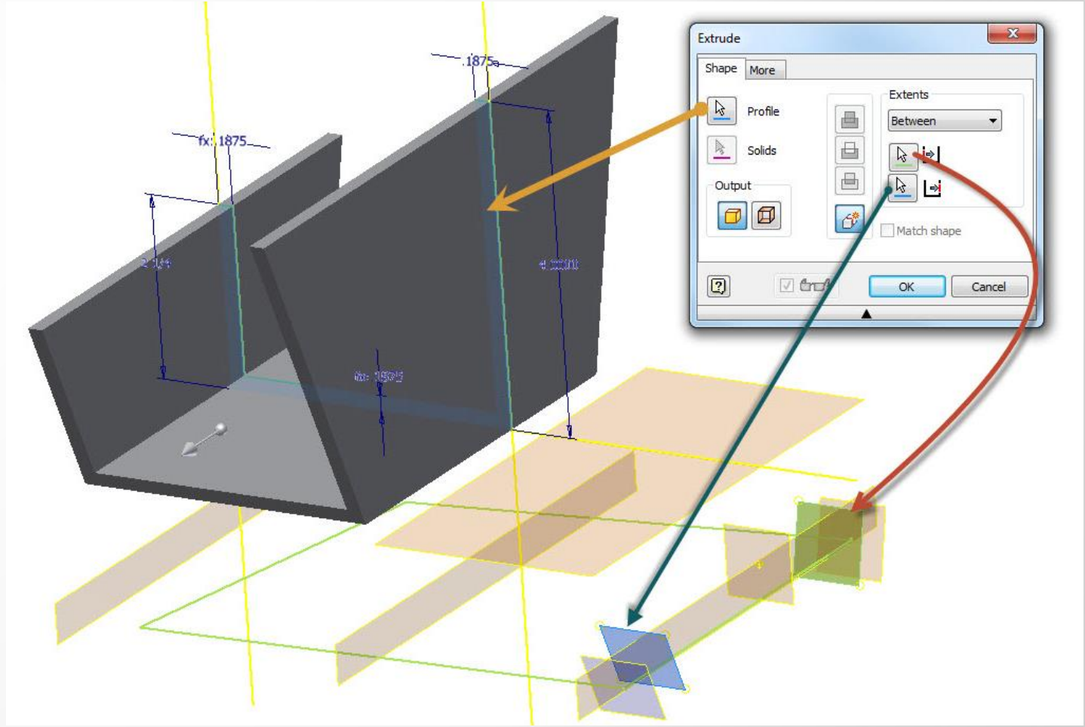


- Derive Frame Part into Part file
- Extrude Between the Offset End cut Planes
- Note: Multiple parts may exist within an icopy Assembly.
- Frame generator is a Good tool



Lab Process

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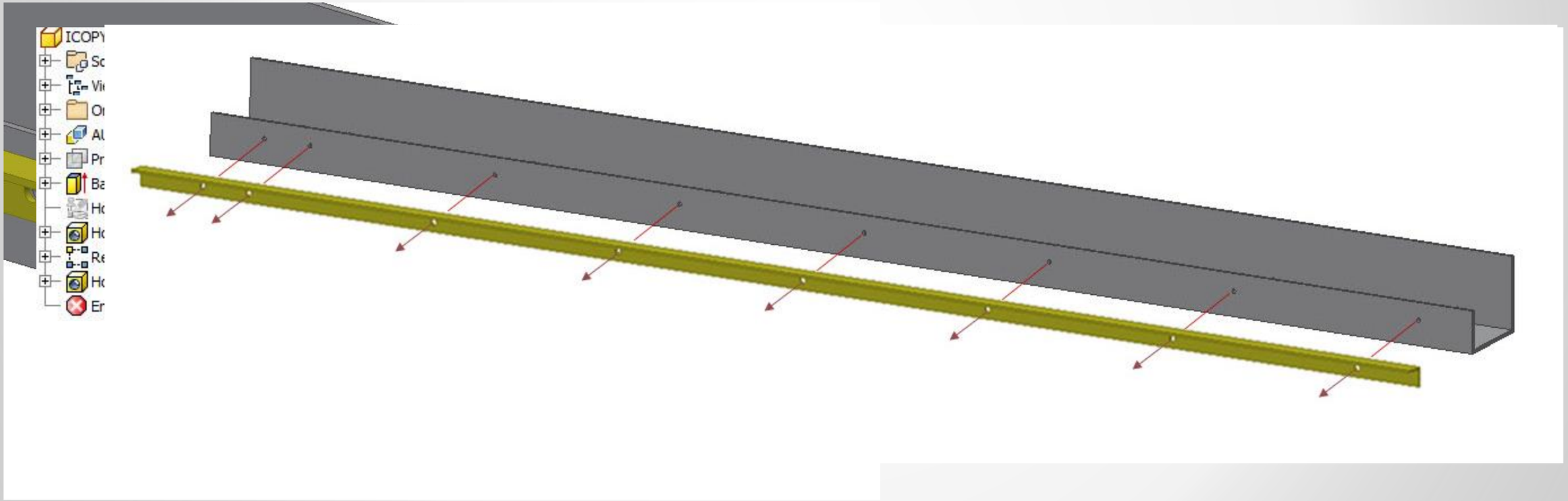

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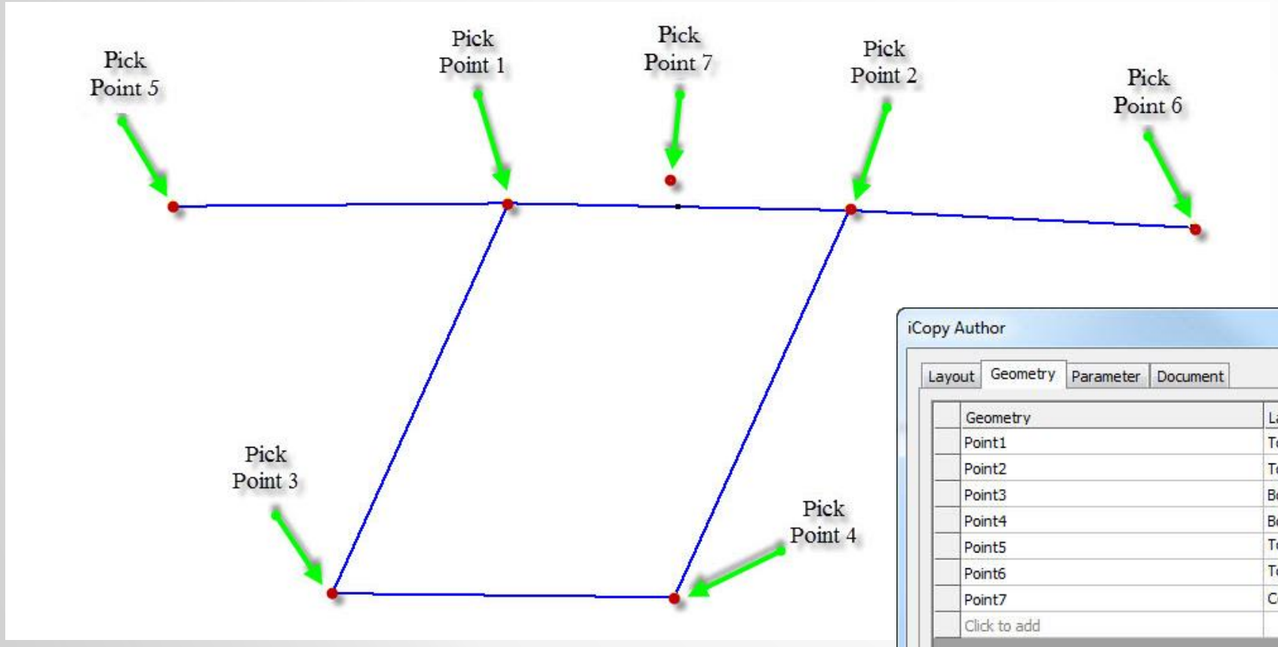
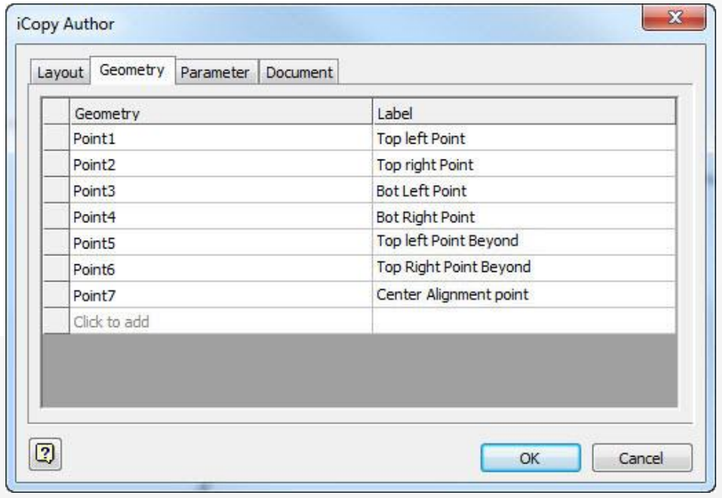
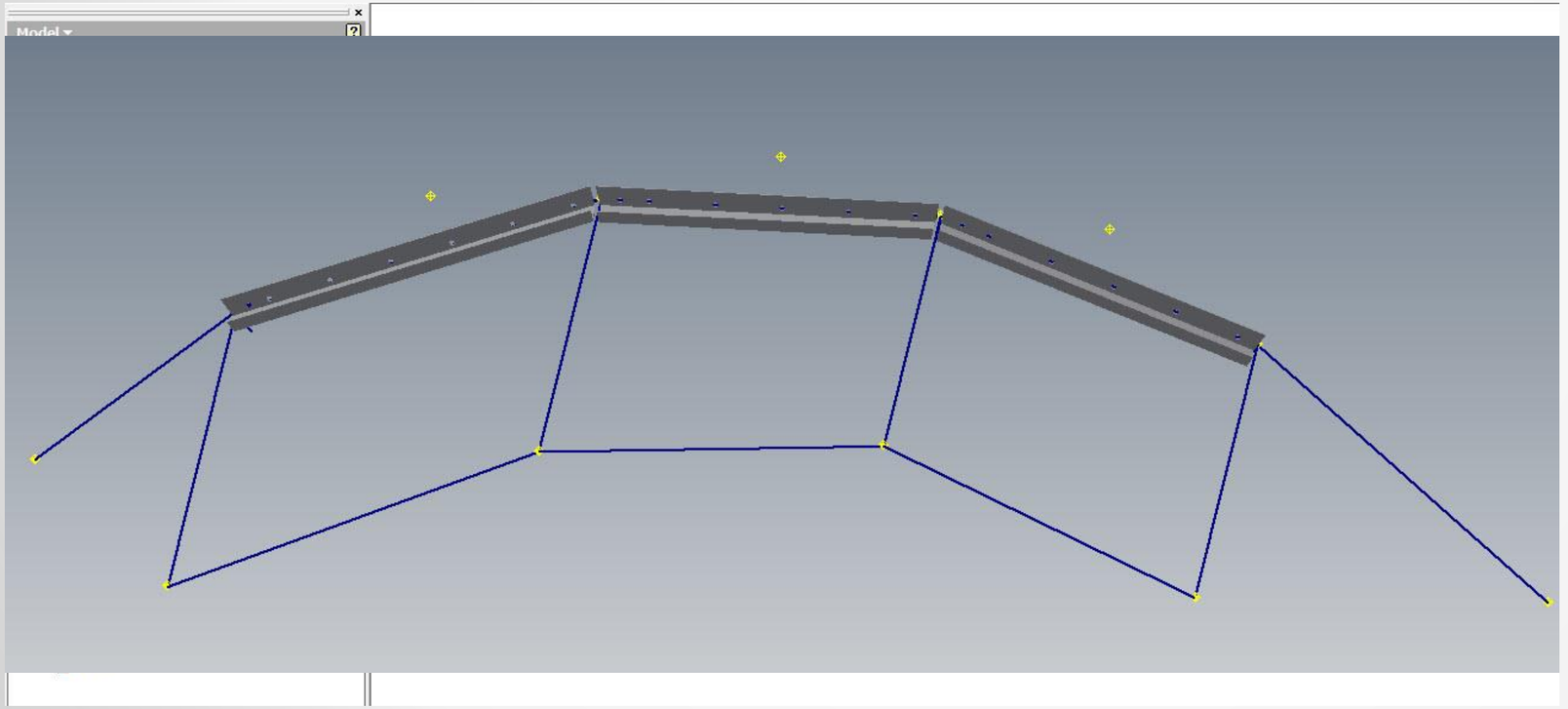




- Author iCopy Assembly to create an iCopy defenition
- iCopy Assembly Contains Skeletal Frame and Part/Assembly Files
- Author Geometry Comes from the Adaptive Skeletal Frame

Lab Process

Create a Skeletal Frame → Create Orientation Workplanes → Create End Cut Workplanes → Create iCopy Channel Part → Create Calculated Hole Pattern → Author iCopy → **Place iCopy**



- Constrained into a General Frame Assembly Model Using the Same Geometry as was Created in the Skeletal Frame
- May place Multiple iCopy Assemblies Along the Same General Frame Assembly Model.

Review


Create a Skeletal Frame
Create Orientation Workplanes
Create End Cut Workplanes
Create iCopy Channel Part
Create Calculated Hole Pattern
Author iCopy
Place iCopy

Tricks and Tips

- Use as few constraints as possible in skeletal frame.
- iCopy Templates can have many parts.
- Use Frame Generator
- A Placed iCopy Template can act as a new Template
- Check and Recheck your ICopy Template
- Constrain Skeletal Frame into General Assembly before adding parts
- Extensive list of varying parameters? Link Values from Revit or from spreadsheets within inventor or Excel.

Questions

Thanks

Please Fill Out Your Survey