Inventor Template Management Through the iLogic API Looking Glass

Jason Hunt

Designer IV, NPD Group Leader

FS-Elliott Co., LLC

MFG318258-L

AUTODESK. UNIVERSITY

About the speaker

Jason Hunt

- NPD Lead Designer for a global centrifugal compressor manufacturer, FS-Elliott Co., that is headquartered outside of Pittsburgh, Pa.
- Based out of the Orchard Park, NY office.
- Over 25 years of compressor design experience (Rotary and Centrifugal).
- Provides lead design services to current New Product Development (NPD) projects and helps drive current CAD standards and best practices in the CAD Group.
- Education background in Engineering from SUNY at Alfred, Industrial Engineering from SUNY Buffalo State and Business/Marketing from the McColl School of Business at Queens University of Charlotte.
- Fifth time presenting at AU and sixth time attending AU.

Lab Assistants

Todd Schmoock

Applications Consultant,

Synergis Technologies, LLC

Mark Lancaster

Product Support Specialist / Help Desk,

Synergis Technologies, LLC

Kevin Smedley

Vice President of Technology,

vaultPDMsolutions

Your Instructors' Schedule

Jason Hunt

Time	Event
Wednesday 4:30 pm	Inventor Template Management Through the iLogic API Looking Glass
Thursday 1:00 pm	Inventor Template Management Through the iLogic API Looking Glass

Todd Schmoock

Time	Event
Wednesday 10:30 am	AutoCAD Electrical: What's Working and What's Not Roundtable Discussion

Mark Lancaster

Time	Event
Tuesday 8:00 am	Getting the Most Out of Your Inventor Templates
Wednesday 10:30 am	Change Orders and Revisions with Vault Professional, Inventor, and AutoCAD

Key Learning Objectives

- Learn how to design iLogic rules to create one drawing template for various sheet sizes and drawing styles.
- Learn how to design and create external iLogic rules to check drawing standards, select drawing styles, as well as sheet sizes and a few other tools.
- Learn how to create an Inventor iLogic rule to force CAD users to fill out required company iProperties.
- Learn about the iLogic API methods used in updating drawings to your latest company standards.

Lab Disclaimer

- This lab is not a deep dive into the basics of iLogic. The understanding of this lab is that the attendee shall have a more advanced knowledge of iLogic, VB and some experience in using the API.
- With that being said, I am not going to deep dive into teaching why to use iLogic and the VB techniques in creating iLogic code.
    - Refer to the “General iLogic / API Appendix” in the handout for more information.
- The focus of this class is to show a more advanced user how to utilize the iLogic / API tools in an advanced way to manage their templates, versus teaching the basics.
- Please be aware that some of the code has already been added to the iLogic Rules, due to time constraints.

Lab Overwiew

Every new drawing, part or assembly file is created from an Inventor template, whether it is a standard template or a user generated one.

This class is not about how to create styles, title blocks, or any another component that makes up a template. This class will all be about how you can manage your template and the components that make up your template.

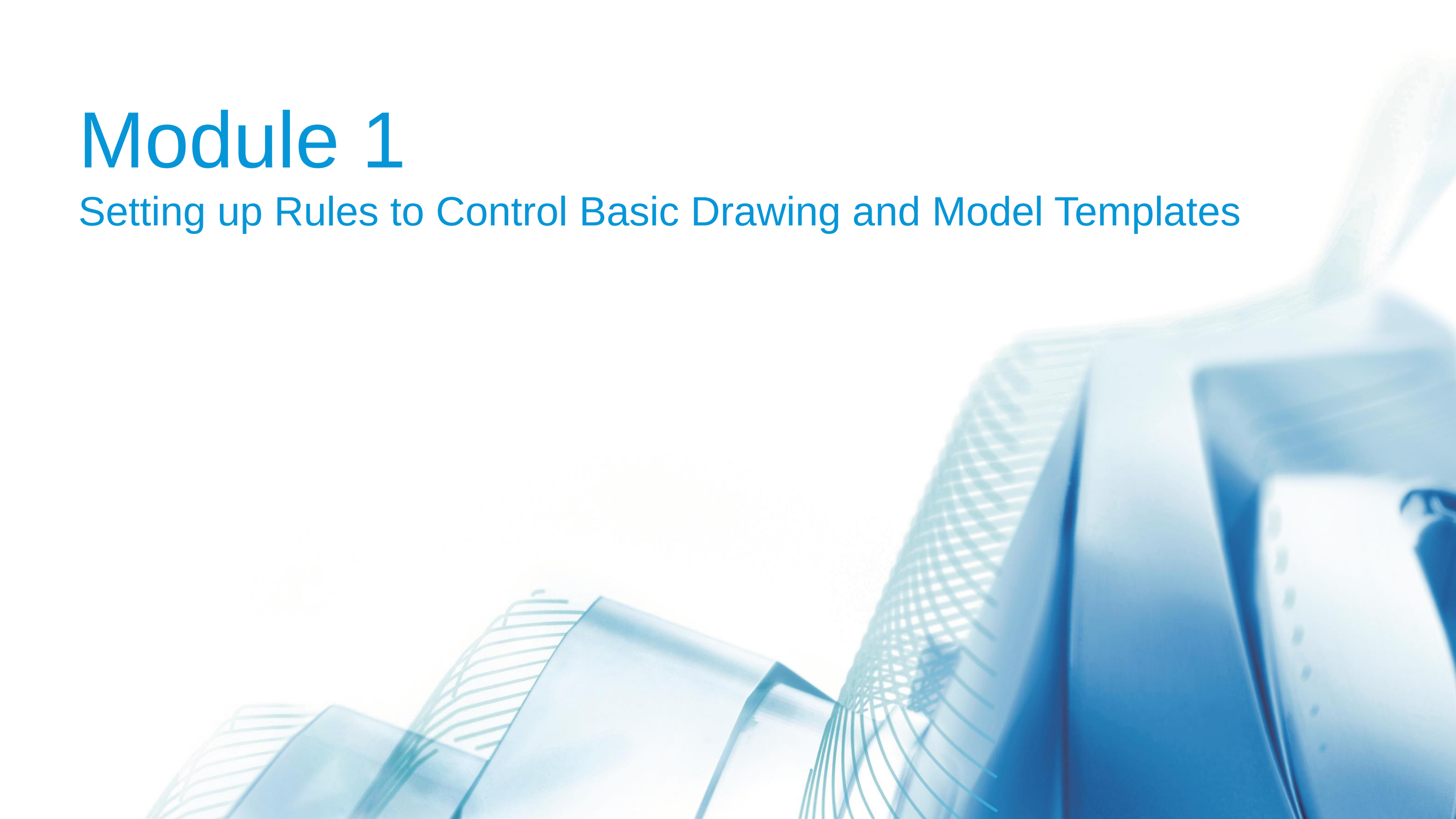
I recommend and believe that a custom company template is the way to go for any company that desires to mandate certain company standards in their Inventor workflows.

Class Format

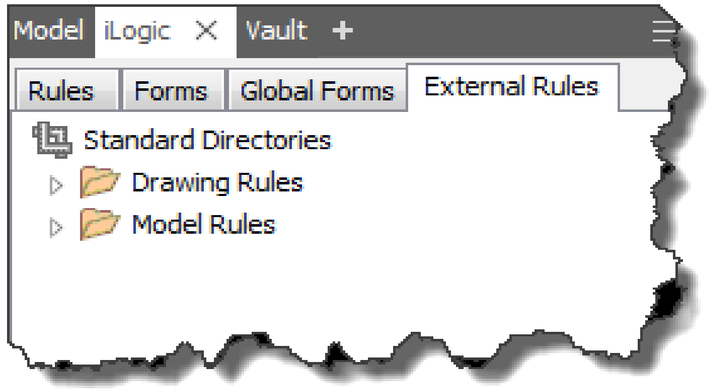
- This a lab where we will do exercises together.
- We will discuss goals for each exercise.
- We will walk through each exercise as a class.
  - Pace for each exercise will be a moderate pace.
  - In case you fall behind, all the datasets will be available to you to explore after AU.
- After the conclusion, there will be some time for Q & A.

Module 1

Setting up Rules to Control Basic Drawing and Model Templates



Module 1 Overview



The purpose of this module is to show how you can utilize iLogic and the API to manage your drawing and model templates.

We will do the following in Exercises 1 through 7:

- Do some general housekeeping to make sure everyone's computer is set up correctly for the lab.
- Create external iLogic rules to drive a new drawing template file to select a sheet size and dimensioning scheme. We will focus only on two sheet sizes to make it simple.
- Create external iLogic rules to drive a new model (.ipt & .iam) template file to select the model units and precision of the model dimensions.
- Create external iLogic rules to generate custom company required iProperties and force population of Key iProperties.
- Set up iLogic Event Triggers for the templates.

Exercise 1 - Overview

This Exercise is just some General Housekeeping steps to follow to allow the lab to flow smoothly.

In this exercise we will do the following:

- Set the project file.
- Set up the iLogic configuration.
- Move the Global forms to the iLogic folder on your computer.

Exercise 2 - Overview

The rule “**iProperties - Drawing**” that we are going to create in this section will control the creation of the iProperties required for the drawing template.

This rule will do the following:

- Will check to see if required iProperties exist in the template file.
- If the iProperties do not exist, this rule will create them.

Exercise 3 - Overview

The rule “**Sheet Size**” that we are going to create in this section will control the drawing template creation.

This rule will do the following:

- Allow the user to select the Sheet Size.
- Allow the user to select the Dimension Style (Scheme).

Exercise 4 - Overview

The rule “**iProperties Check - Drawing**” that we are going to create in this section will check to see if key iProperties are filled out. If they are not filled out, the program will force the user to populate these iProperties.

This rule will do the following:

- Check key iProperties are populated.
- Force key iProperty population.

Exercise 5 - Overview

The purpose of this exercise is to set the iLogic Event triggers for the drawing template file.

In this exercise we will do the following:

- Automatically run the template program, when the dwg is opened.
- Automatically Force key iProperty population.

Exercise 6 - Overview

The rule “**MODEL UNITS**” that we are going to create in this section will control the setup of the model, based on your standards.

This rule will do the following:

- Will check to see if required iProperties exist in the template file.
- If the iProperties do not exist, this rule will create them.
- Allow the user to select the model units and precision of the units to display in the model.
- Please note that the iLogic event triggers have already been set for this model.

Exercise 7 - Overview

The templates in this exercise will automatically run as soon as you open them, due to the iLogic Event triggers.

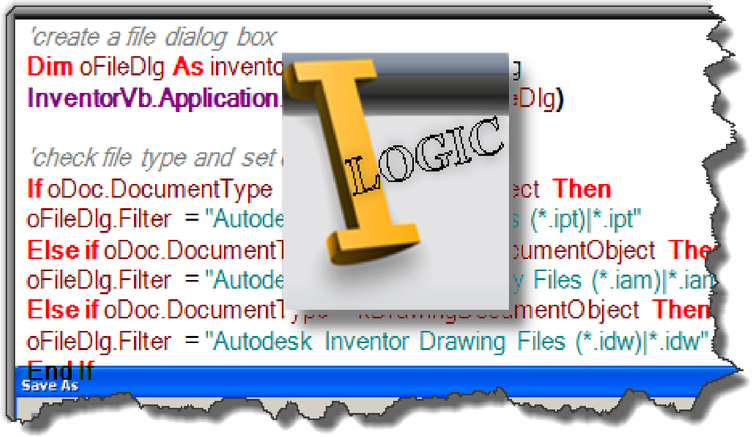
Templates we will work with are just the AU2019.ipt and the AU2019.dwg templates.

Module 2

Creating External Rules to Update Drawings to the latest standards

Module 2 Overview

The purpose of this module is to show how you can utilize both iLogic and the API to update drawings to your companies, latest standards. This part of the lab exercises will only focus on a few key elements of the API model objects, due to time constraints.



We will do the following in Exercises 8 through 10:

- Create external iLogic rules to check if your drawing file is per the latest company standards.
- Create external iLogic Rules to update drawing files to latest company standards.

Exercise 8 - Overview

In this exercise we will create rules that are related to the Drawing Border.

The rules we will be creating will do the following:

- When updating an old drawing a rule will need to be created to delete the old border.
- A rule will then need to be created to add the new border.
- A third rule will need to be created to incorporate the above rules by removing the old border and add in the new border to the drawing being updated.

Exercise 9 - Overview

In this exercise we will create rules that are used to manipulate the sheet size and drawing styles.

The rules we will be creating will do the following:

- When updating an old drawing a rule will need to be created to select the Dimension and text style for the drawing, this is a very large rule so we will just be doing a small portion of it due to time constraints.

- A rule will be created to select the sheet size and incorporate the “**DIMENSION AND TEXT STYLE**” rule.

Exercise 10 - Overview

In this exercise we will be updating a drawing to the latest standards.

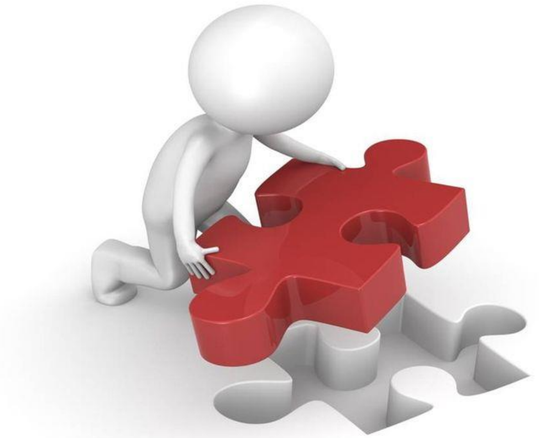
This exercise will involve the following:

- We will be testing out the new rules to update the drawing “**25000.dwg**” to the latest standards, with a predefined Global form.

- This will test out the rules, if you have any errors, don’t worry this will be demonstrated in class and you will have the final correct code in your datasets.

Conclusion

Conclusions



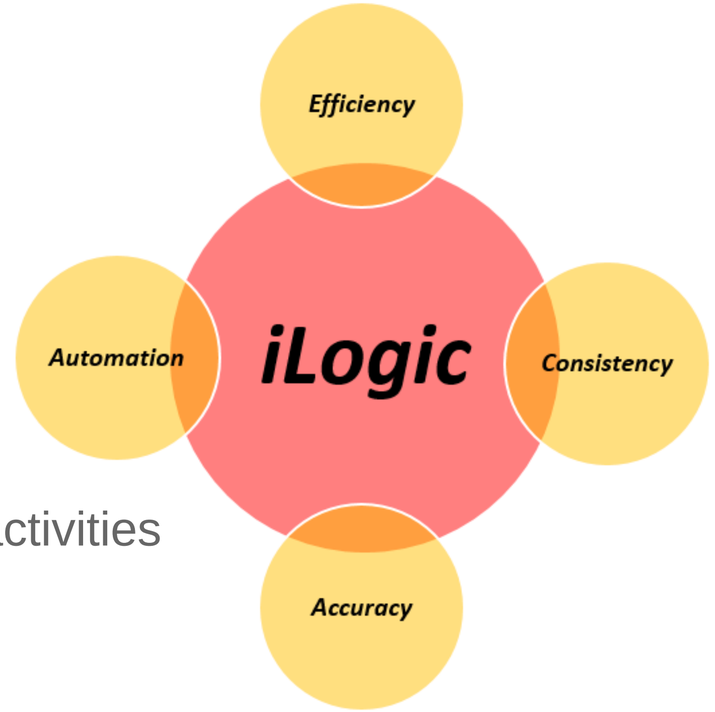
- There are a number of ways to create code to drive intelligent templates within Inventor 2020.
    - What we have explored is the basic API I have used to drive template creation and file maintenance.

- Please be aware that what I have shown you in this lab is only the tip of the iceberg, in terms of what can be accomplished in utilizing the iLogic API to drive template creation and maintenance of older CAD files.

- The key to deciding the iLogic rules needed to drive your company standards is to understand your objectives. Each iLogic Rule has its own driving factor/s to push you towards using them.

Conclusions (Con’t)

Think about the following areas when deciding to use iLogic:



Automation:

Automation allows your design and engineering team to focus on design activities that are not easily automated.

Efficiency:

iLogic can help you become efficient in various aspects of our designs.

Consistency:

Using iLogic can help your company design components in a consistent manner.

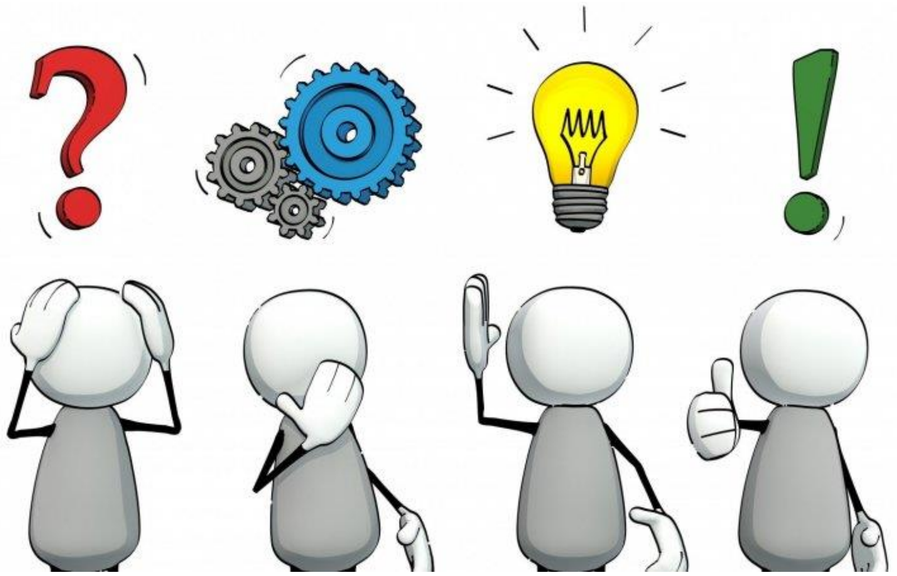
Accuracy:

iLogic gives you the opportunity to create very accurate designs.

Conclusions (Con’t)

- Please start thinking about your current Inventor template workflows and how you can incorporate iLogic into them.

- This class has helped introduce you to how iLogic has helped my company and get you started in thinking about how to apply iLogic and API in your company’s workflows.



Blog Resources

Autodesk Vault

- http://blogs.autodesk.com/vault/

Autodesk Inventor

- http://blogs.autodesk.com/inventor/

AUTODESK®

Make anything™