AUTODESK. UNIVERSITY

MFG468488 - Working in Fusion 360 for Inventor Users: How and Why

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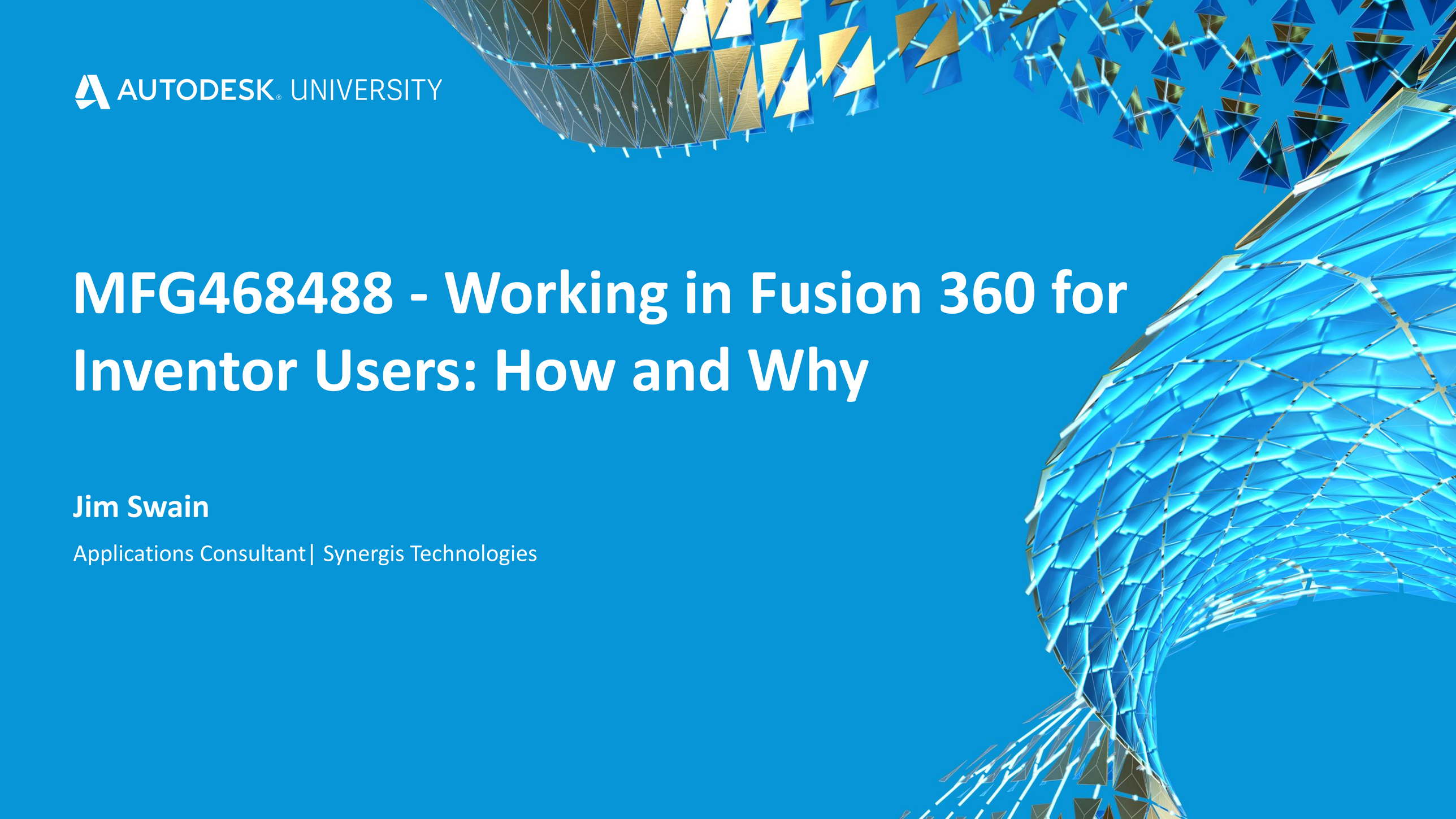


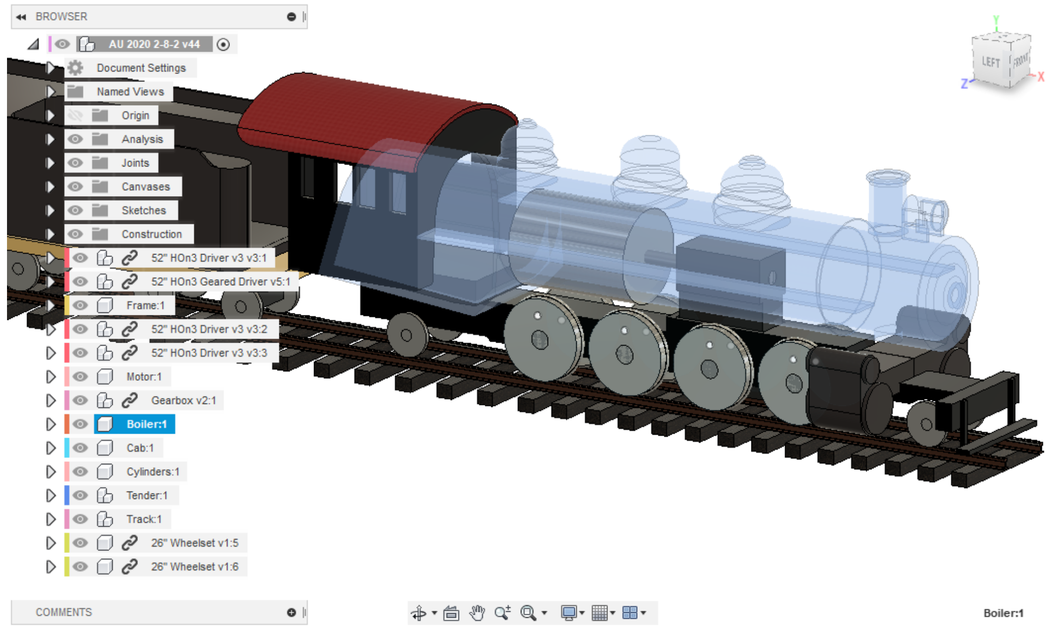
About the speaker

Jim Swain

I am an Applications Consultant with Synergis Technologies LLC, specializing in mechanical design and analysis. I have worked with CAD/CAE tools for over 40 years as a design engineer, CAD manager, trainer and consultant. My primary focus has been in the mechanical design and manufacturing areas. I have taught design classes at Autodesk University, our own Synergis University and at the college level.

Agenda

- **Introduction – Why this class?**
- **When would I choose Fusion 360 for a project?**
- **When would I choose Inventor for a project?**
- **Some key differences in Fusion 360’s workflow.**
- **A sample project.**
  - Model
  - Analyze
  - Machine

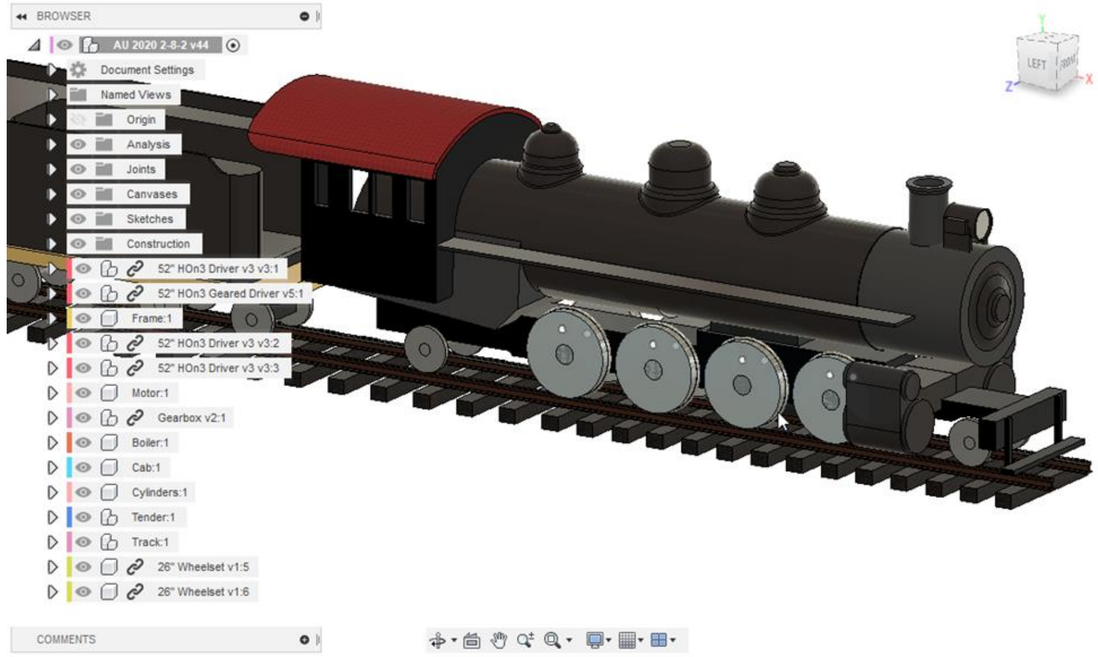


Fusion 360 for Inventor Users – Why This Class?

- The workflow in Fusion 360 is very similar to Inventor’s workflow.
- Trying to use an identical workflow in Fusion 360 will cause different results and frustration.

Using the tools the “right” way.

- **Fusion 360 is a wonderful suite of design tools for the Product Design field.**
- **When I first tried to use Fusion 360, I tried to run it just like Inventor.**
- **Learn from my mistakes and successes:**
  - When to use Fusion 360, and when not to.
  - Tips I learned as I explored the software.
- **Sample project.**
- **The sample is an actual hobby project of mine.**
  - A model railroad steam locomotive.



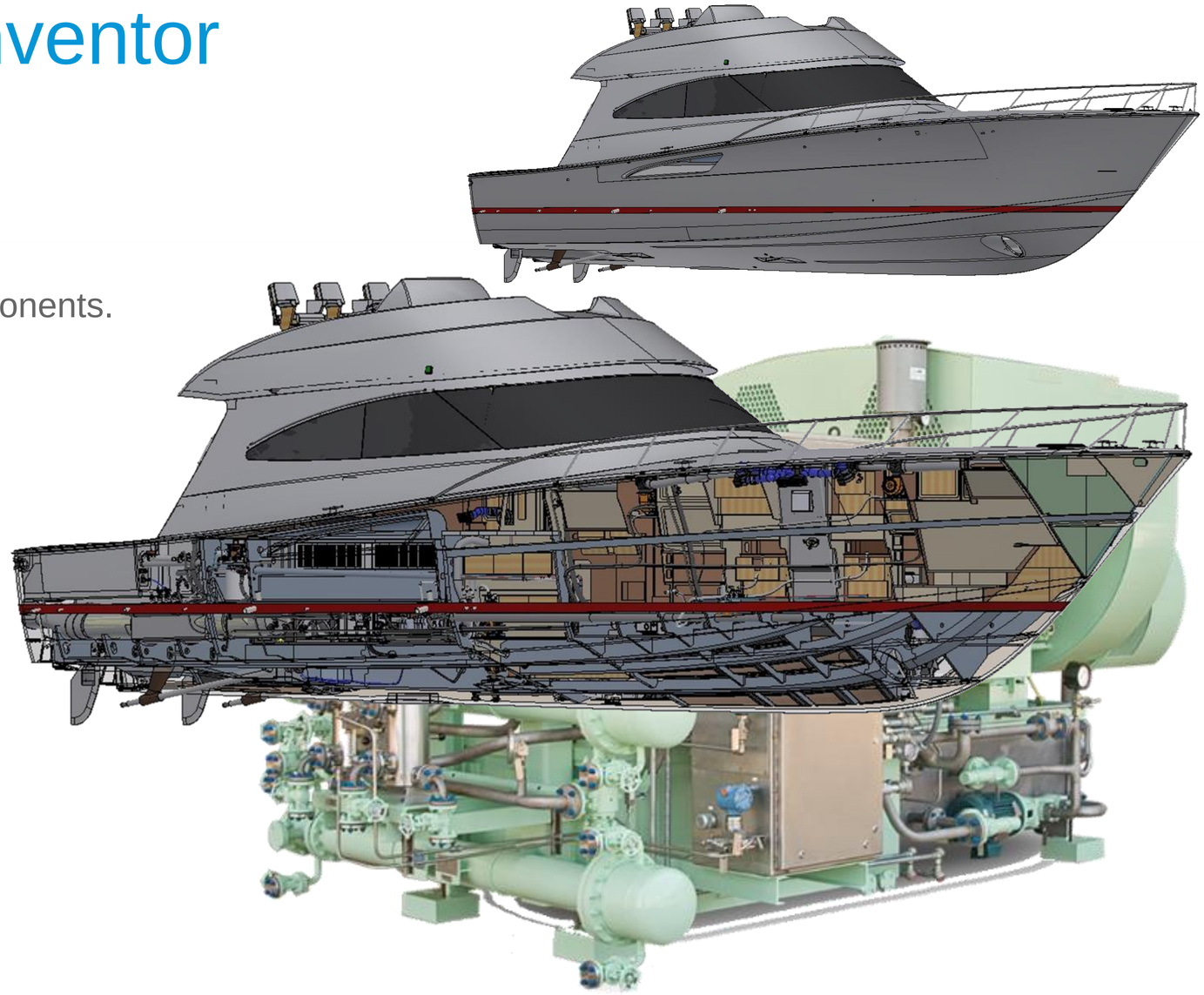
When Do I Choose Fusion 360?

- **Conceptual Design Work**
  - Working from Pictures or Sketches
  - Generative Design*
- **Organic Shapes***
  - Free-form modeling
    - T-Spline Bodies
    - Meshes
- **Simulations**
  - Simplify tools
  - Easy to use simulation tools

Not covered in this class.

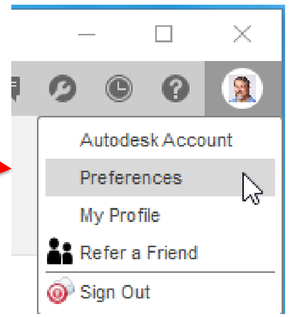
When Do I Choose Inventor

- **Large Assemblies**
  - Thousands or tens of thousands of components.
- **Routed Systems**
- **Frame Generator**
- **Content Center**
- **Detailing Plastic Parts**
- **Detailing Sheet Metal Parts**
- **Design Assistants**
- **Interacting with Revit**
- **Families of designs**



Boat images courtesy of Viking Yacht Company

Getting Started - My Preferences

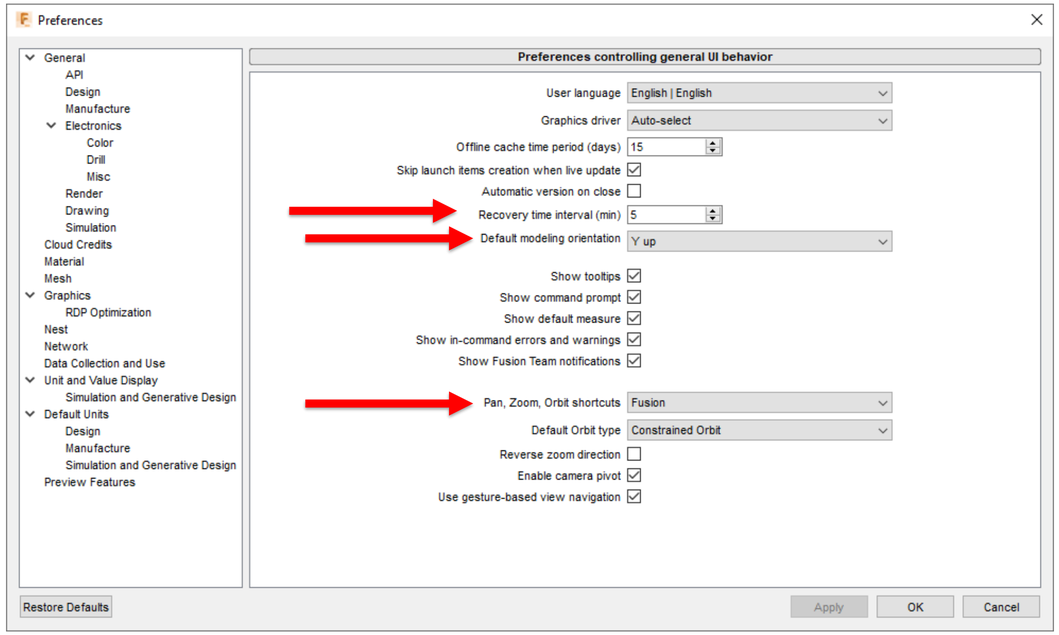


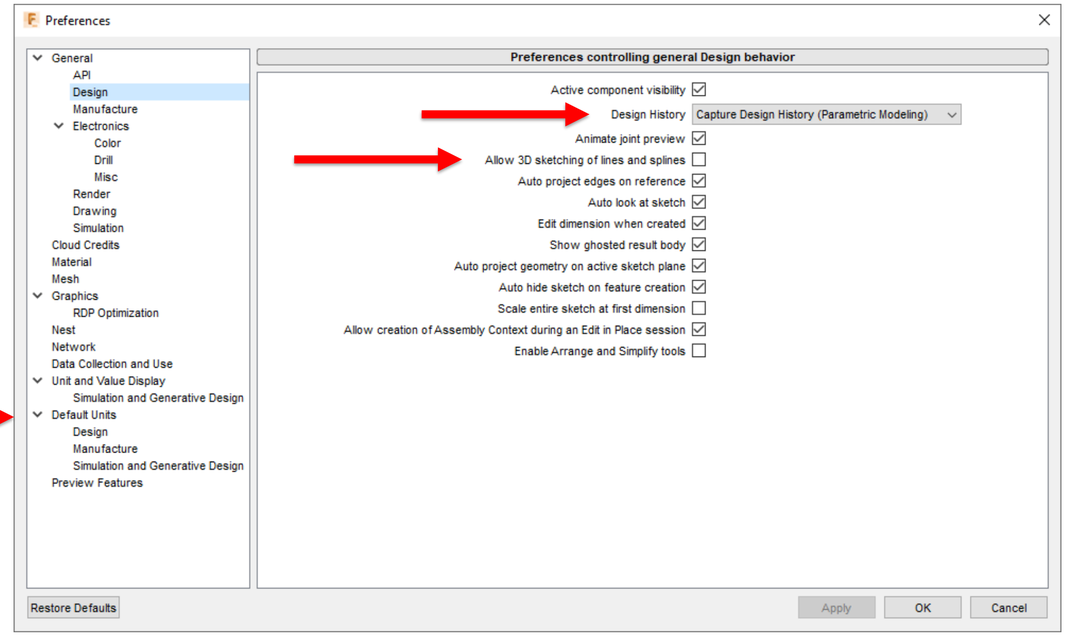
Preferences are tied to your login.

- **You need an Autodesk login.**

Some key settings to note:

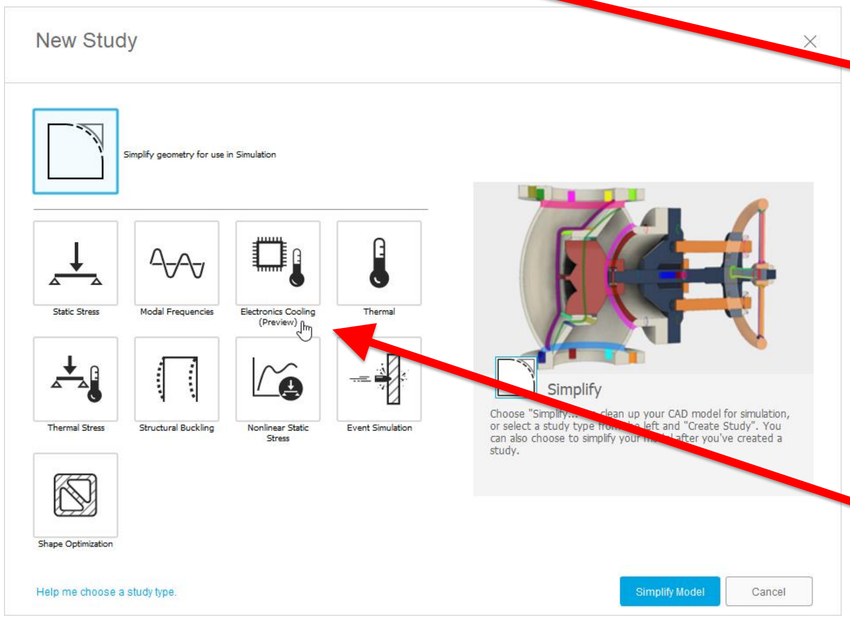
- **General**
  - Recovery time intervals = Autosave!
  - Y up or Z up?
  - Pan/Zoom/Orbit shortcuts set to match Inventor
    - *This does cause trouble with my 3D mouse.*
- **General > Design**
  - ***Capture Design History by default!***
  - Clear 3D Sketching by default
- **Default Units**
  - Design v. Manufacture v. Simulation

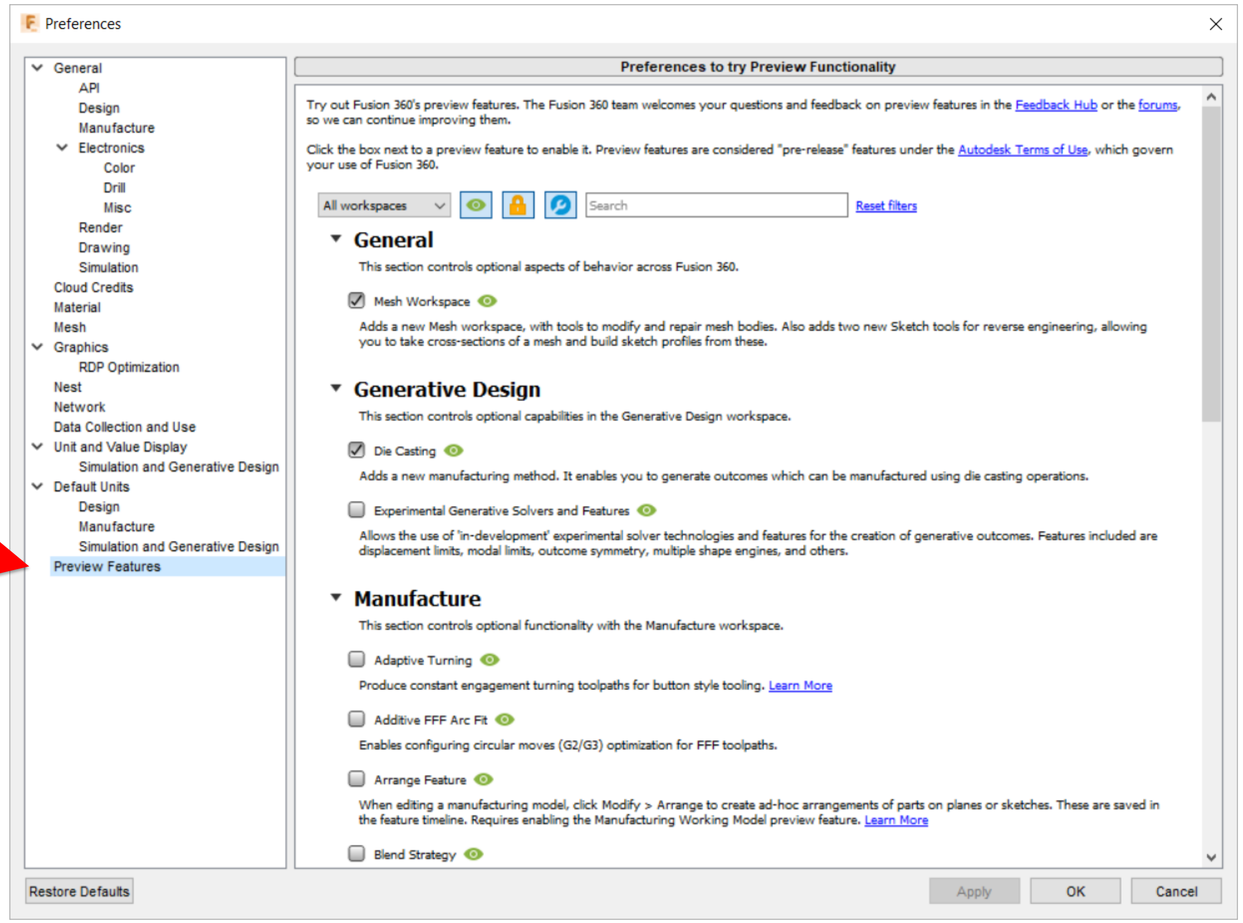


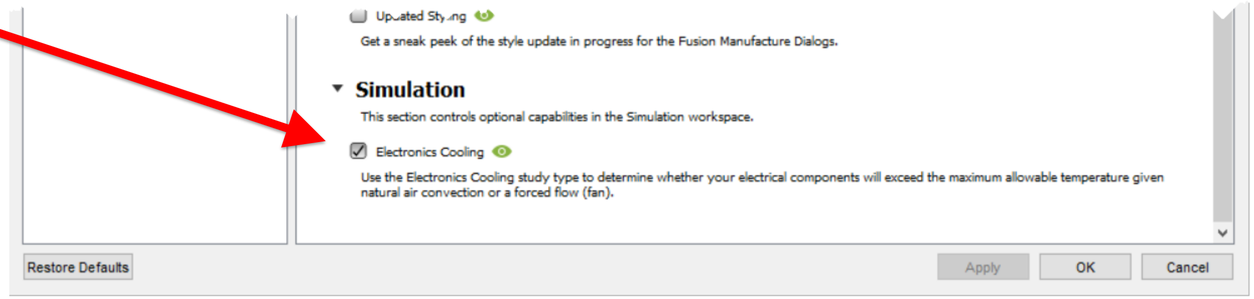


Preferences - Previews

You can access technology previews through your preferences.







Some Conceptual Differences

INVENTOR

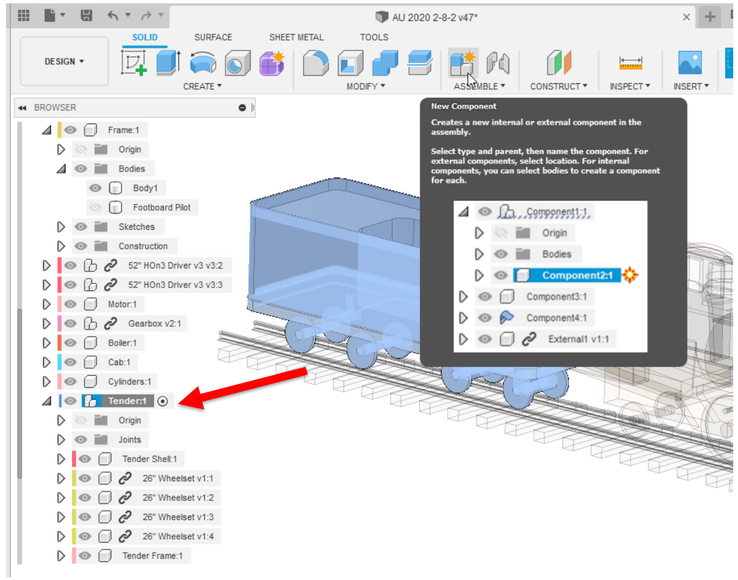
- **Projects = Search Paths**
  - Save goes to Workspace
- **Typically “Bottom-up” design workflow**
  - Always external components
- **No Autosave**
- **Browser is the timeline**
- **Components, with included bodies, in files**
- **Assembly Constraints and Joints**
  - Use either type in an assembly.
  - Always ground at least one component.

FUSION 360

- **Project = Folder in the Cloud and Team Member Management**
  - Save goes to the Cloud folder or local cache.
    - CTRL+Shift+S = local save
- **Typically “Top-down” workflow**
  - Typically internal components
- **Autosave (Recovery file)**
- **Browser and Design History**
  - Design History must be turned on.
- **Bodies and Components in the design**
- **Only Assembly Joints**
  - Joints are only between components, not bodies.
  - As-built Joint between at least one component and the top Browser node

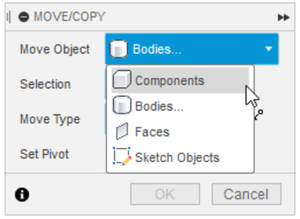
Some Workflow Differences and Recommendations

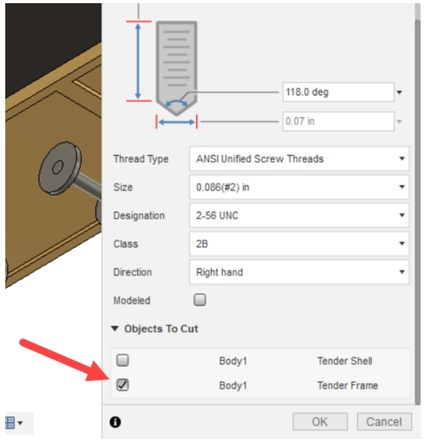
- **Always start a new component**
  - Good starting technique
    - Unless you are working on a single part design
- **Be aware of which component is active!**
- **There isn't a "Replace Component" tool**
  - Delete the old and insert the new
- **Joints, not Assembly Constraints**
- **As-Built Joints if components are already in the right position**
- **Lock joints to temporarily fix moving parts**
- **Rigid Groups to lock several components in their current relative position**
- **Grounding doesn't work the same as Inventor.**
  - Use an As-built Joint between a component and the top node in the Browser

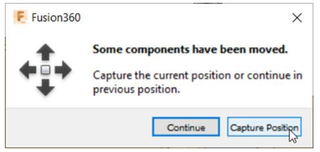


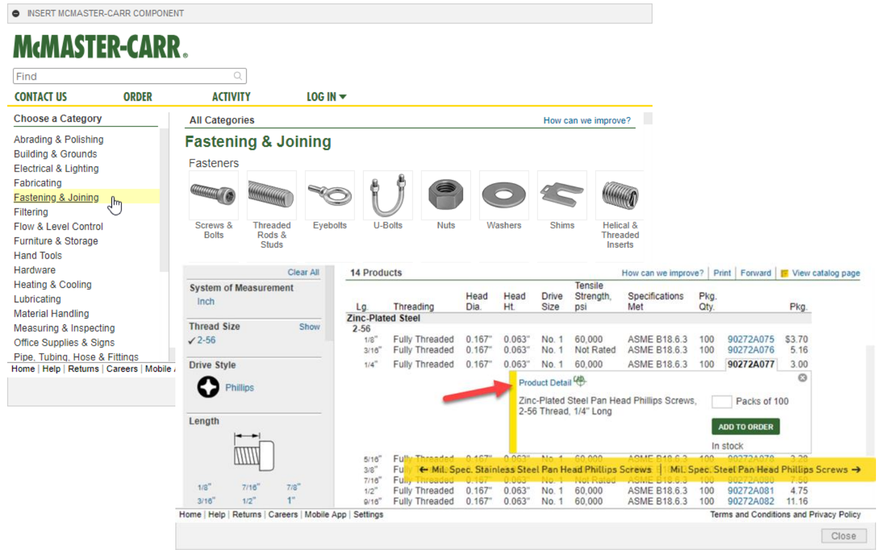
Some Workflow Differences and Recommendations

- **Be careful to select desired type of object for Modify tools.**
  - Bodies vs. components
- **For “cuts” and “all” – pick which bodies are being cut (at the bottom of the dialog box)**
- **Capture position when asked.**
- **Edit features in the Design History**
- **Insert individual fasteners**
  - There isn’t a Content Center.
  - There is Insert from McMaster-Carr and Manufacturer list



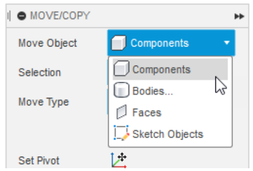


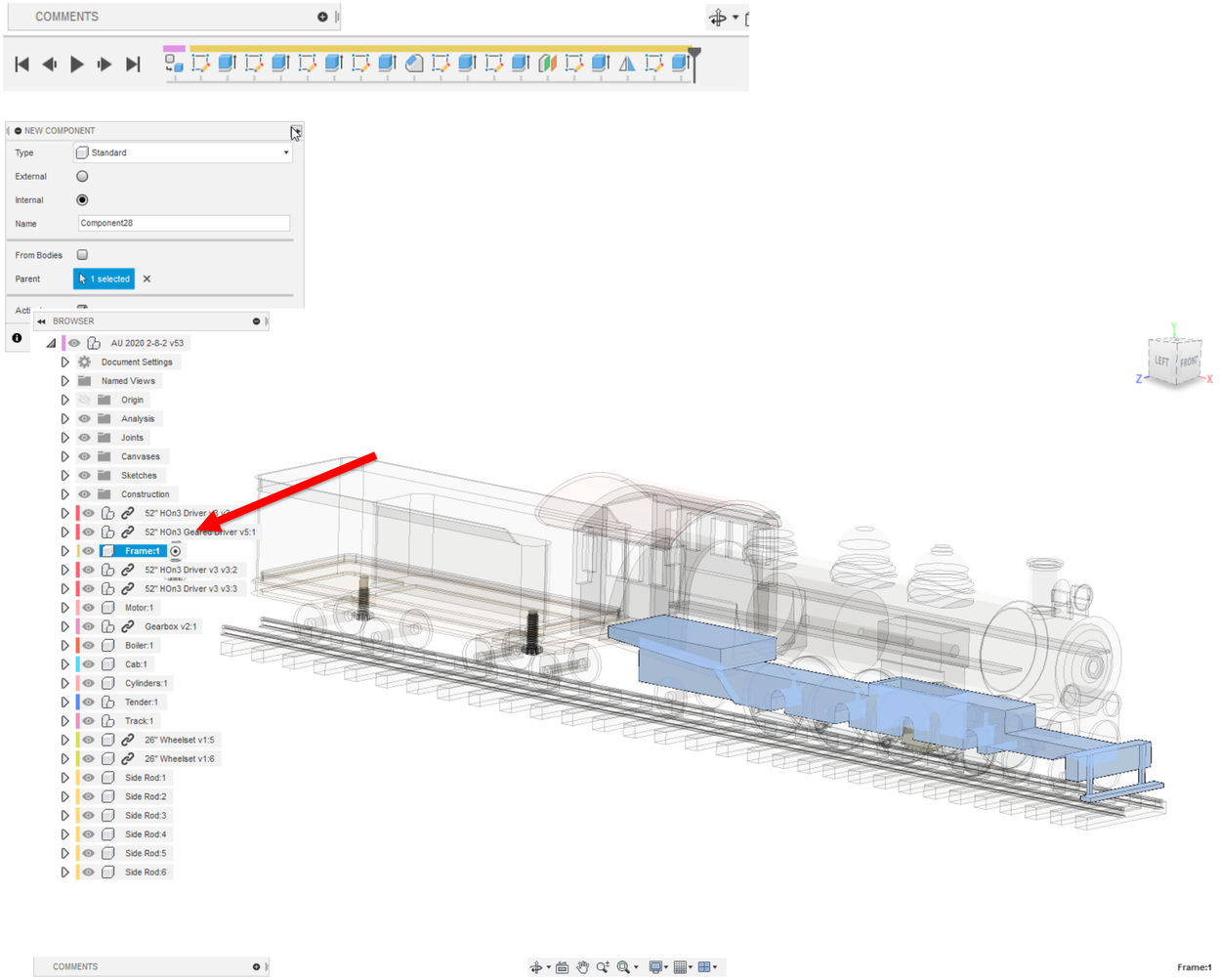




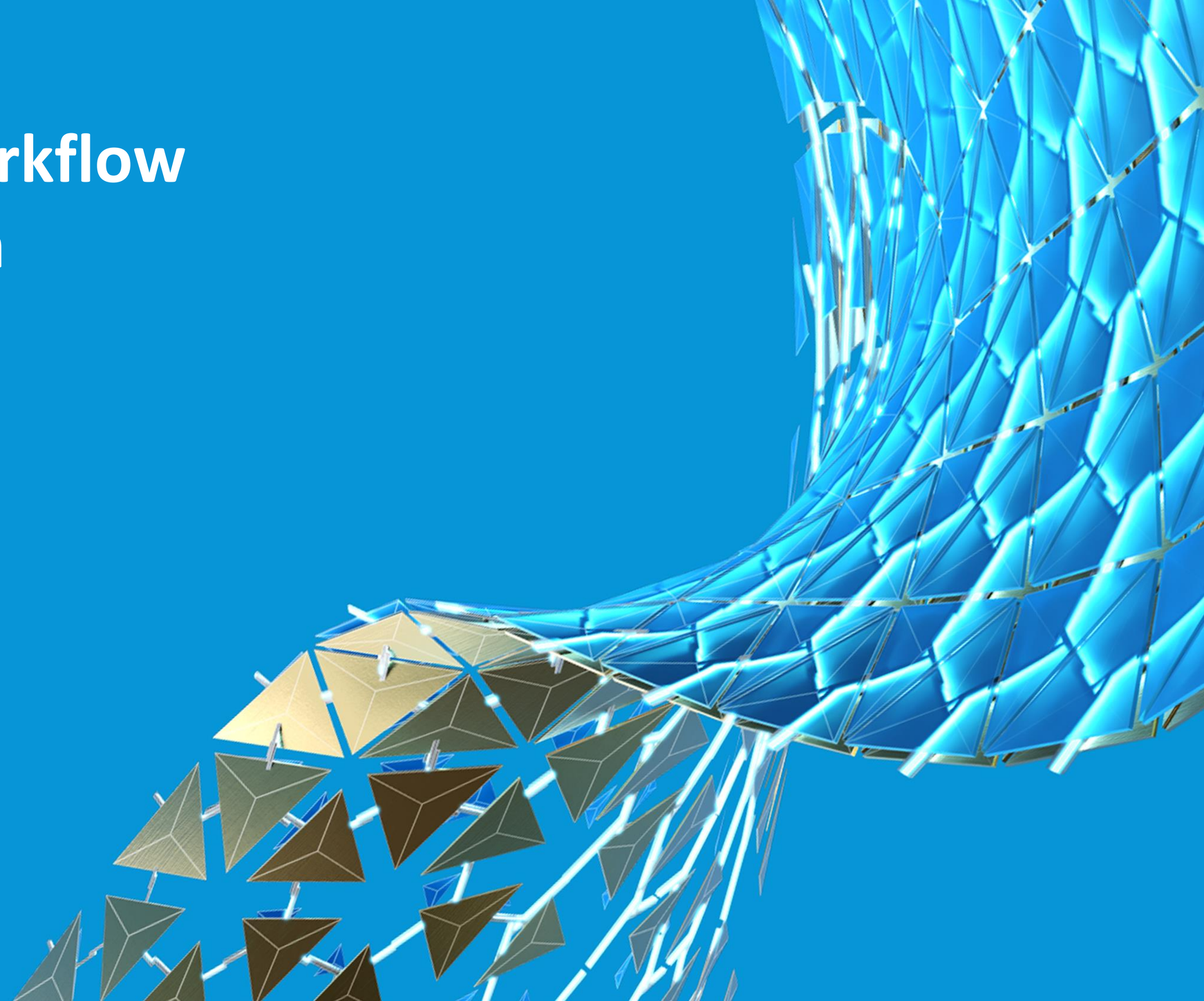
Key Highlights

- **Make sure your Design History is on.**
- **Make a new component.**
  - Joints can only be between components.
- **Make sure you know which component is active.**
- **Make sure you know what type of object you are selecting.**





Fusion 360 Workflow Demonstration



I hope this helps you avoid using an excellent suite of tools incorrectly.

Thank you for your time.