



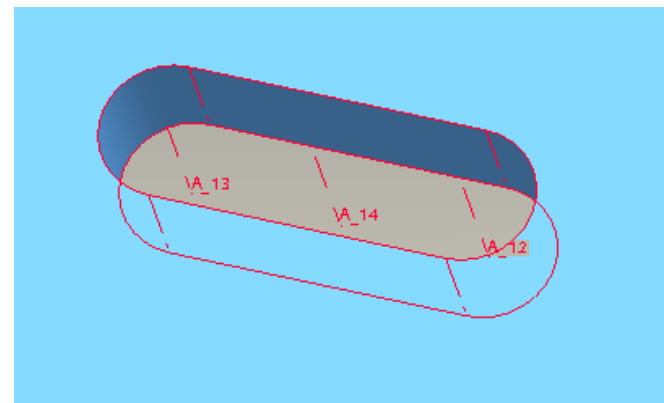
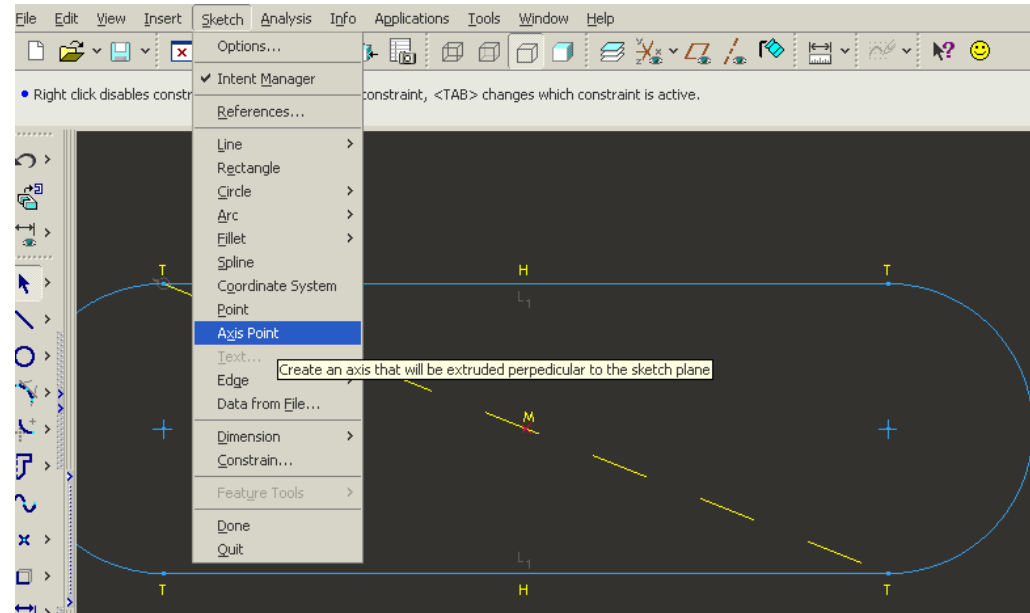
# 15 Tips in 30 Minutes

Vincent Pihlström -  
PTC

Sept 13, 2006

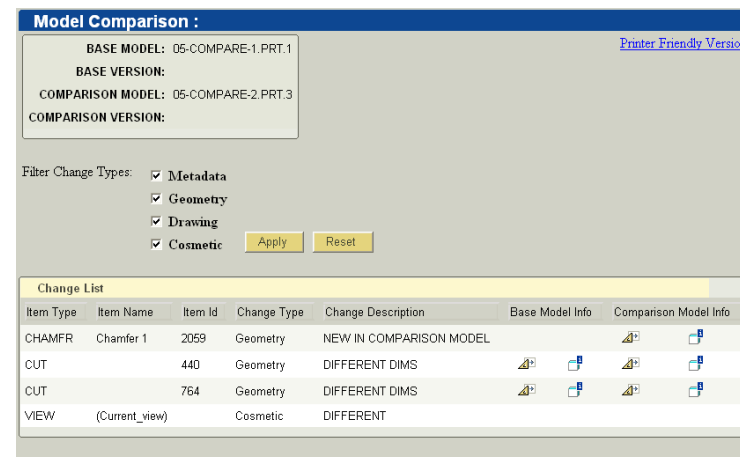
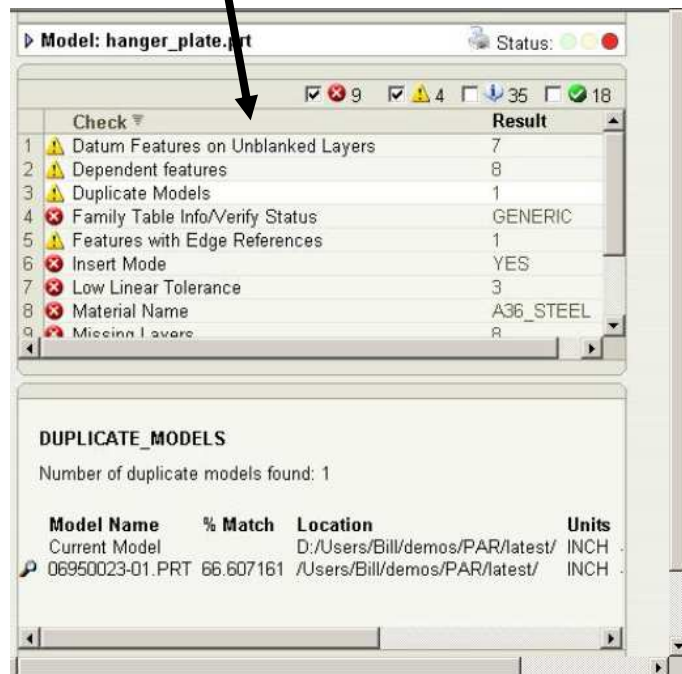
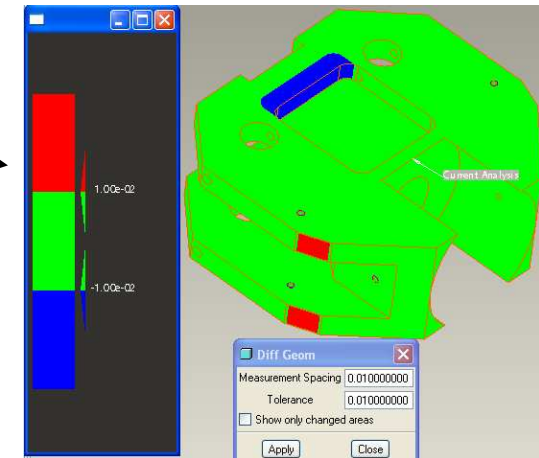
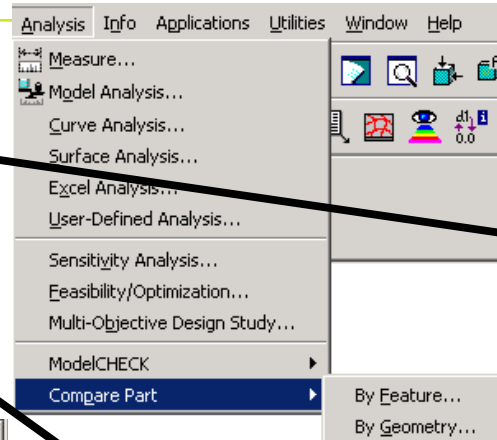
## #1 Creating Slots With An Axis At The Center

- Create initial cut in part
- Sketch geometry of slot:
- Create a diagonal line through slot and change it to a construction line
- Add an Axis Point to the center of the construction line
- Finish the feature



## #2 Compare Geometry

By Geometry  
By Feature  
Shape Indexing

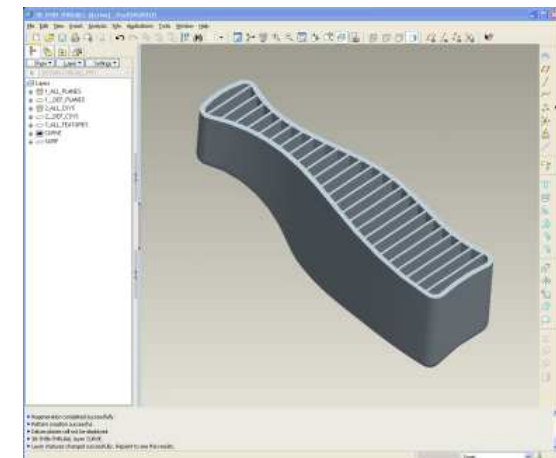
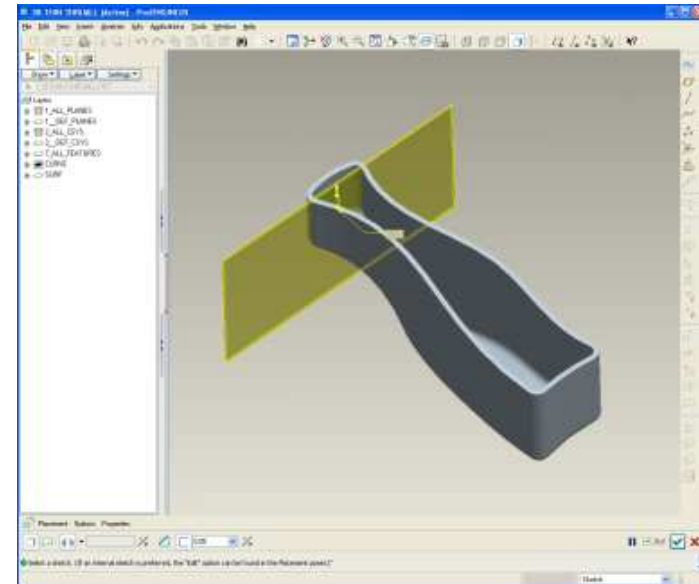


## #3 Thin Thru all for Thin Extrudes

### ◎ Thin features

- Sketch outside the model
- Thru all option
- Automatically trims and adjusts for depth of model

### ◎ Great for patterning



## Transition 1

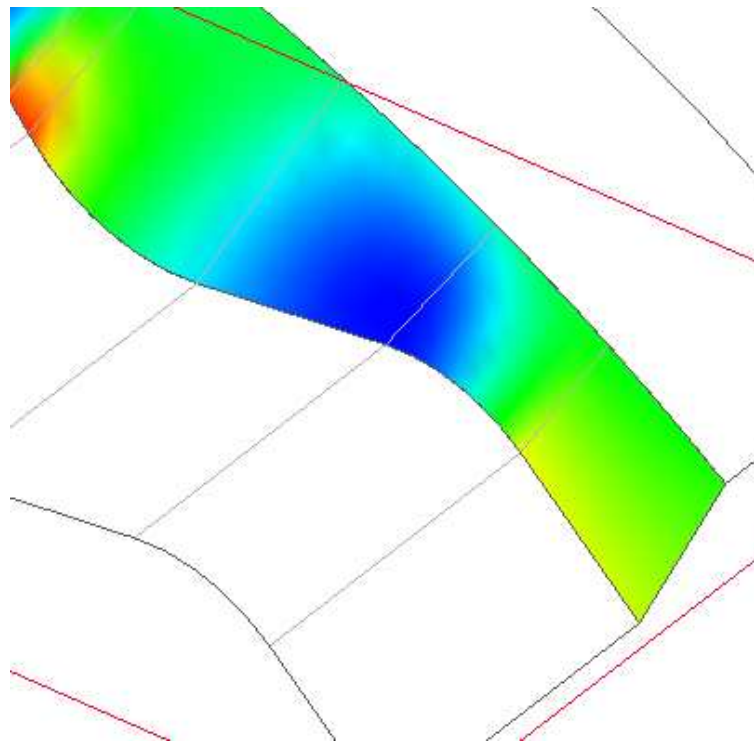
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**Engineers aren't boring people...**

**we just get excited over boring things.**

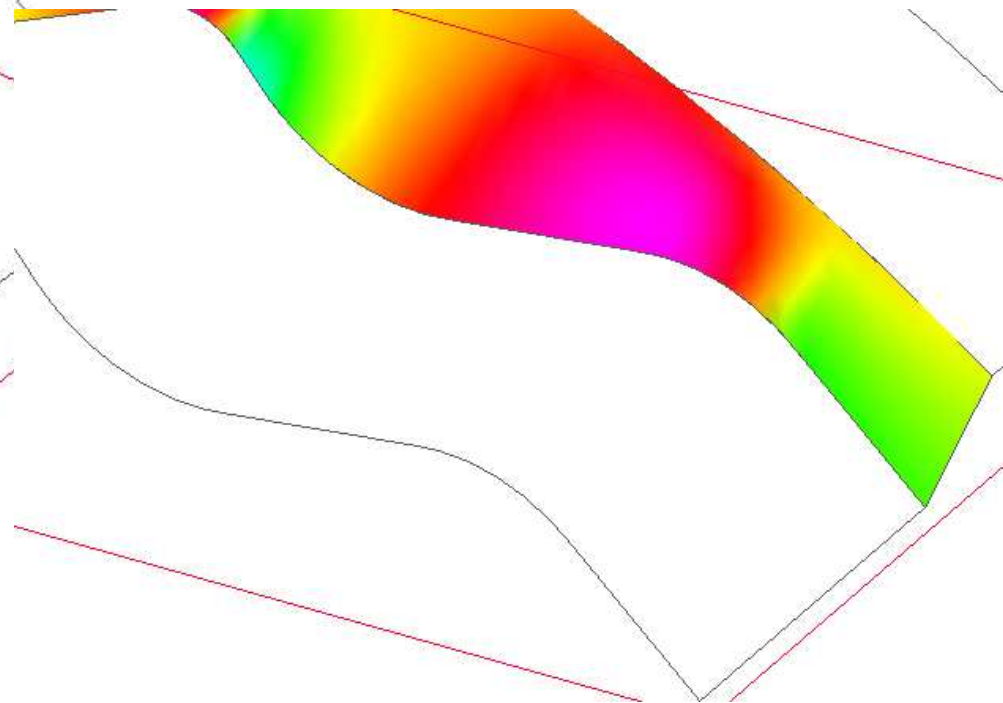
## #4 Sketch – Convert to spline

- Many facets in original and blended surfaces



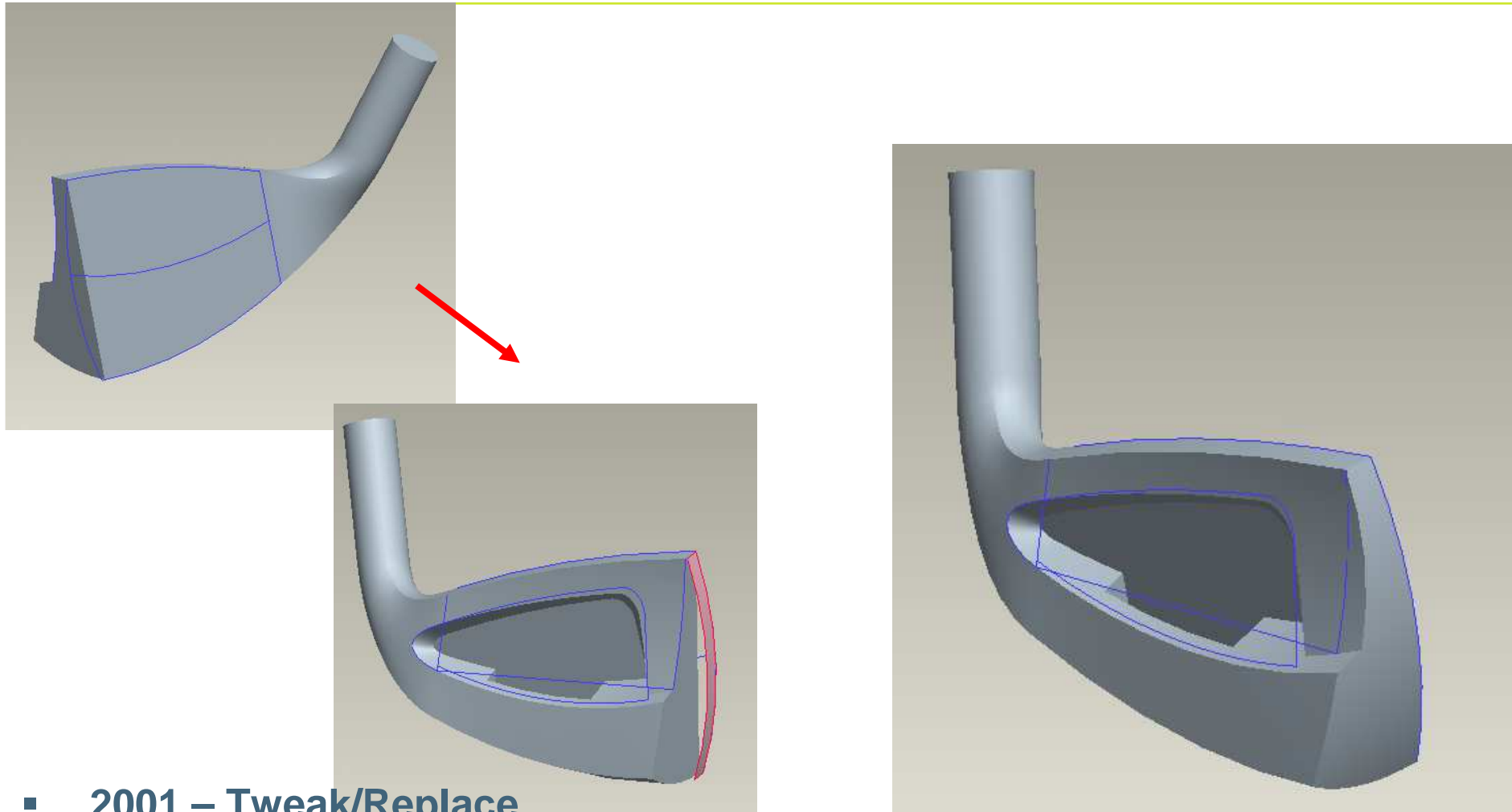
Splined out...

- Redefine sketch
- Select all entities
- #Edit / #Convert to / #Spline





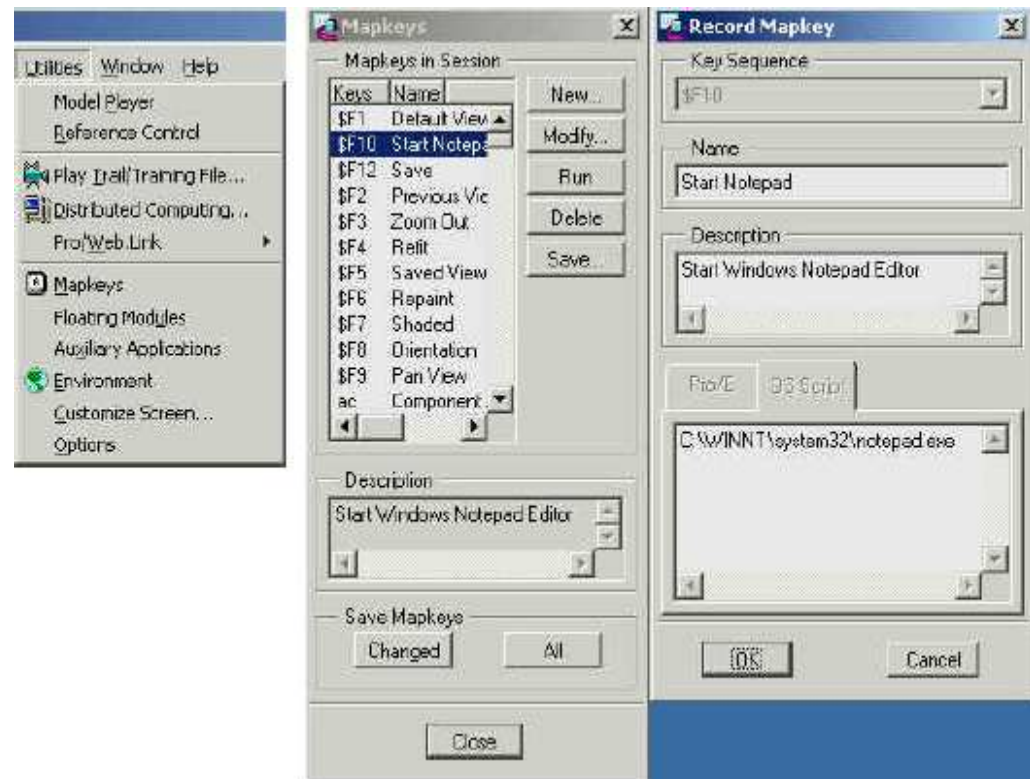
## #5 Using Offset Replace to Trim/Extend Protrusions



- 2001 – Tweak/Replace command

## #6 How to Create a Mapkey to Start an Application Outside of Pro/E

- *Select Utilities > Mapkey > New*
  - *Fill in mapkey Name and Description field*
  - *Select OS Script tab and full pathname to desired application*  
*(C:\WINNT\SYSTEM32\notepad.exe)*
- Select OK, close mapkey dialog box*





## #7 New Windows Icons in PRO/E

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- **1) Open Microsoft Word.**
- **2) Select #Tools #Customize.**
- **3) Under the "Toolbars" tab, put a checkmark next to any of the toolbar names. This will bring up a pop-up window of the toolbar that was checked. For example, putting a checkmark next to "Microsoft" will bring up a toolbar with various Microsoft Application icons, such as Excel and Power Point.**
- **4) From the pop-up window, right click on the desired icon and select "Copy Button Image". This will copy the icon image to the clipboard.**
- **5) In Pro/ENGINEER, create a mapkey. Select #Utilities #Customize Screen.**
- **6) Select the "Commands" tab and the mapkey icon whose image will be modified**
- **7) Click on "Modify Selection", then "Paste Button Image". This will replace the default mapkey icon image with the image that was copied to the clipboard.**

## #8 Family Table printing from Excel

- No formatting/printing from Pro/TABLE

Type	Instance Name	SS_HEIGHT	d64	d27	d4 PART_HEIGHT	d3 PART_DIAMET...	F979 COPIED GRO...	F721 [CUT]	F58 TOP_CUTOUT...	d44	F398 CEN
	11-EXCEL_TABLE_PLOTTI...	50	0.13	180.0	0.50	2.62	Y	Y	Y	0.05	Y
	4-CLUTCH_BASE_0001	50	0.13	160.0	0.50	2.00	N	Y	N	0.07	Y
	4-CLUTCH_BASE_0002	50	0.13	160.0	0.50	2.00	N	Y	Y	0.07	N
	4-CLUTCH_BASE_0003	20	0.13	160.0	0.20	2.98	Y	Y	N	0.05	Y
	4-CLUTCH_BASE_0004	70	0.28	100.0	0.50	2.00	N	N	N	0.07	N
	4-CLUTCH_BASE_0005	40	0.13	160.0	0.50	2.98	N	N	N	0.05	Y
	4-CLUTCH_BASE_0006	40	0.20	15.0	0.40	2.90	Y	N	Y	0.06	Y
	4-CLUTCH_BASE_0007	50	0.13	160.0	0.50	2.00	N	Y	N	0.07	N

- Dump it to Excel for printing

Pro/E Family Table												
11-EXCEL_TABLE_PLOTTING												
INST NAME	d67 BOSS_HEIGHT	d64	d27	d4 PART_HEIGHT	d3 PART_DIAMETER	F979 COPIED_GROUP_3	F721 [CUT]	F58 TOP_CUTOUT_S LOT	d44	F398 CENTER_HOLE	DESCRIPTION	
IGENERIC	0.06	0.125	180	0.5	2.62	Y	Y	Y	0.05	Y	CHOKE DESIGNED TO REPLACE ORIGINAL	
4-CLUTCH_BASE_0001	0.06	0.13	160	0.5	2	N	Y	N	0.07	Y	THERE'S NO WAY THIS CAN ALL LOOK GOOD ON A SCREEN SHOT	
4-CLUTCH_BASE_0002	0.06	0.13	160	0.5	2	N	Y	Y	0.07	N	JUST TOO MUCH INFORMATION IN HERE TO DISPLAY IT ALL ON THE SCREEN	
4-CLUTCH_BASE_0003	0.12	0.13	160	0.2	2.98	Y	Y	N	0.05	Y	ESPECIALLY ON MY TINY LITTLE 19 INCH LCD MONITOR	
4-CLUTCH_BASE_0004	0.07	0.28	100	0.5	2	N	N	N	0.07	N	MAYBE SOMEDAY I'LL GET ONE OF THOSE GREAT MP3'S	
4-CLUTCH_BASE_0005	0.04	0.13	160	0.5	2.98	N	N	N	0.05	Y	OR PERHAPS A 24" LCD... MAYBE BOTH. THAT SURE WOULD BE NICE, BUT NOT SURE IT'S	
4-CLUTCH_BASE_0006	0.04	0.2	15	0.4	2.9	Y	N	Y	0.06	Y	IN THE BUDGET FOR FY07. MAYBE IF I DO A REALLY GOOD JOB THIS YEAR I'LL GET	
4-CLUTCH_BASE_0007	0.06	0.13	160	0.5	2	N	Y	N	0.07	N	UPGRADED TO THE 21" LCD THAT SOMEONE ELSE ALREADY THREW OUT.	

## Transition 2

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**Dilbert's "Salary Theorem" states that "Engineers and scientists can never earn as much as business executives, sales people, accountants and especially liberal arts majors."**

**This theorem can now be supported by a mathematical equation based on the following two well known postulates:**

## Transition 2 cont....

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**Postulate 1: Knowledge is Power.**  
**Postulate 2: Time is Money.**

**As every engineer knows:**

**Power = Work / Time.**

## Transition 2 cont....

---

**Since: Knowledge = Power,**

**then**

**Knowledge = Work / Time,**

**and Time = Money,**

**Then -> Knowledge = Work / Money.**

Transition 2 cont....

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**Solving for Money, we get:**

**Money = Work / Knowledge.**

Thus, as Knowledge approaches zero, money approaches infinity, regardless of the amount of work done.

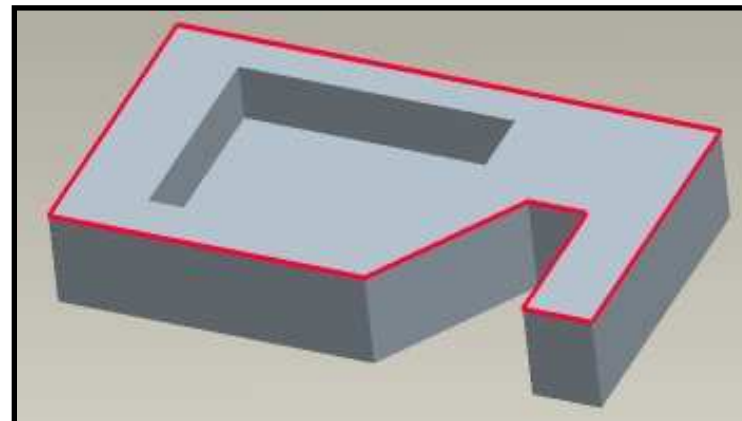
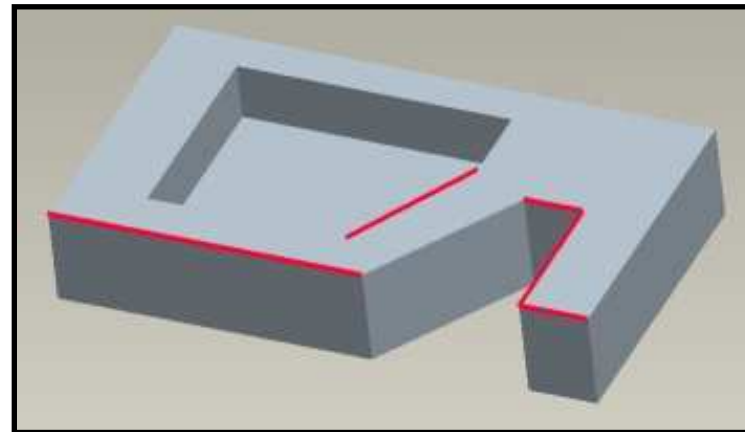
The less you know...the more money you make.



## #9 Selecting Edges

### ⊙ Methodology for selecting multiple edges

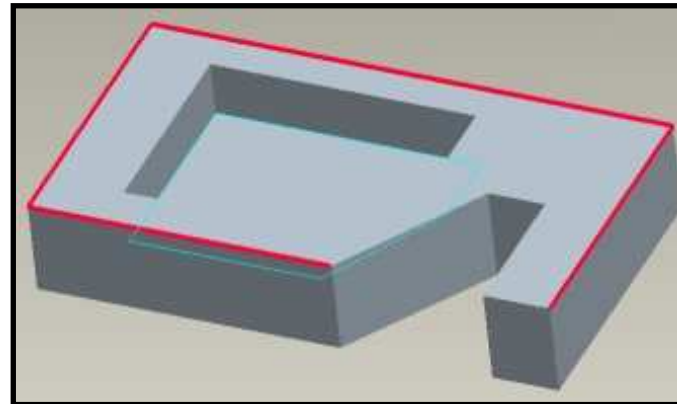
- **One by One**
  - Hold Ctrl key and select individual edges
- **Surface Loop**
  - Select edge on surface
  - hold the shift key down while cursor is over that surface or another edge of that loop



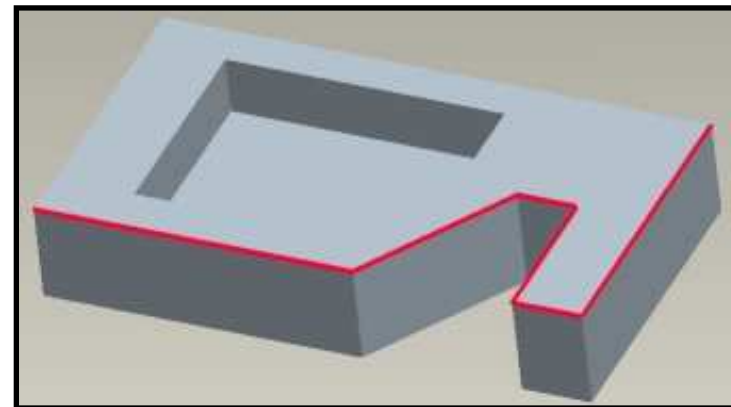
## #9 Selecting Edges (cont.)

### ⊙ Methodology for selecting multiple edges

- **Surface Loop From-To (Edge Chain)**
  - Select starting edge
  - Hold Shift key down
  - Click right mouse button to toggle from Surface Loop to Loop From-To
  - Click right mouse button again to select opposite half of loop
  - One more RMB click toggles back to Surface loop



Or

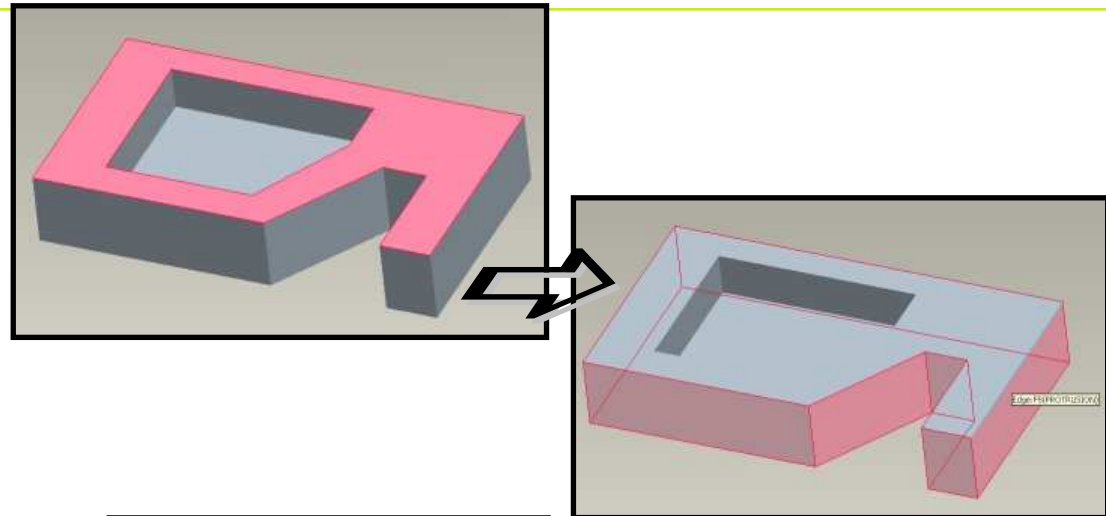


## #10 Surface Specific Shortcuts

⊙ There are methods for selecting multiple surfaces

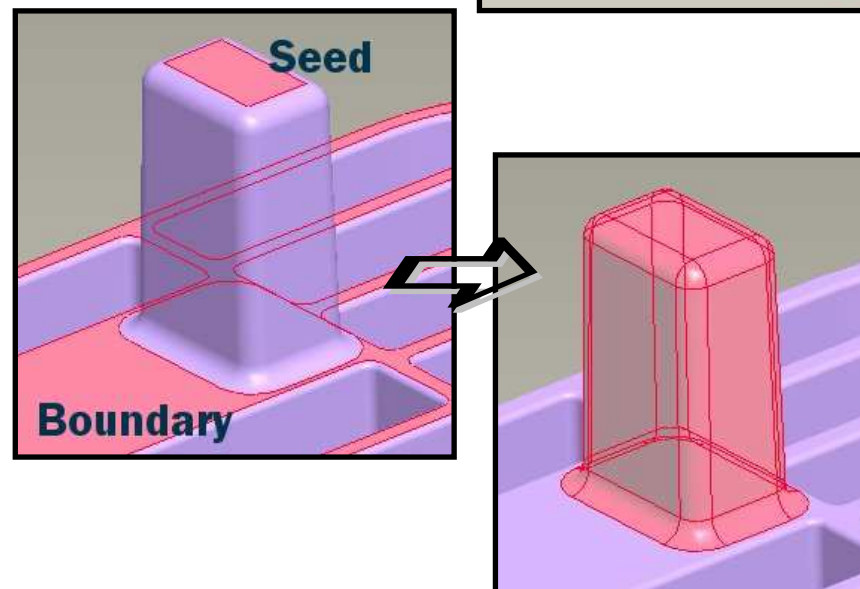
### - Loop Surface

- Selects all surfaces that loop the edge of a surface
- Select surface to be looped
- Hold Shift key and pick any edge of first surface



### - Seed and Boundary Surface

- Selects all surfaces starting with the seed surface, and ending when the boundary is contacted
- Select surface to be the seed
- Hold Shift key and select boundary surface

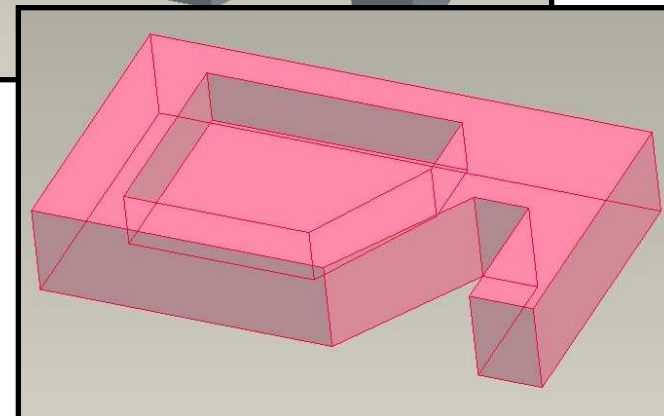
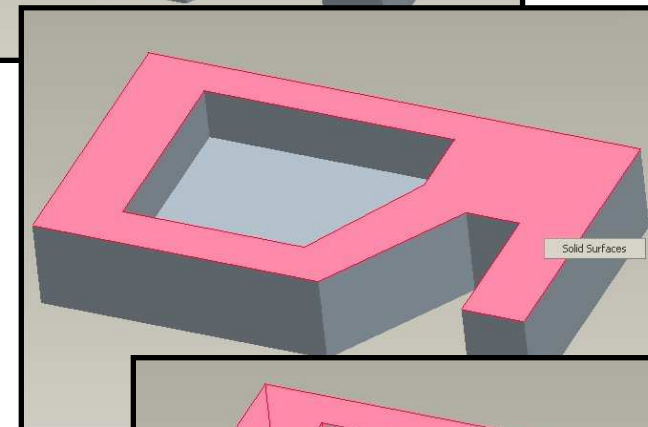
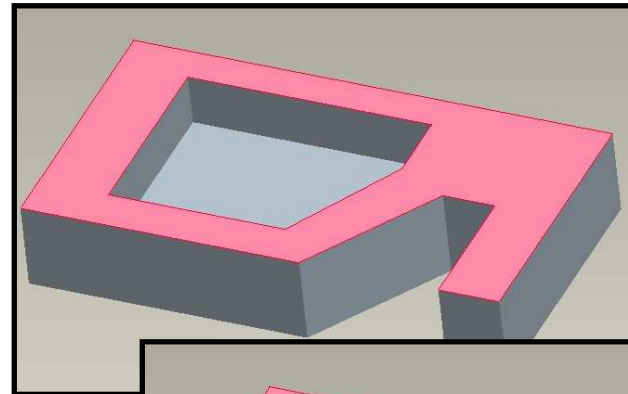


## #10 Surface Specific Shortcuts (cont.)

⊙ There are methods for selecting multiple surfaces

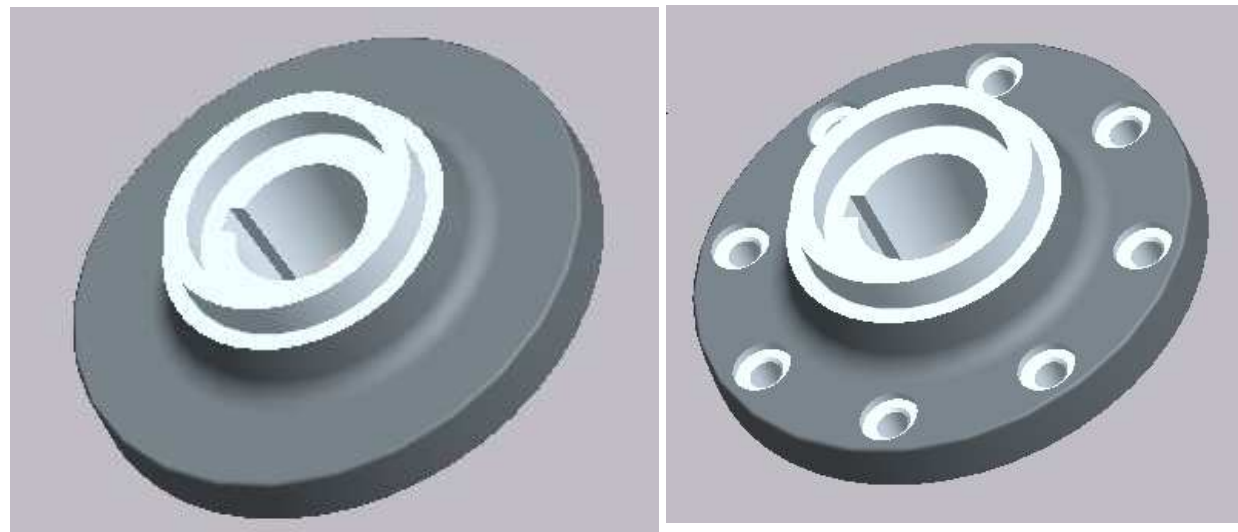
- **Solid Surface**

- Select a surface from the model
  - Right mouse click over that surface
  - Select the solid surface box that pops up
  - The entire model surface is selected
- **The entire surface can be used to create a copy**



## #11 How to Automatically Add Color to Machined Features in a Casting

- Before machined features are added, color the part (Ex. White)
- Paint the outside surfaces of the casting a different color (Ex. Gray)
- As you add cuts to the model representing machined features, outer skin color will be removed exposing inner model color



- **Alternative:** - Use the Find Tool to find Hole surfaces, or cut surfaces and apply the color.

## Transition 3 – Engineering terminology revealed

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# What we Hear.....What it means.....

**The entire concept will have to be abandoned.**

**The only guy who understood the thing quit.**



## **Transition 3 – Engineering terminology revealed**

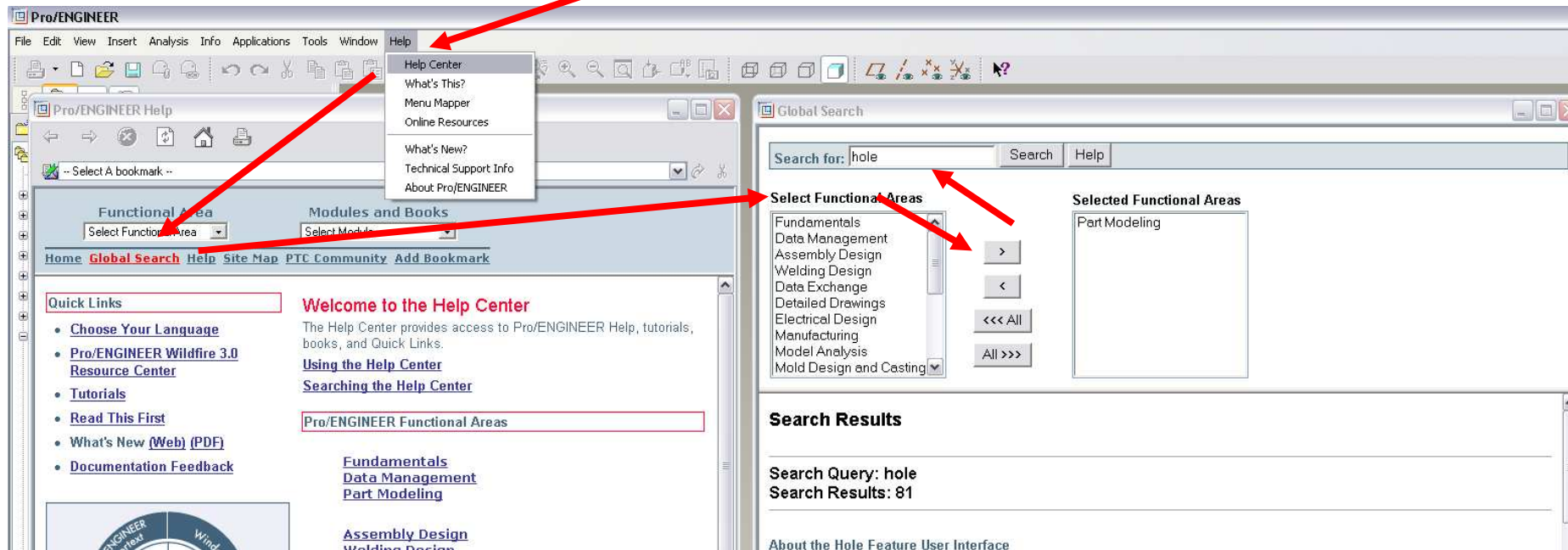
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**The test results were extremely gratifying.**

**It works and boy are we surprised.**

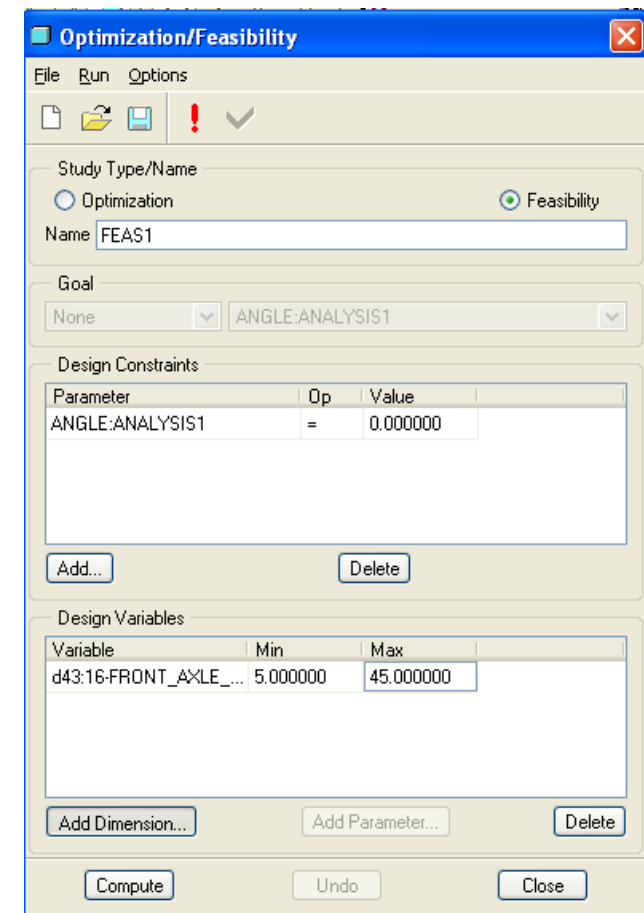
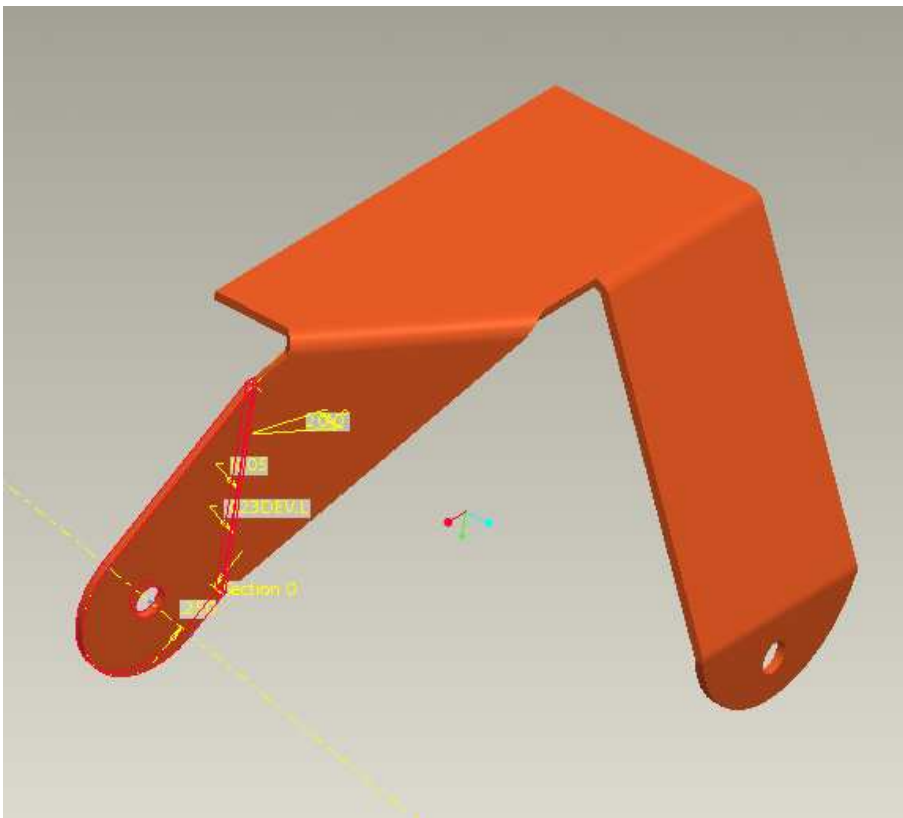
## #12 Finding Help

- ⦿ Help is under your fingertips
- ⦿ The trick is knowing how to search the **Help Center**. Lets search for hole.



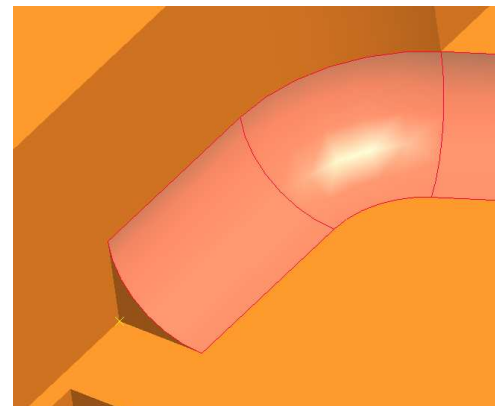
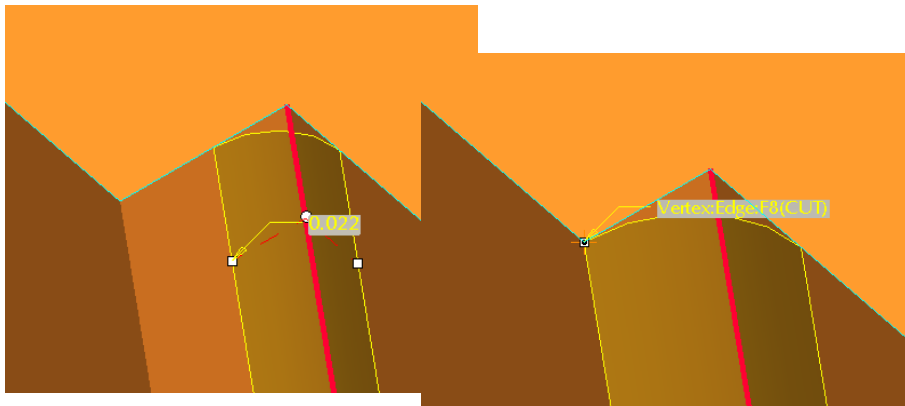
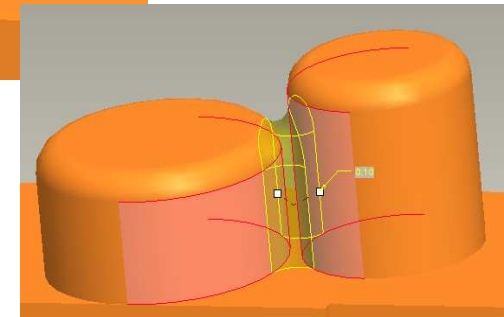
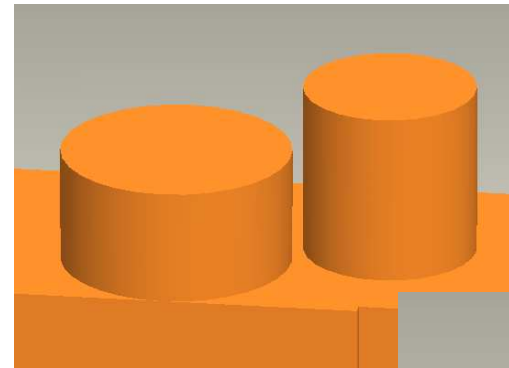
## #13 Get to know BMX – Wagon bracket

- ⦿ Analysis features solve problem for you
  - What angle do I need to make angle = zero
  - Lets use the excel equation from tip # 6-7



## #14 Round surf-surf

- ⦿ Surf – Surf Round for adding space in gap
- ⦿ One feature instead of many for adding geometry into gap
- ⦿ Drag handle + Shift to vertex
- ⦿ Round – un-force tangency
  - Use SHIFT to override “Tangent Chain” with “From-To”





**Transition 4 – You might be an engineer if....**

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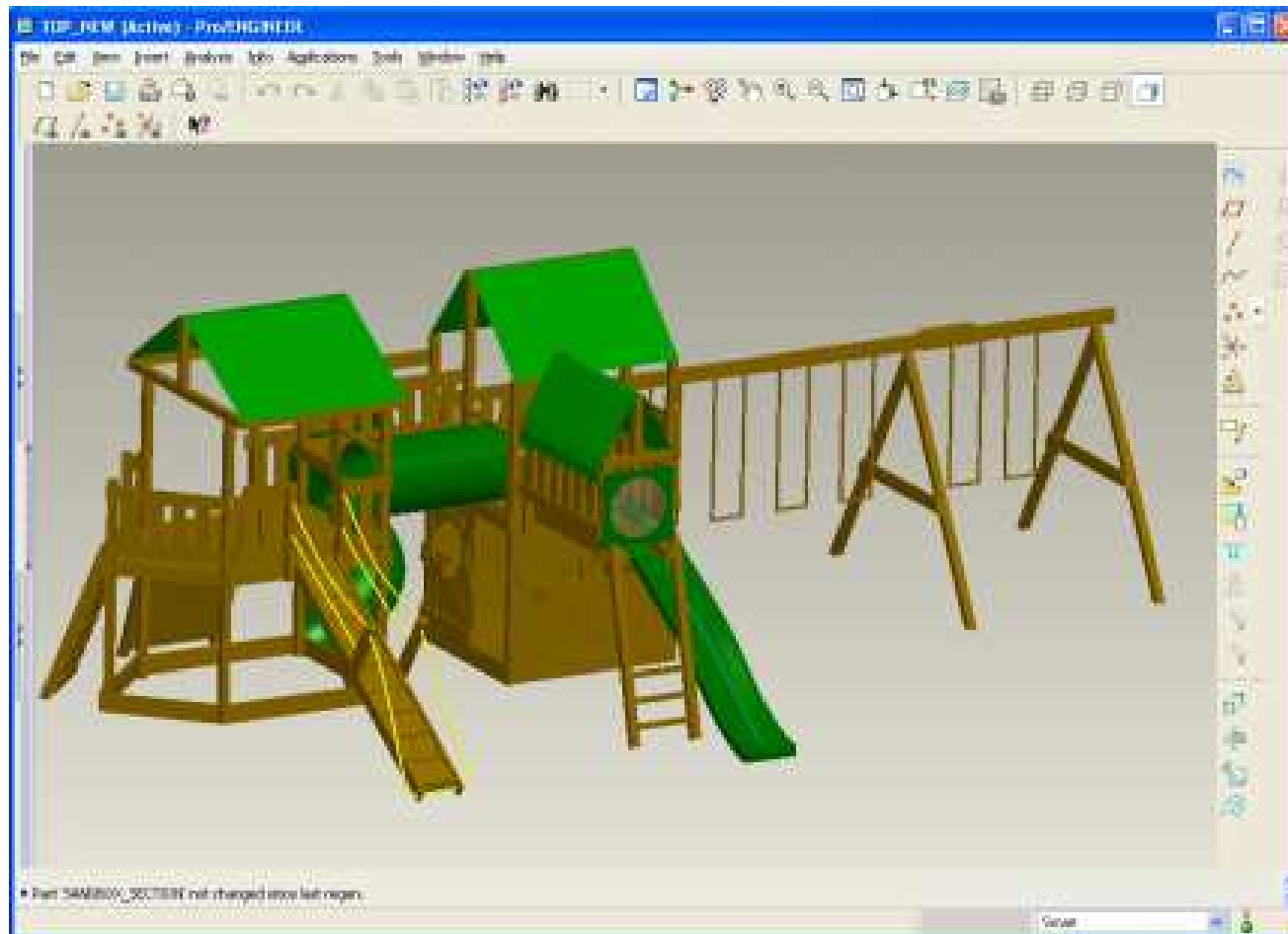
**You might be an engineer if....**

**you've ever tried to repair a \$5 radio.**

**you use Pro/ENGINEER to design your son's Pine Wood Derby car.**



Transition 4 – You might be an engineer if....  
**...or your kids' swingset!**



## Transition 4 – You might be an engineer if....

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**Questions? Sorry, out of time...**