A 3D wireframe rendering of various mechanical components, including gears, shafts, and a pulley, set against a dark background with blue bokeh light effects.

Autodesk® Inventor® work flow for developing a top down manufacturing shop process.

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Class Summary

- Autodesk Inventor can be used to save time, money, and scrap in manufacturing. Successfully manufacturing a product is not only about the final product, it also includes how you get there. Use Inventor to work backwards to develop all the process steps of manufacturing a part. Design the finished part you need, then with iParts and iLogic you can engineer all steps needed to get from a block of steel to a finished part. We will show a workflow that takes advantage of the associative abilities of the “I” tools. As your finished product evolves all of the production steps change as well. This work flow enables you to develop documentation for inspection, fabrication, etc, work holding, fixturing, and machining 3D models of each progression. Stress analysis of parts in process can be used to assure the process won't damage the final product. we will also offer tips and tricks that help the manufacturing engineer incorporate Inventor on the shop floor.

Learning Objectives

After completing this class, attendees will be able to:

- Use iParts to describe process steps from start to finish.
- Incorporate tips and tricks relevant to Inventor and machining.
- Understand associative properties and parameters with regards to steps in a process.
- Build one typical model of a family, then automate the development steps for all variations.

Contact Information

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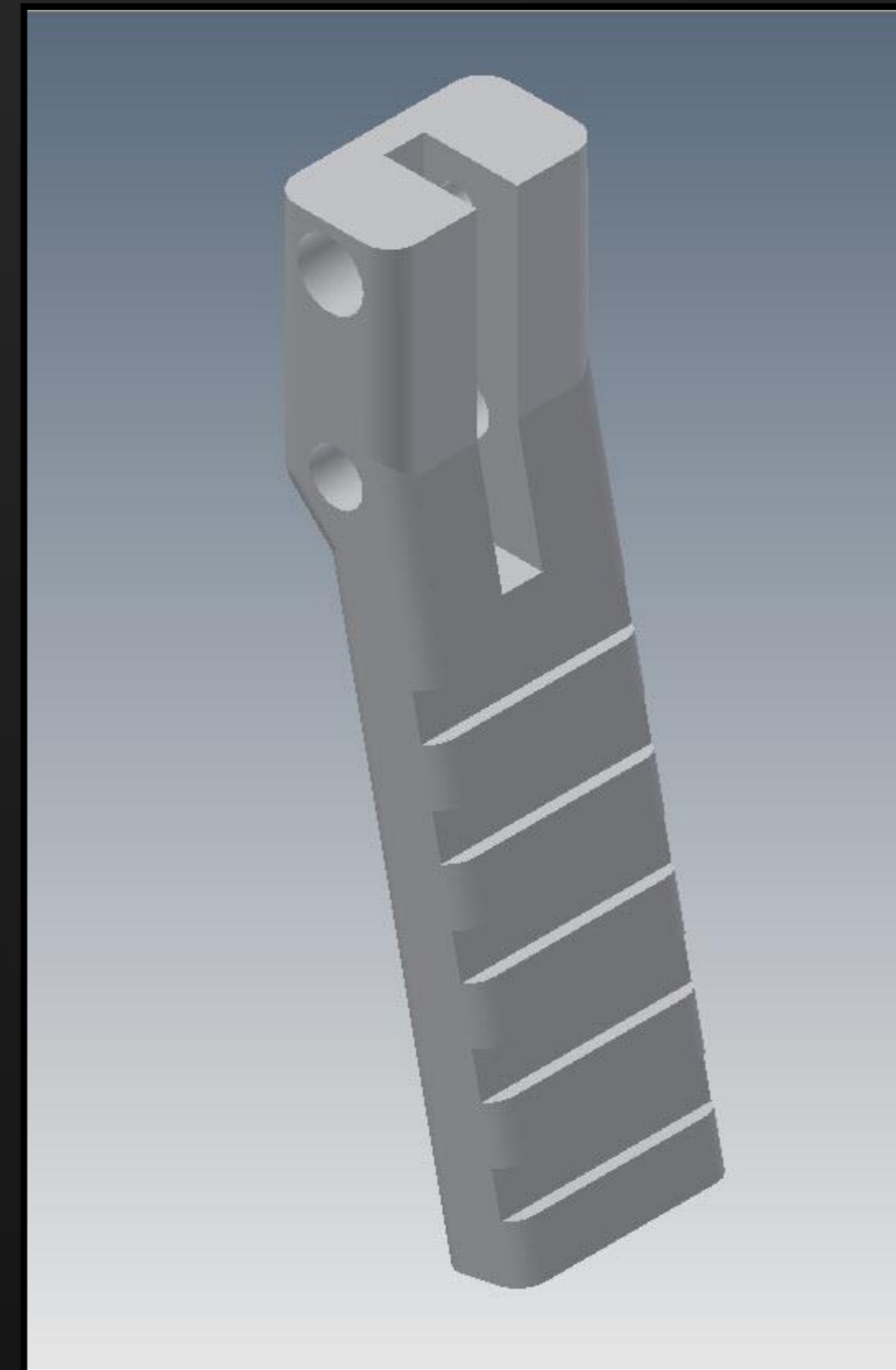
Creating a manufacturing process using iParts

This work flow starts after the part has been designed.

No need for you to be part of the design process.

Simpler part and document management.

Easy to modify after process has been completed.



Content Center (CC) Skills and Tips

- Review of basic CC usage with iPart content
- Inserting content with iMates
- Placing content with **PATTERN COMPONENT**
- Using Measure with **PATTERN COMPONENT**
- Creating a R/W library in CC
- Creating a top level category in CC
- Publishing an iPart to CC

iParts vs iLogic

- iParts are used when there are limited numbers of members. With our tooth example we might have up to a dozen variations i.e.: Material, Diameter, or Length.
- iLogic is used when the number of members is unknown and you will be using rules to control other parts whether they are iParts or not. Consider a part that has hundreds of possible variations. Go with iLogic.

Bill of Material - BOM

- Bidirectional changes add consistency to your work
- Review of tabs in BOM
 - Model Data
 - Structured
 - Parts Only
- Add a category to BOM, then map it to the part data
- Modify part and assembly data in the BOM
- Pushing changes to the iPart in Content Center

Using iParts to create part process steps and drawings

- Start with finished part.
- Be sure each dimension and feature that will be effected in the manufacturing process has a named parameter.
- Rename features to what they are.
- Turn part into an iPart
- Create a new member and change part number to the mfg process name. Make the part number column the primary key
- Turn off all but the first feature in the new member
- Set EDIT MEMBER SCOPE to “member”
- Modify the new member as needed to get the starting rough material

Using iParts to create part process steps and drawings

- Create the next member
 - Edit the part number to match the machining process
 - Modify the part to match the process step. In this case it is unsuppressing the drilled hole feature.
 - Repeat these operations till done.
 - Create documentation based on iPart members.
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- To make global changes to the part, change EDIT MEMBER SCOPE back to “family”

iParts vs Derived Parts

- The advantage of iParts is you are working with a single file, the parent will control all of its members.
- Derived Parts need to be created and derived from each previous successive step to create the next process. Resulting in a lot of files to manage.

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