Woodworking Fabrication: Tools & Workflows Inventor Manufacturing MD 7398

Steven Widom – Widom Associates

Code Class Description (use edited version off the AU Website) [Arial 10]

This class provides not only the techniques but also the actual working methods and workflows that are used by the top performers in the woodworking and fabrication industry. When software and processes work together properly, they can perform the tedious steps in a fraction of the time. This class will focus on 2 main areas in the average workday of a designer engineer. The first area is design for approval. The second area is design for manufacturing. We will concentrate on the how-to and look at actual workflows that are not out of the box. Learn about unique construction procedures that use the latest versions of AutoCAD software, Revit software, Inventor software, and computer-aided manufacturing tools. Through demonstration and lecture the class will present methods for the wood trades that will cut down to hours tasks that usually take days for architects, designers, engineers, fabricators, and model makers to complete.

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Learning Objectives

Learn how to identify and adopt the necessary workflows for designing and fabricating wood-based products
Learn how to identify core Autodesk and add-on products that work together for speed and efficiency
Learn how to apply efficient practices for wood-based development
Learn about where and how to use libraries from the Internet, both Autodesk and non-Autodesk specific

Occupation/profession:
Architect, Artisans/Craft and Field Worker, Construction Engineer, Manufacturing Engineer, Mechanical Engineer

About the Speaker

Steve Widom is the senior solutions engineer and chief technology officer for Widom Associates, an Autodesk Consulting Value Added Reseller based in Northport, New York. Since 1984 he has used Autodesk, Inc., software as a trainer, consultant, and application expert in the fabrication, manufacturing, and architectural fields. He provides custom classes and support for Inventor software, AutoCAD 3D software, AutoCAD Revit software, and the Autodesk family of design suites, specific to the wood, metal, plastic, and architectural industries. He has a particular interest in the woodworking fabrication field, including architecture, millwork, furniture fabrication, case goods, stair development, and door and window development. He has over 30 years of teaching and consulting experience. In his life before computers, Steve designed and manufactured juried, award-winning, custom hardwood furniture, and he designed and built custom homes. You can visit his YouTube channel at www.youtube.com/widomtech.

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Ilogic code used in the tutorial:

'Ilogic code for renaming solid bodies in Inventor part files "available for download"

```
'check for custom iProperty and add it if not found
Dim prefix As String = "Prefix"
customPropertySet = ThisDoc.Document.PropertySets.Item _
("Inventor User Defined Properties")
Try
      prop= customPropertySet.Item(prefix)
Catch
    ' Assume error means not found
        customPropertySet.Add("", prefix)
End Try

'write the part number to the Prefix iProperty if it is empty
If iProperties.Value("Custom", "Prefix") = "" Then
iProperties.Value("Custom", "Prefix") = iProperties.Value("Project", "Part Number") & "_"
Else
End If

'check that this active document is a part file
Dim partDoc As PartDocument
If ThisApplication.ActiveDocument.DocumentType <> kPartDocumentObject Then
MessageBox.Show ("Please open a part document", "iLogic")
End If

'define the active document
partDoc = ThisApplication.ActiveDocument
Dim solid As SurfaceBody
Dim i As Integer

'get input from user
prefix = InputBox("Enter a prefix for the solid body names", "iLogic", iProperties.Value("Custom", "Prefix"))

'write input back to custom iProperty
iProperties.Value("Custom", "Prefix") = prefix
i = 1
'rename all solid bodies incrementing suffix
For Each solid In partDoc.ComponentDefinition.SurfaceBodies
solid.Name = prefix + Iif(i < 10, "0" + CStr(i), CStr(i))
i = i + 1
Next
```

Ilogic Code as well as demo sets available for download – Autodesk University 2014

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This year by request - I have published multiple "woodworking for Inventor" tutorials on our "youtube" site, as well as the "Autodesk Screencast site." This "pdf" document and our other downloads support the tutorials on the web.

https://youtube.com/widomtech
https://screencast.autodesk.com

Woodworking - Miter folding With Autodesk Inventor – Tutorial in depth

Icopy Inventor – Tutorial in depth

Autodesk Screencast site:
https://screencast.autodesk.com/Main/Details/d2494345-d1de-4b4b-a0cb-264c57df60d0

Icopy for the wood industry – Face frame development

https://screencast.autodesk.com/Main/Details/7de31862-f761-4b42-a557-2f3ef8294b84

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Unique workflows for the wood industry including miter folding.

All of the tutorials guide you thru, step by step the development of unique workflows and usage within all versions of Inventor.

If you have followed along and there seems to be an issue:
Key gotchas you need to verify. (Frame and all components available for download to compare)

- Verify the skeletal sketch in the .IPT file is unconstrained (no dimensions, except possible parameters)
- Verify you have added parameters correctly in the .IPT file (Solid Bodies)
- Verify you have renamed the 10 solid bodies , and they are all new solids not joined
- Verify the skeletal sketch in the .IPT is adaptive
- Verify you can change the adaptive sketch in the .IPT file and the solid bodies adjust
- Verify the master part in the assembly is adaptive
- Verify the master part is grounded utilizing the added assembly tool (see below) and fully constrained within the Icopy template assembly
- Verify all your control points in the assembly have been assigned (Icopy author)
- If all is correct and it still does not work review tutorial

Grounding component to origin of assembly -

You want to ground a component so that its origin is aligned with the origin of the assembly. You can do this by using the Ground and Root component, which is available in the Assembly Tools

Grounds a selected component within an assembly structure so that its origin is aligned with the origin of the assembly.

In a single operation the selected component is:

- Moved, grounded, and aligned to the origin of the assembly.
- Repositioned as the first browser node in the assembly browser.

Any components that are constrained to the selected component maintain their constraints.

Note: If the selected component has existing assembly constraints that prevent it from being moved to and aligned with the assembly origin, additional conflicting constraints are applied. Your assembly displays a red Recover indication. The component is grounded and repositioned within the assembly browser node structure.

Installation instructions – Install from media or download

If you have not yet installed the Assembly Tools, follow these steps:
1. Close Inventor, if necessary.
2. Browse to the *\SDK\Tools\Users\AssemblyTools* folder that is located in your Inventor installation path.
3. Double-click the *Setup.exe* file.
4. Follow the instructions to complete the installation.
   There will now be an Assembly Tools toolbar in the assembly environment. Use the Ground and Root Component tool to ground your component to the assembly's origin.