

# It's *STILL* all in the Details – Tips & Tricks for Detailing in Inventor

**Jim O'Flaherty**

Autodesk Licensing & Support Manager – MHS, Inc.

**Radu Stancescu**

Autodesk Inventor Administrator, Benson Industries





# About the speaker

## Jim O'Flaherty

- Began career in 1980 as a Draftsman (on the board)
- Worked in the industries of:
  - Avionics
  - Autodesk Reseller
  - Automotive
  - Consumer goods
  - Industrial Machinery
  - Nuclear Waste removal
  - Power Generation
  - Parcel Conveyors
- Autodesk Inventor since Release 3
- 1<sup>st</sup> Commercial implementation of Autodesk Vault Workgroup
- Autodesk Expert Elite since 2014
- Autodesk Inventor Certified Professional/Instructor
- Autodesk University Speaker 2015 thru 2020
- Autodesk University Speaker Mentor 2017 thru 2020
- Known as The Angry Elf & Angry Elf's Alter Ego on Discussion Groups



Angry Elf



Angry Elf's Alter Ego





# About the speaker

Jim O'Flaherty – Personal Life

Proud father to my all-too-great kids (2 & 4 legged)

Connoisseur of fine whiskey and movies

Guitar player (more owner these days)

And a slight fan of a little known band from England

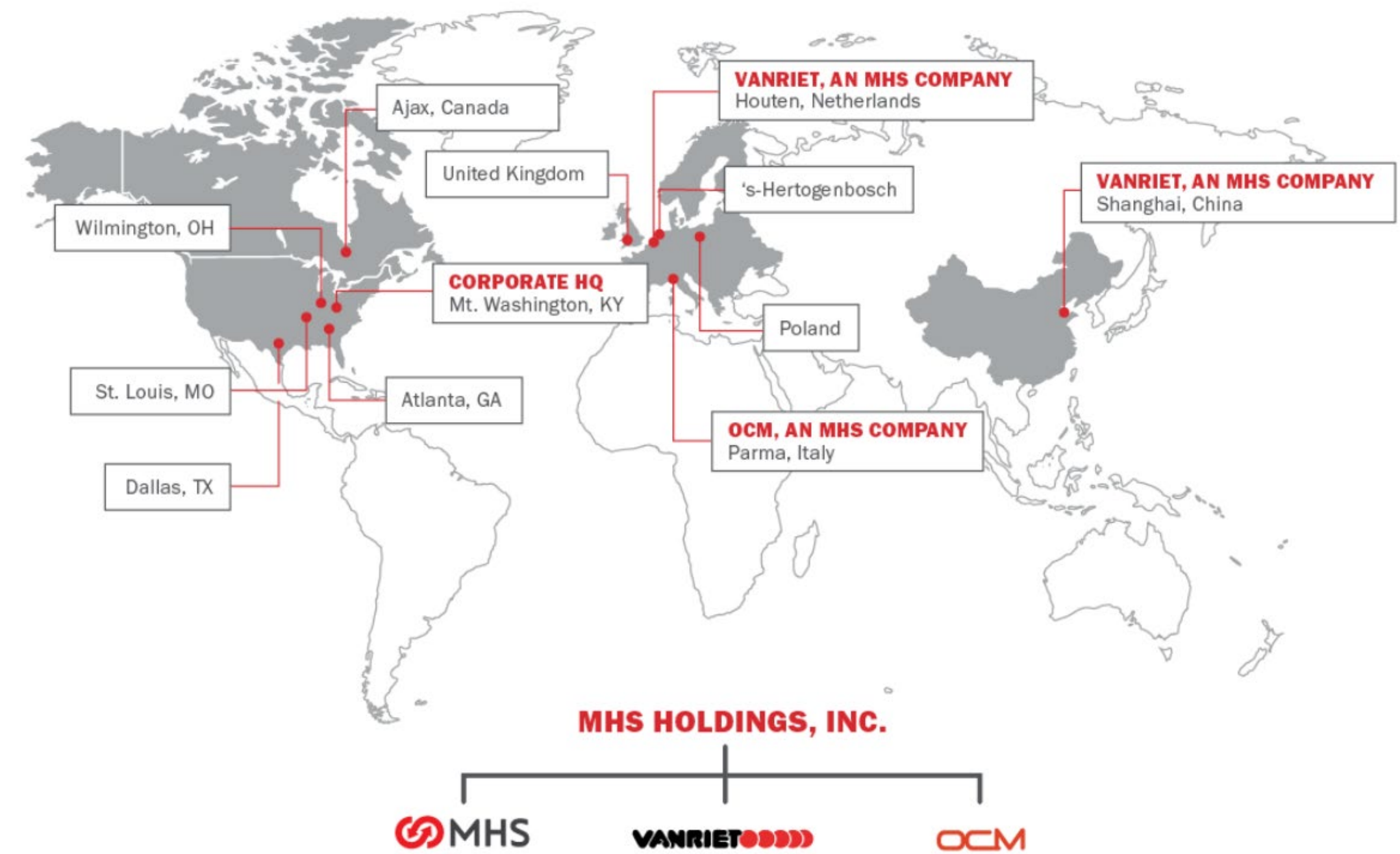






# About the speaker

Jim O'Flaherty – Professional Life  
Material Handling Systems, Inc.







# About the speaker

## Radu Stancescu - Work

Radu has over 20 years in the mechanical design using Autodesk software and several years in implementing ERP and Data Management products; currently he's working in the IT division at Benson Industries, a premier custom curtainwall and external cladding subcontractor in the USA and Asia. Radu is an Autodesk Inventor Certified Professional, Implementation Certified Expert and an Autodesk Certified Instructor since 2007. He's also been a speaker at Autodesk Accelerate 2019.





# About the speaker

Radu Stancescu – Hobbies

Family

Ultramarathon Runner

High Altitude Mountaineering Climber (Hiker)

Professional Soccer Referee (past)

Chess

Food, Drinks

Pokemon Go





# About the speaker

Radu Stancescu – Benson Industries

**Marina Bay**

**The New York Times**

**Sales Force Tower**

**One World Trade Center**



# Preface – The Legal Details of the Details





# Preface – The Legalities of a Mechanical Drawing

Legally speaking drawings are in fact legal documents.

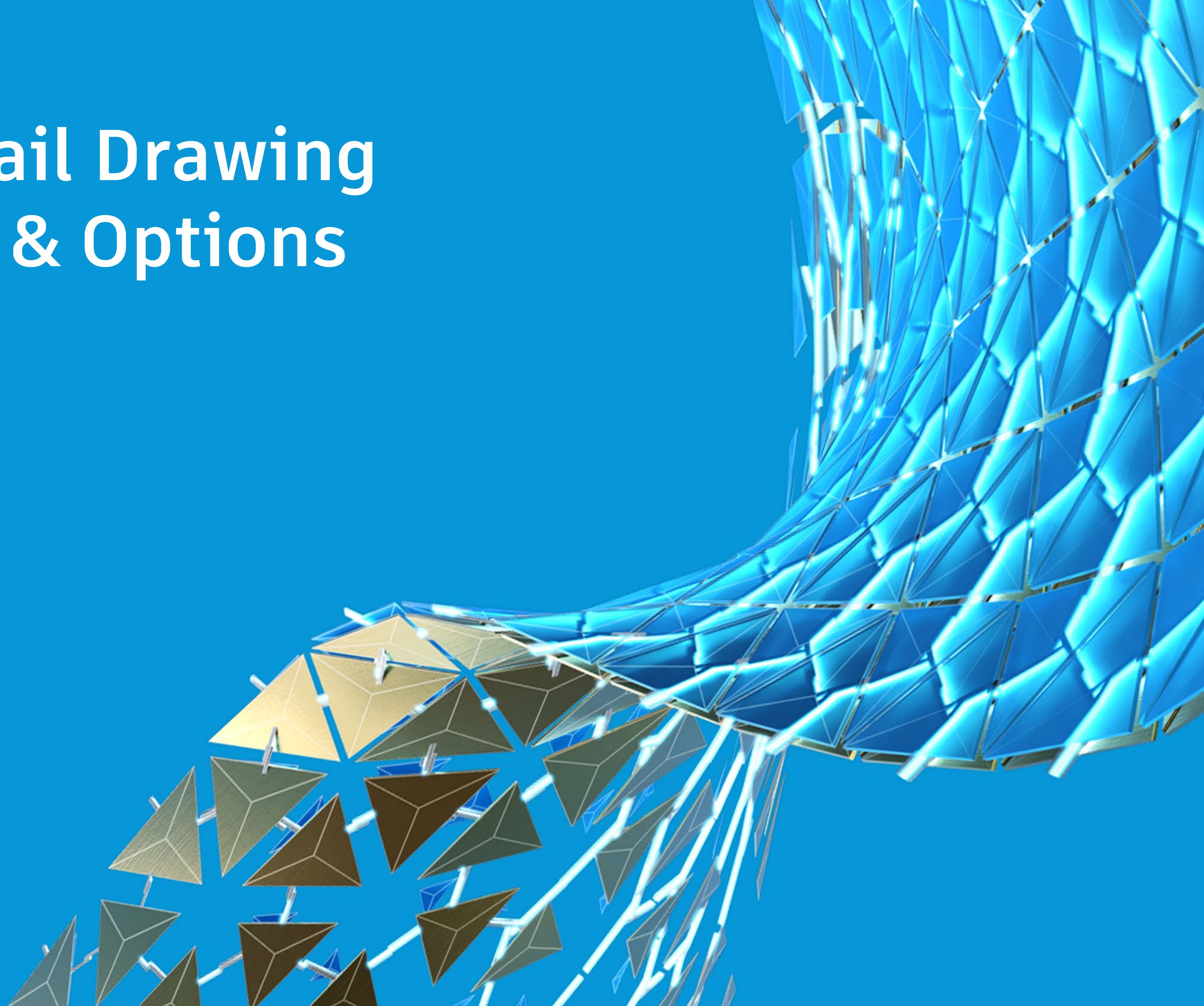
They communicate all the needed information about what is to be created for the customer.

If the product is produced incorrectly, liability can be assigned to the responsible party based on the drawing and whether the product was created per the drawing specification or not.

If those specifications are found to be wrong, liability falls squarely on those who signed the approvals for the drawing, i.e. Engineer, Director of Engineering, QA, etc.



# Inventor Detail Drawing Environment & Options





# Section #1 - Views

## Manipulating Views

Once you've placed a view, they can be manipulated in a number of ways. Some of the more common are:

- **Aligning Horizontally or Vertically**
- **Rotating normal to an edge, to an absolute angle or Relative Angle**
- **Scale**
- **Name**



<https://youtu.be/xJDXQsnJv8Y>

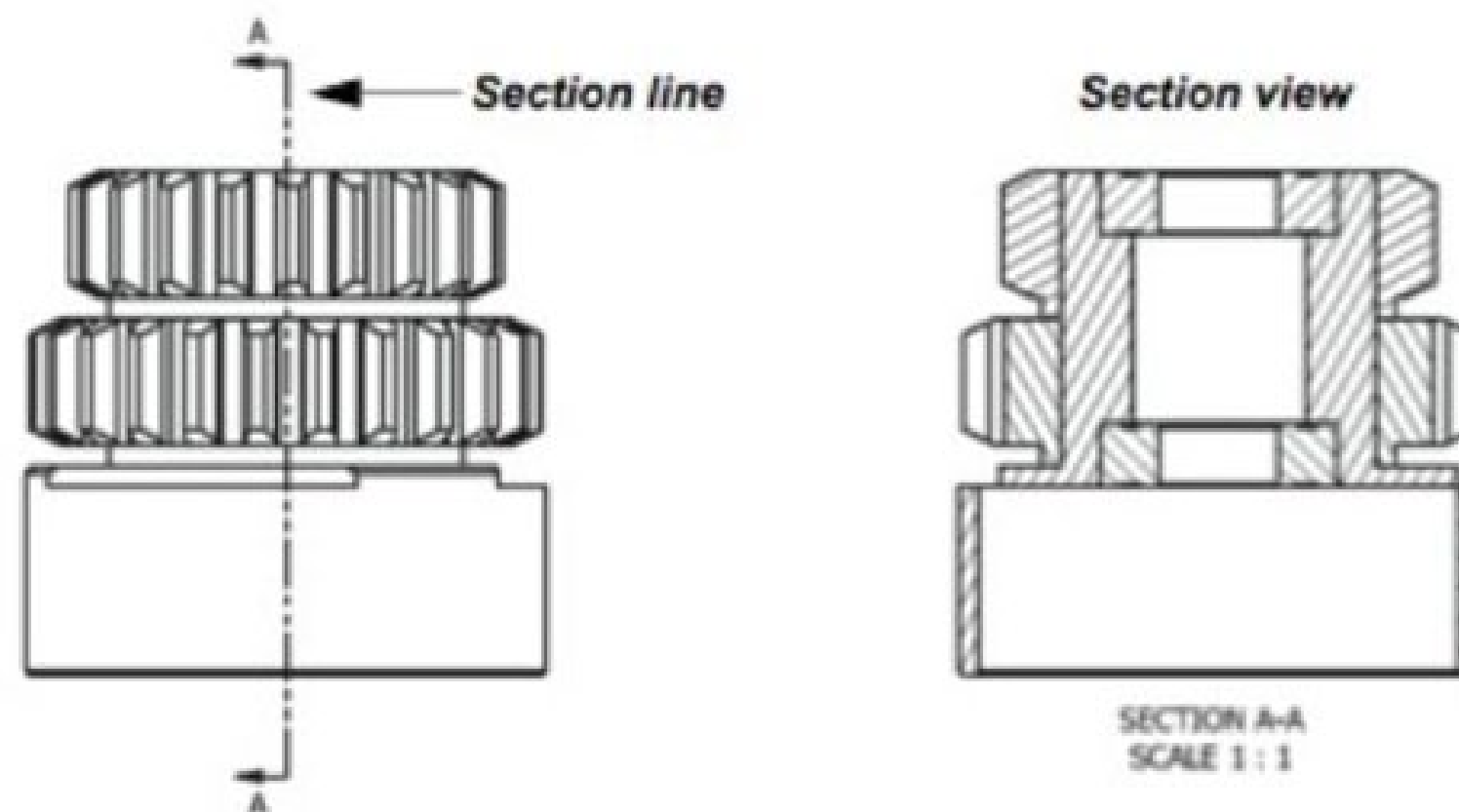


# Section #1 - Views

## Section Views



Section Views are one of the more common types of views you'll use in detailing your parts and assemblies.





[https://youtu.be/\\_Kq9\\_Mqn31s](https://youtu.be/_Kq9_Mqn31s)

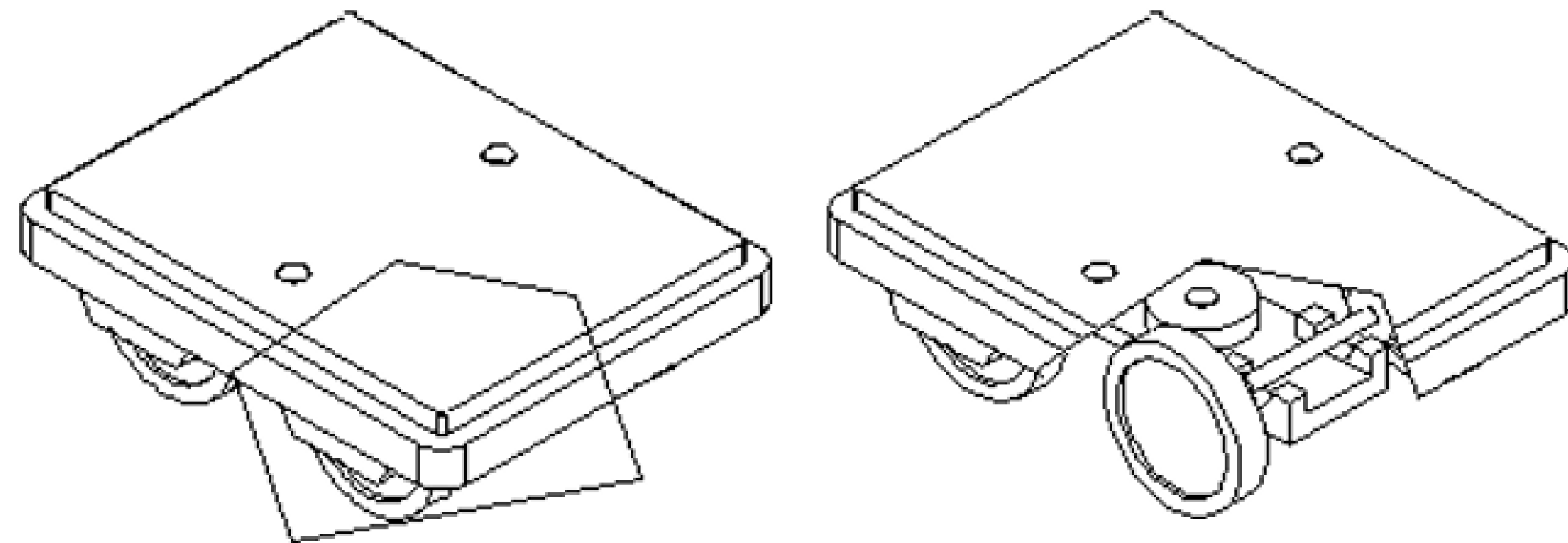


# Section #1 - Views

## Break Out Views



**Break Out Views** are used to display the areas or components that may be hidden by other components of the assembly model.





<https://youtu.be/XEtBufDT2NE>



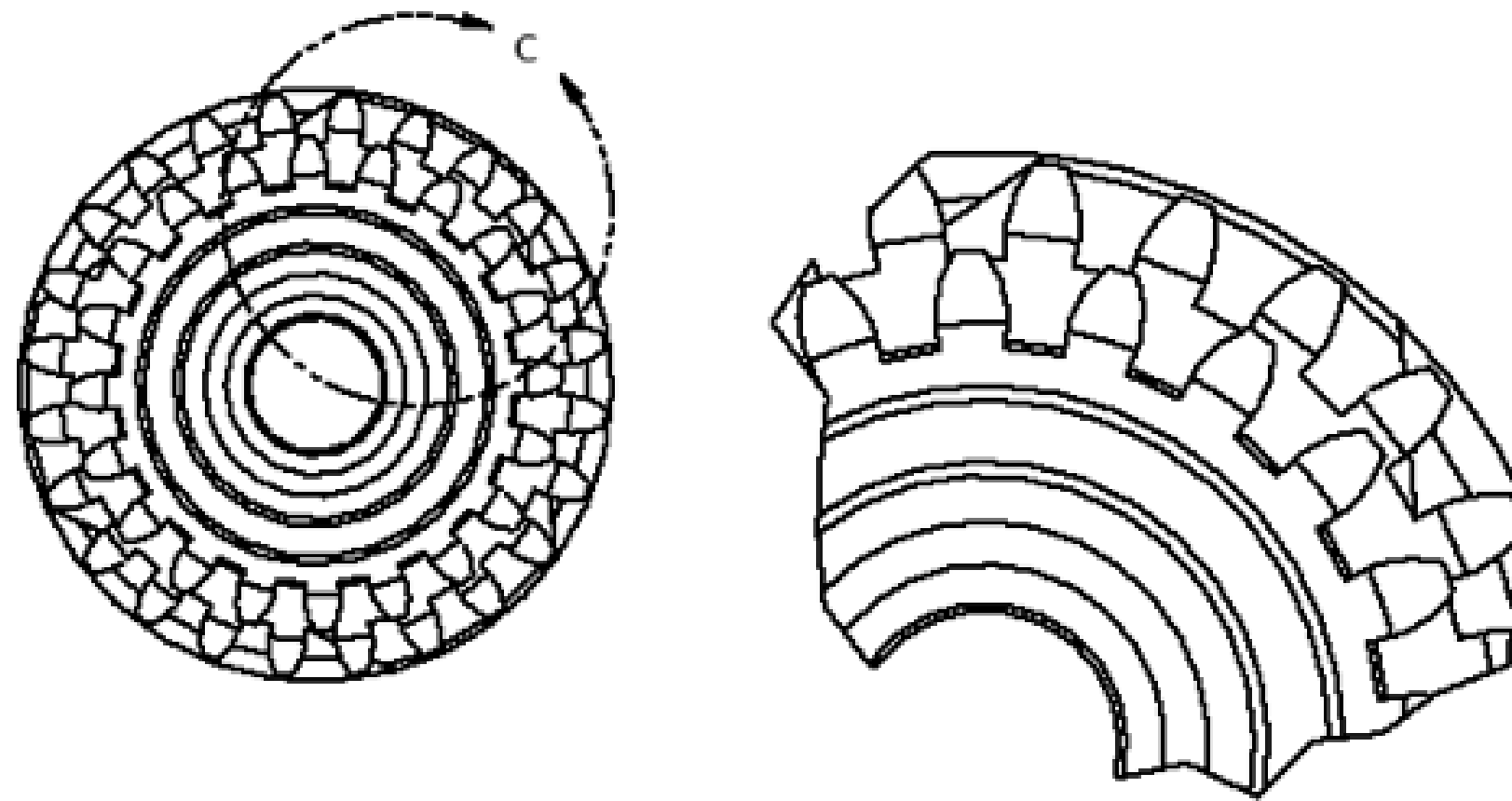
# Section #1 - Views

## Detail Views



Detail

Detail Views are used to enlarge an area of a parent view in order to display the details more clearly.



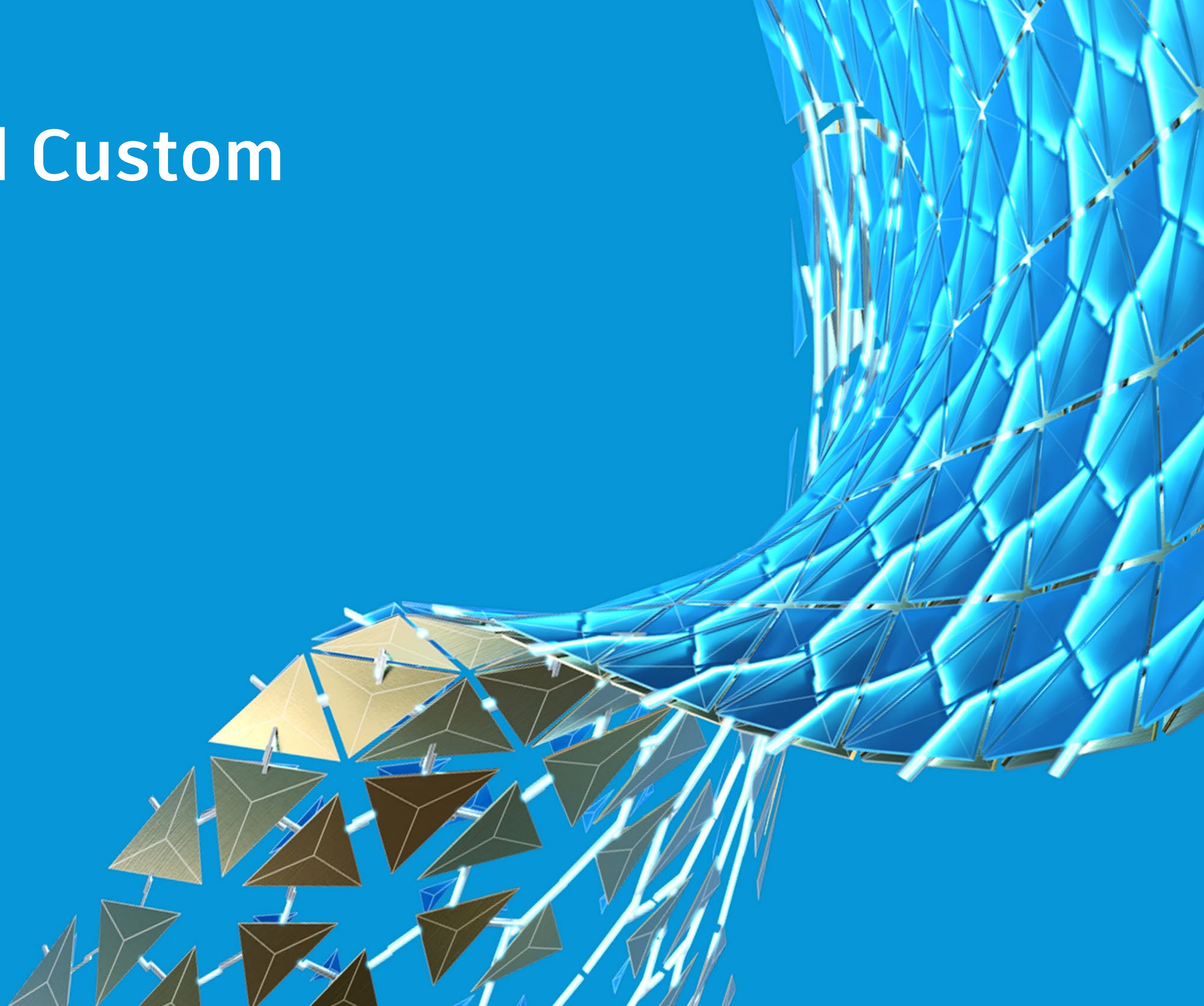
DETAIL C  
SCALE 10 : 1



<https://youtu.be/BUrPjwgl-O4>



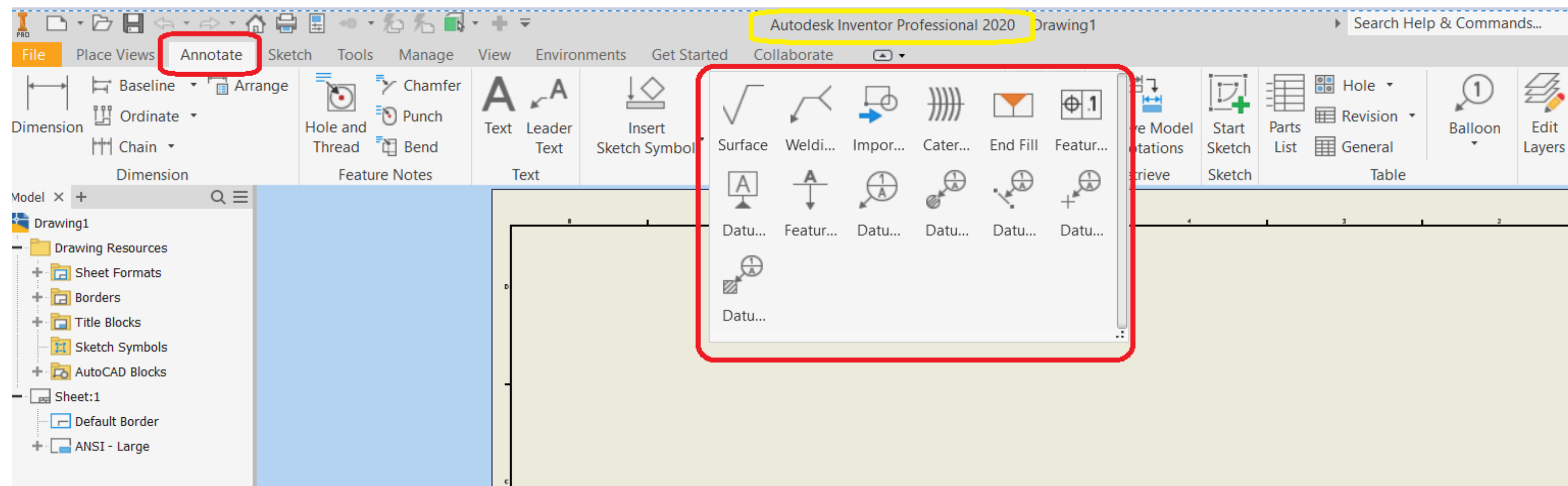
# Standard and Custom Symbols





# Section #2 – Standard Symbols

Standard Symbols are predefined annotations such as surface texture, features control frame, welding or datum identifier. You can copy existing symbols and paste them in your drawings as new symbols to quickly and easily create new symbols. The active style determines the symbol appearance; for further details see the Style and Standard Editor.

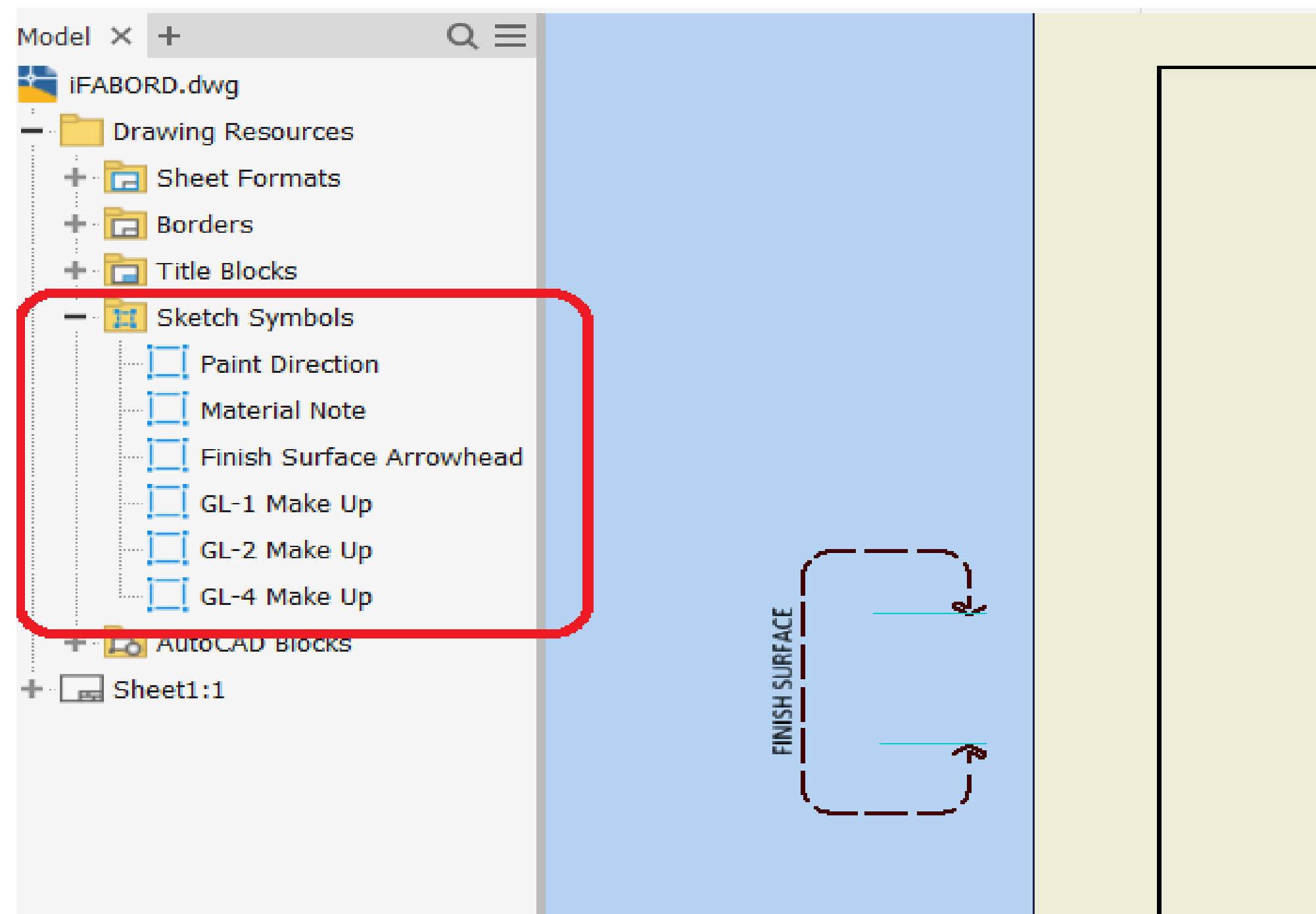


You can copy existing symbols and paste them in your drawings to quickly and easily create new symbols.



## Section #2 – Custom Symbols

Local sketch symbols are stored in the Drawing Resources Sketch Symbols folder in the browser. Symbols created in the current drawing can be saved locally or to an external symbol library. Symbols created in a template file are available locally in all drawings using the template. Symbols added to and stored in a sketch symbol library can be accessed by multiple users and computers.





## Section #2 – Custom Symbols

You can save all your sketch symbols to a sketch symbol library. If no library exists, select the Create a New Library icon to create a new external library. Select the folder icon to create a subfolder within the selected library if desired.

**Note:** Sketch Symbol Library location is saved by default to C:\Users\Public\Documents\Autodesk\Inventor 2020\Design Data\Symbol Library. You can add, delete, or rename libraries at this location.

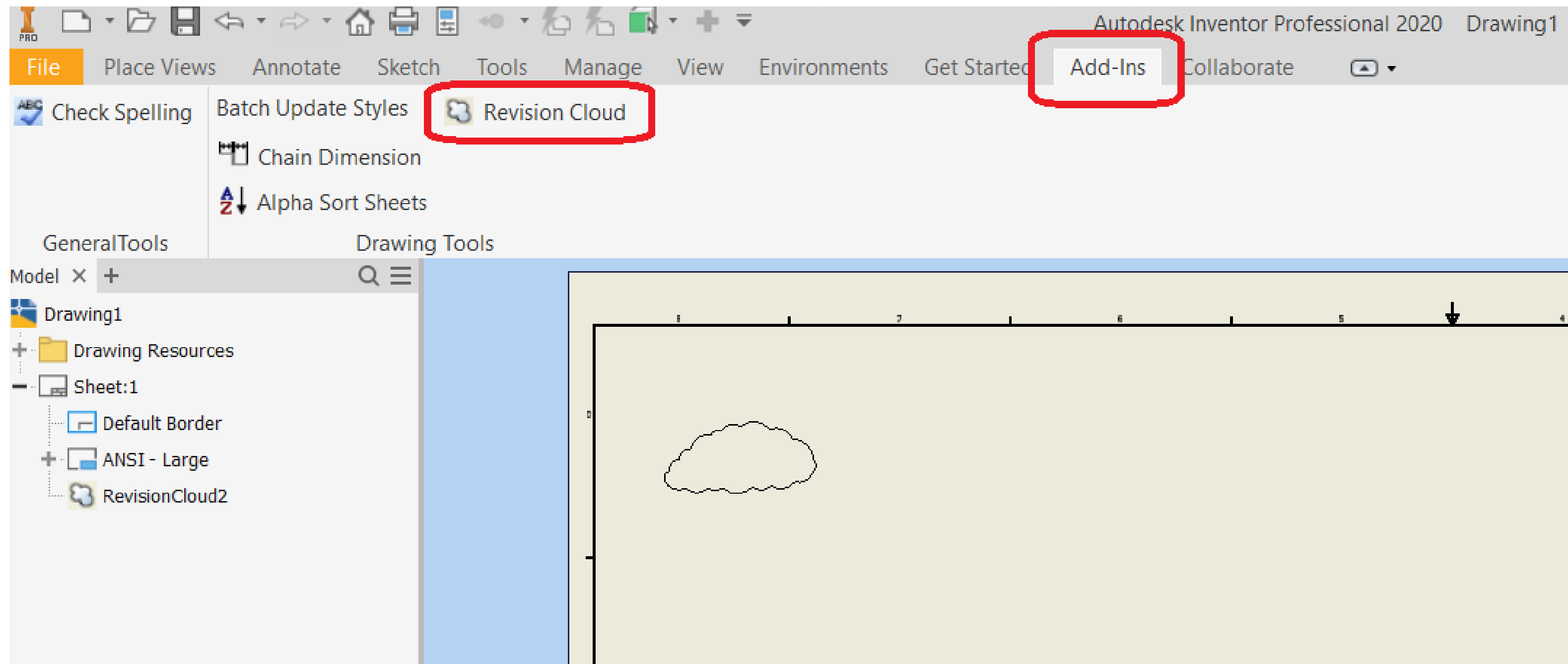
Two sketch symbols cannot be saved to the symbol library with the same name; actually, a library is a drawing.

A sketch symbol can contain geometry, text, iProperties, prompted text and imported images.

***All of these are going to be demonstrated now***



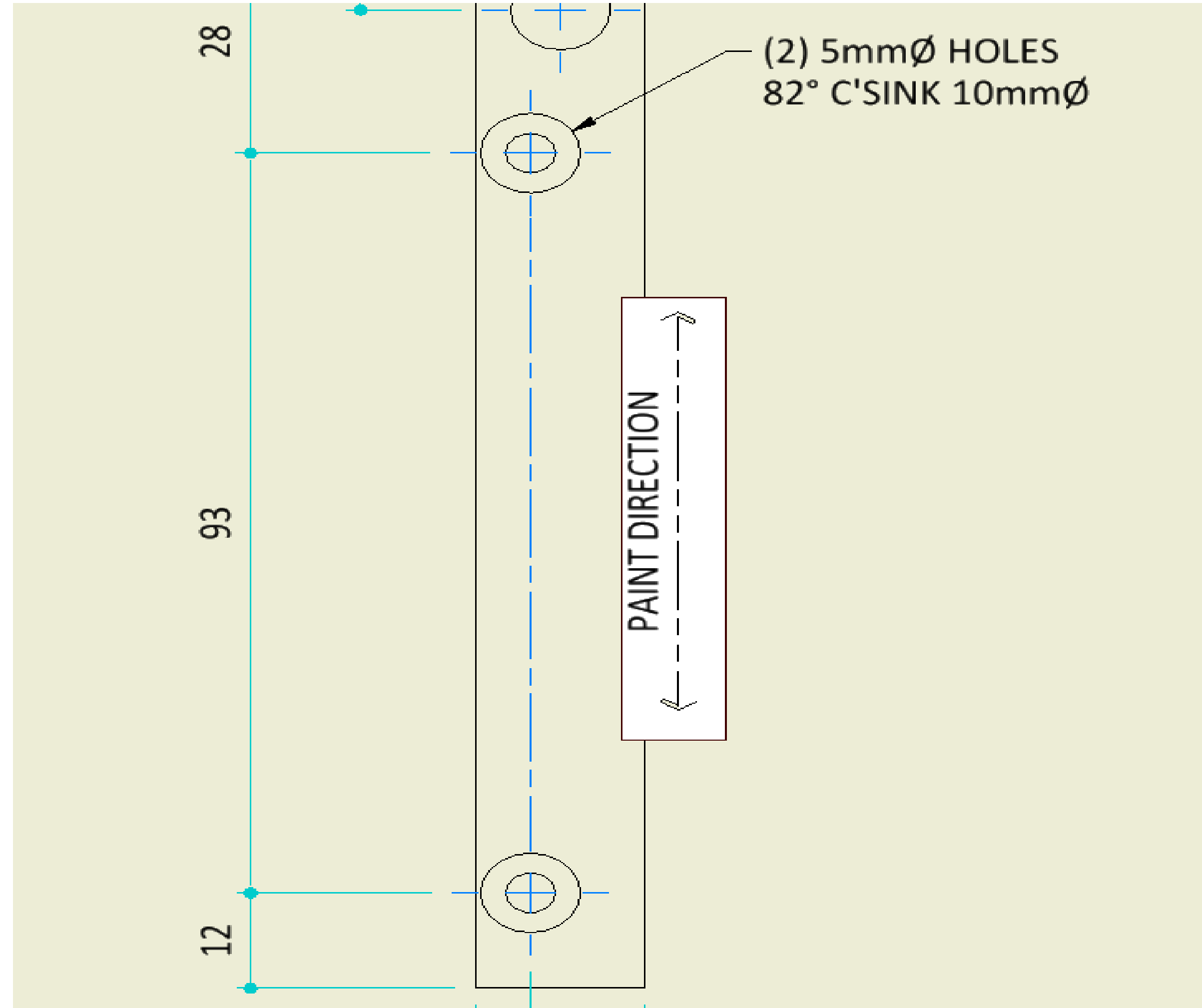
# BONUS #1 – Revision Cloud



It is not a default function in Inventor and must be manually added.

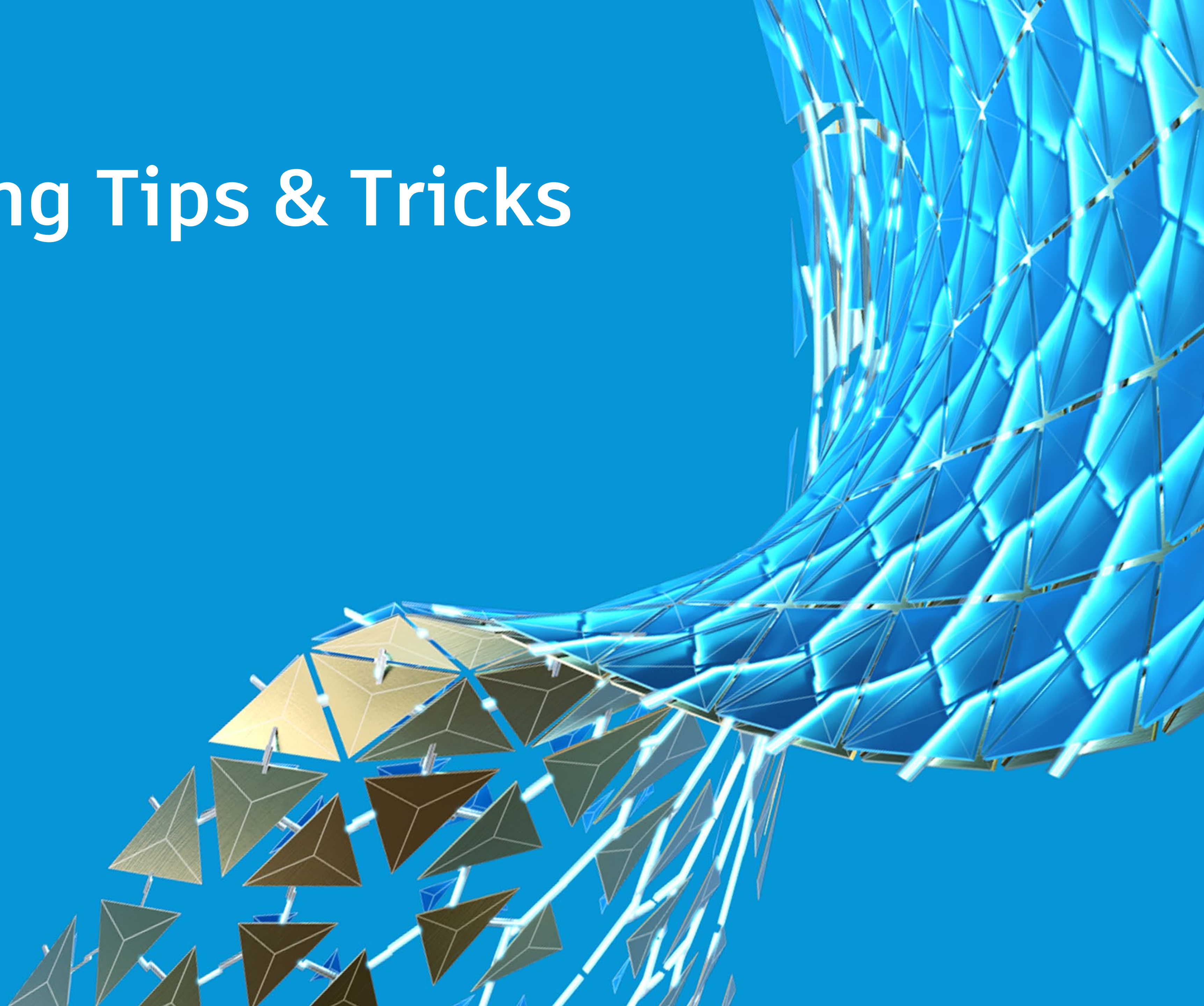


## BONUS #2 – Symbol Mask





# Dimensioning Tips & Tricks





# Section #3 – Dimensioning Tips & Tricks

## Intersection Dimensions

**Intersection Dimensions require a few extra steps and specific order of those steps to function correctly or to give you the dimension you desire. A little finesse and you're good to go.**

**Let's take a look at this dimension type.**



[https://youtu.be/\\_ULAN7NHcok](https://youtu.be/_ULAN7NHcok)



# Section #3 – Dimensioning Tips & Tricks

## Tangent Dimensions

***Note: this is for those using per-2020 release***

Even more so than Intersection Dimensions, Tangent Dimensions require a level of finesse...that and a keen eye.

Let's take a look as to why that is.

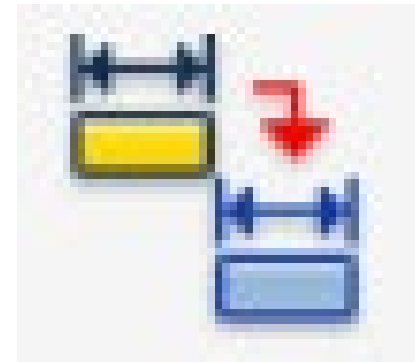


<https://youtu.be/w4tuLkSrYAc>



# Section #3 – Dimensioning Tips & Tricks

## Model Dimensions



Using Model Dimensions offer numerous benefits, from eliminating the need to manually insert the dimensions on the detail sheet to having the ability to edit the model from the detail sheet, avoiding opening the model file or flipping back and forth between the two files.

Let's demonstrate...



<https://youtu.be/ksOZe6Qx9Bw>



# Section #3 – Dimensioning Tips & Tricks

## Ordinate Dimensions in Detail Views

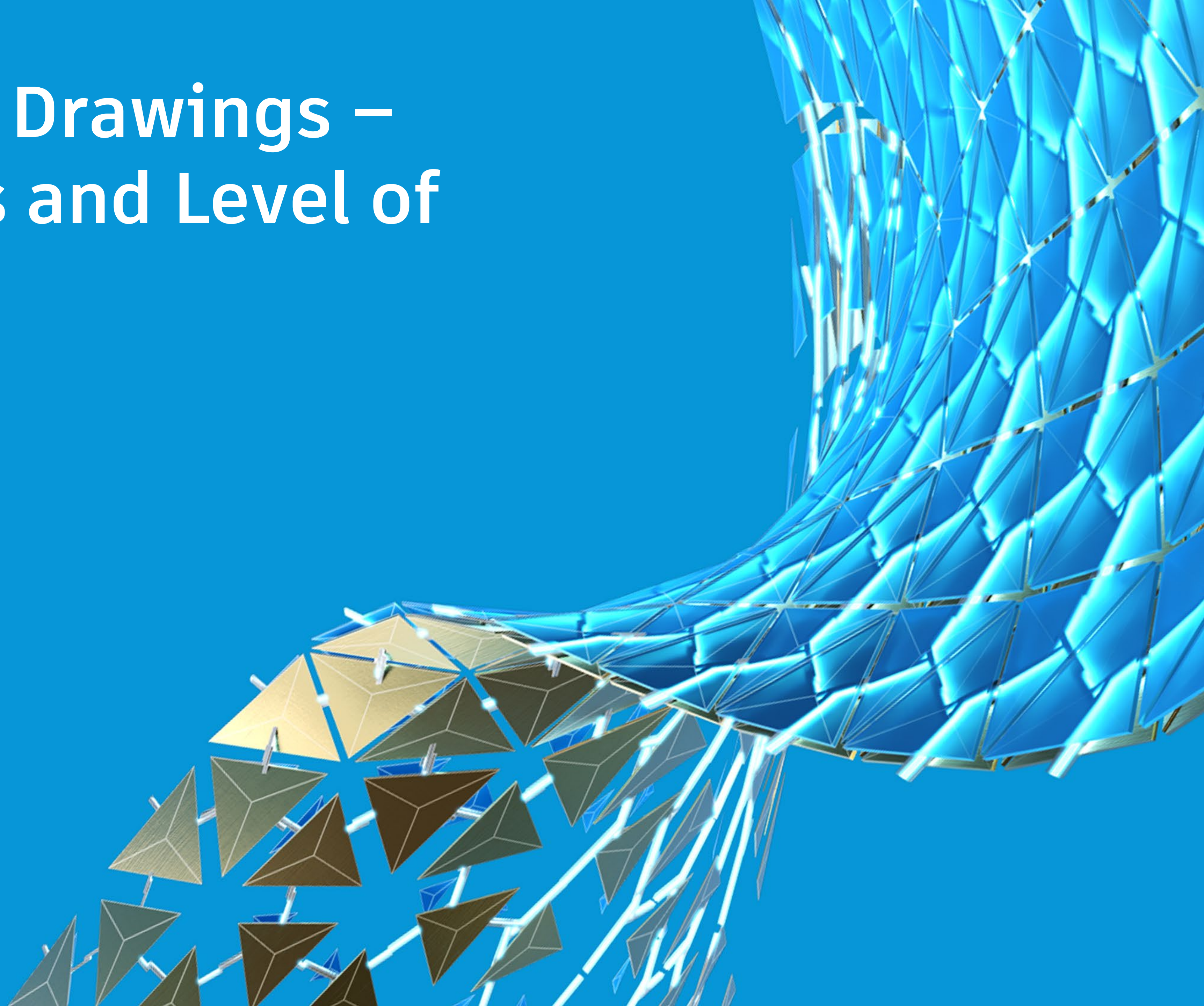
**Creating an Ordinate dimension or a set of, in a Detail View, has always been a bit of a head scratcher. But once you know how, you'll be able to impress your friends at a party.**

**Let's demonstrate...**

<https://youtu.be/i28tfrM3yRo>



# Modeling for Drawings – Design Views and Level of Details





# Section #4 – View Representations

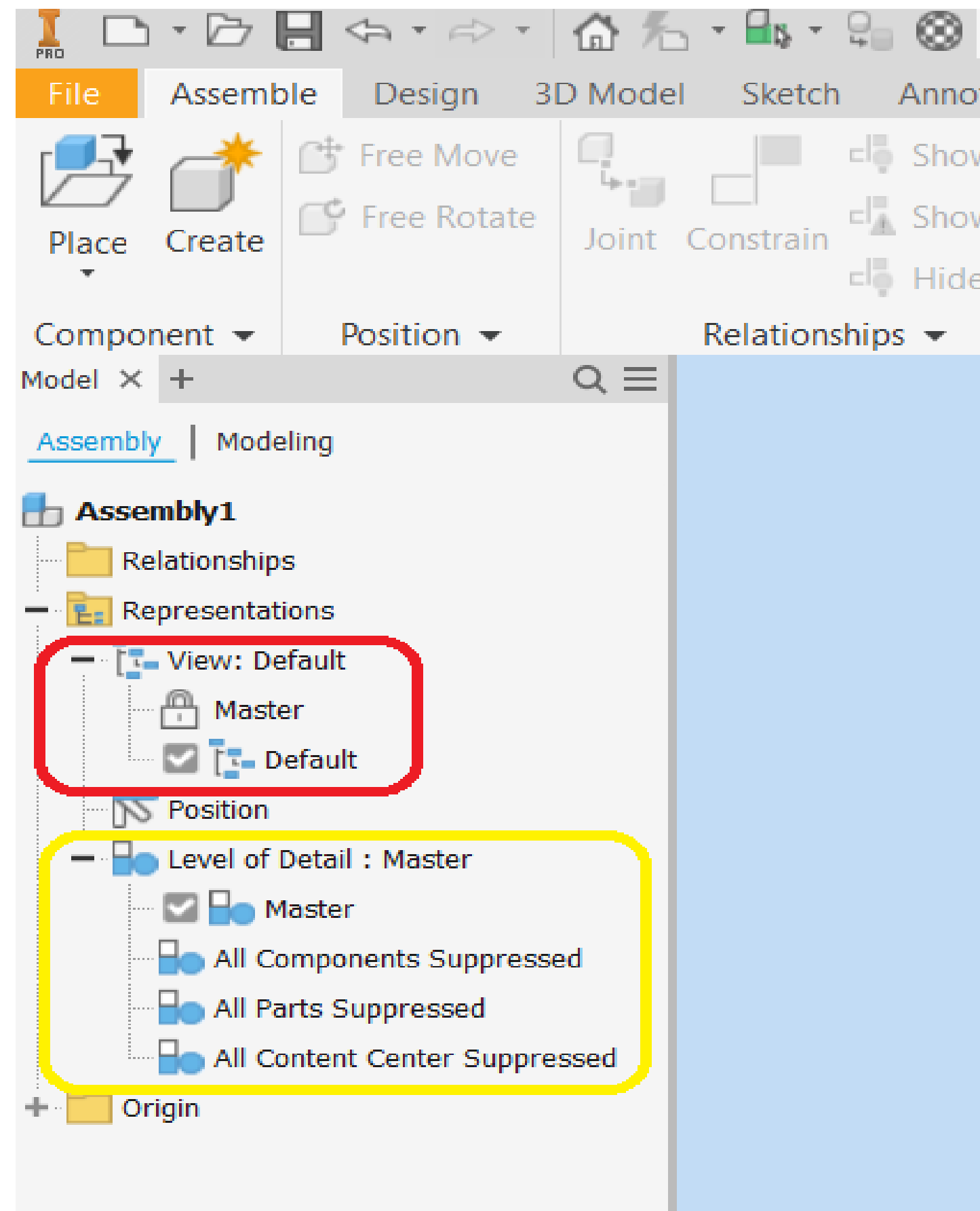
**View Representations control component visibility and transparency, sketch and work feature visibility, component selection status (enabled or not enabled), appearance and style characteristics applied in the assembly, zoom magnification, viewing angle and others. Turning off the visibility of components does not remove them from your system's RAM therefore View Representations are not used to manage memory.**

**Note:** When a component is set to Transparent in the assembly, transparency is carried over in associative drawing views. Drawing view transparency overrides are disabled in these associative views. To manage component transparency in the drawing view you must turn off the view associativity.

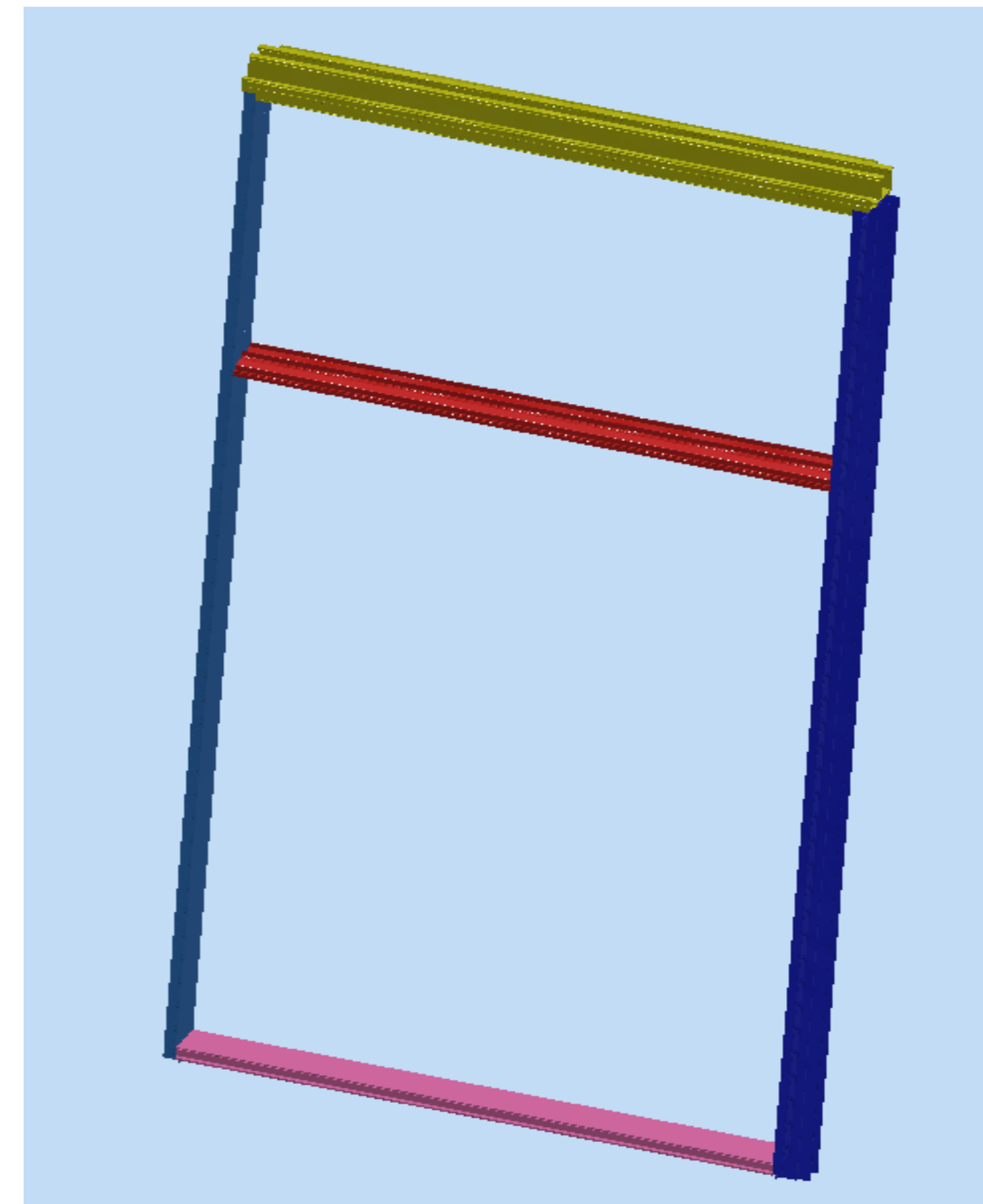


# Section #4 – Practice 1

## A. Opening a new assembly



## B. Opening an existing assembly



# Section #4 – View Representations

**They can be used as a filter in the drawing's part list.**

**Lock the View representation option**



# Section #4 – Practice 2

The screenshot displays the Autodesk Inventor Professional 2020 interface. The title bar indicates the file is "Unit 52 testing". The ribbon includes tabs for File, Place Views, Annotate, Sketch, Tools, Manage, View, Environments, Get Started, Add-Ins, and Collaborate. The Annotate ribbon is active, showing tools for Dimension, Feature Notes, Text, Symbols, Retrieve, Sketch, Table, and Format. The left sidebar shows the Model tree with "Unit 52 testing", "Drawing Resources", "Sheet:1", "Default Border", "ANSI - Large", "PARTS LIST:Unit 52 testing.iam", and "VIEW1:Unit 52 testing.iam". The main drawing area shows a large rectangular frame with a smaller rectangular frame inside. A parts list table is visible in the top right corner of the drawing area, and a "Parts List: Unit 52 testing.iam" dialog box is open in the bottom right corner.

**Parts List: Unit 52 testing.iam**

ITEM	QTY	PART NUMBER	DESCRIPTION
2	1	6855-1001	
3	1	6854-1001	
5	1	6840-1001	
9	1	6841 - 1001	

OK Cancel Apply

# Section #4 – LOD Representations

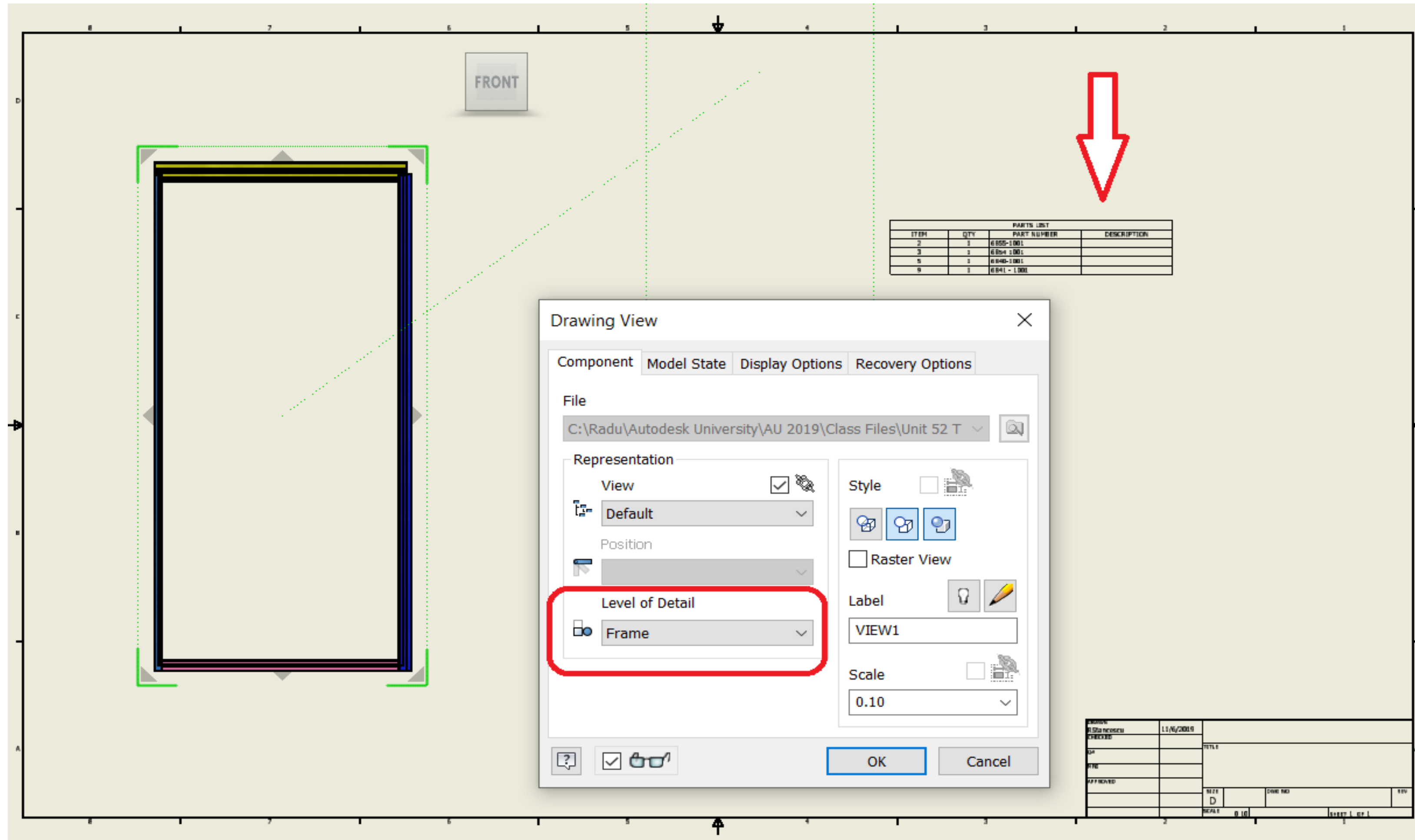
**Level of Detail Representations improve capacity and performance. They suppress unneeded components or replace many parts with a single part representation to reduce memory consumption and to simplify the modeling environment. Save the representation with a name and activate it for modeling tasks or select it for creating drawings.**

**Level of Detail Representations control only suppression states of components and are used to manage memory by not loading the parts into RAM. They cannot be used to filter the drawing's part list.**

**Use the capacity meter to manage memory consumption. To improve performance when working on a large assembly, use the capacity meter to determine the current state of memory consumption. When you want to reduce memory consumption, determine if you can suppress some components and create a new Level of Detail representation or use a Substitute Level of Detail to reduce memory consumption even further.**

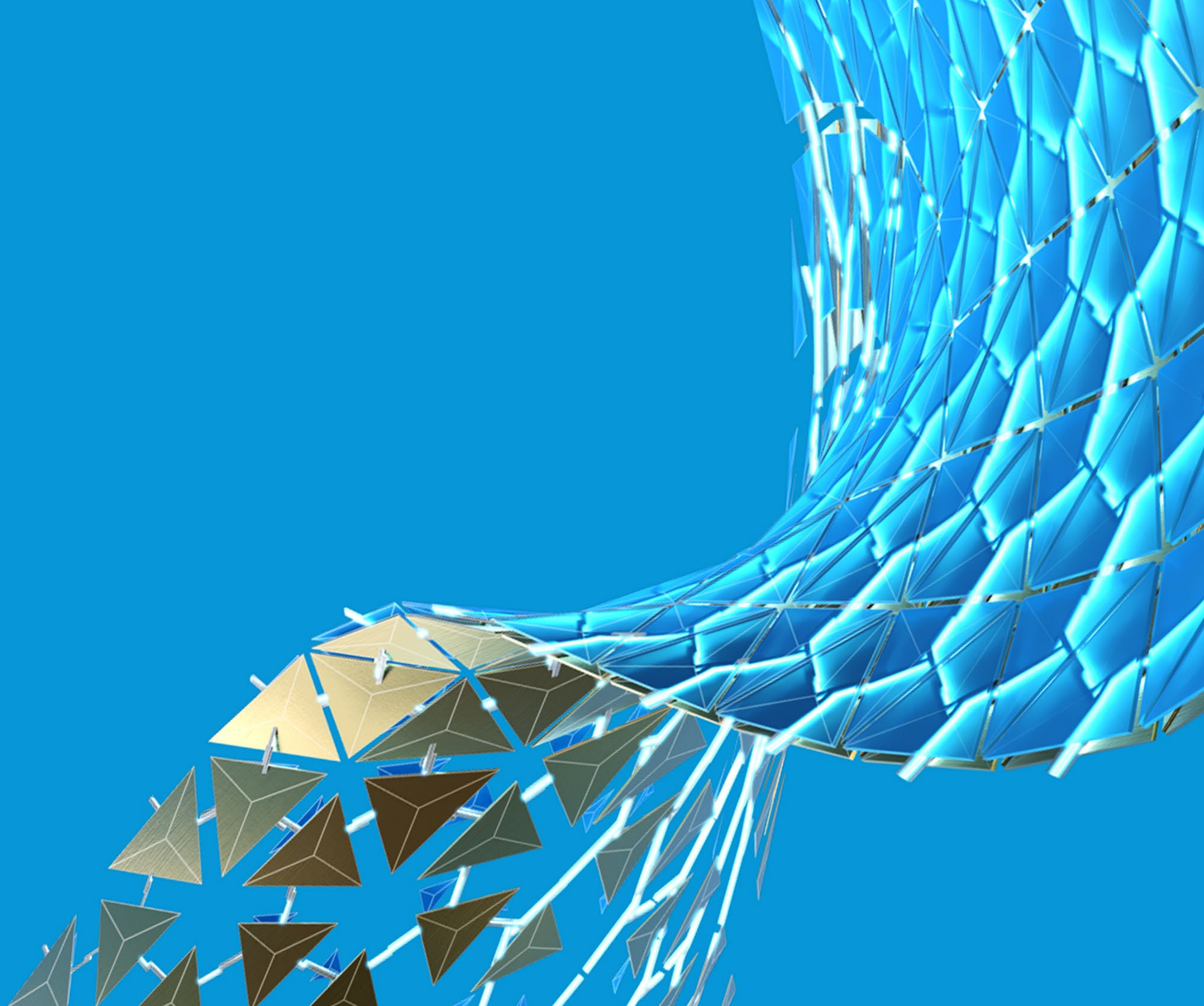


## Section #4 – Practice 3





# Questions?







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