



## CATIA V5 Training Exercises













# Structure Design Administration

Version 5 Release 19  
January 2009

EDU\_CAT\_EN\_SRA\_AX\_V5R19

Student Notes:

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# Master Exercise: Administrating SR1

## Step 1: Creating a New Project



In this exercise you will:

- Create a structure tree for your new project
- Copy existing PRM file
- Modify the copied PRM file
- Set up CATIA V5 variables
- Test your modifications

```

E:\SERVER\DS\DB\SR1_TST\ProjectSettings\SR1_TST.xml - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Back Forward Stop Home Search Favorites Media
Address E:\SERVER\DS\DB\SR1_TST\ProjectSettings\SR1_TST.xml
<!DOCTYPE Project (View Source for full doctype...)>
<Project Name="SR1_TST">
<!-- ***** PROJECT RESOURCES ***** -->
<!-- ID SCHEMA RESOURCES -->
<Resource Name="PipingIDSchema" Description="Piping ID Schema Directory" Visible="yes">
  <ID Type="Path" Driver="File" Location="E:\SERVER\DS\Setup\EquipmentAndSystems\Piping\DataDictionary"
  Path="No Description" Access="R" />
</Resource>
<Resource Name="EquipmentIDSchema" Description="Equipment ID Schema Directory" Visible="yes">
  <ID Type="Path" Driver="File" Location="E:\SERVER\DS\Setup\EquipmentAndSystems\Equipment\DataDictionary"
  Path="No Description" Access="R" />
</Resource>
<Resource Name="InstrumentIDSchema" Description="Instrument ID Schema Directory" Visible="yes">
  <ID Type="Path" Driver="File" Location="E:\SERVER\DS\Setup\EquipmentAndSystems\Instrument\DataDictionary"
  Path="No Description" Access="R" />
</Resource>
<Resource Name="HVACIDSchema" Description="HVAC ID Schema Directory" Visible="yes">
  <ID Type="Path" Driver="File" Location="E:\SERVER\DS\Setup\EquipmentAndSystems\HVAC\DataDictionary"
  Path="No Description" Access="R" />
</Resource>
<Resource Name="TubingIDSchema" Description="Tubing ID Schema Directory" Visible="yes">
  <ID Type="Path" Driver="File" Location="E:\SERVER\DS\Setup\EquipmentAndSystems\Tubing\DataDictionary"
  Path="No Description" Access="R" />
</Resource>
<Resource Name="WaveguideIDSchema" Description="Waveguide ID Schema Directory" Visible="yes">
  <ID Type="Path" Driver="File" Location="E:\SERVER\DS\Setup\EquipmentAndSystems\Waveguide\DataDictionary"
  </Resource>
  
```

## Do It Yourself (1/3)

- Create new Directories: TST\_SR1
  - └ Structure
  - └ StructuralCatalogs
  
- Copy Project.xml (...\\intel\_a\\startup\\EquipmentAndSystems\\ProjectData) into TST\_SR1 directory
  - ◆ Rename it to: TST\_SR1.xml
    - Optionally: copy Project.dtd (...\\intel\_a\\reffiles\\disciplines)
  
- Copy the following directories from ...\\intel\_a\\startup\\EquipmentAndSystems\\Structure\\StructuralCatalogs into E:\\TST\_SR1\\Structure\\StructuralCatalogs:
  - ◆ Materials
  - ◆ ModelsResolved
  
- Edit TST\_SR1.xml
  - ◆ Modify the aliases as follow (depending on where CATIA is installed)

```
<!-- Aliases in the project file -->
<Alias Name="Startup_Directory" Value="C:\\Program Files\\Dassault Systemes\\B17D24\\intel_a\\startup\\EquipmentAndSystems" />
<Alias Name="Components_Directory" Value="C:\\Program Files\\Dassault Systemes\\B17D24\\intel_a\\startup\\components" />
<Alias Name="MultiDiscSample" Value="MultiDiscipline\\SampleData" />
```

## Do It Yourself (2/3)

- ◆ Change location variables in STRUCTURE DISCIPLINE RESOURCES
- ◆ Search for `<!-- ***** Specification Catalog ***** -->`
  - Modify the Location Variable

```
<!-- ***** Specification Catalog ***** -->
<Resource Name="StructureSpecificationsCatalog" Description="Structure Specifications Catalog" Visible="yes">
  <ID Type="Catia" Driver="File" Location="E:\TST_SR1\Structure\StructuralCatalogs\Materials\StructureMaterialSpecifications.catalog"/>
</Resource>
```

- ◆ Search for `<!-- ***** Material Catalog ***** -->`
  - Modify the Location Variable

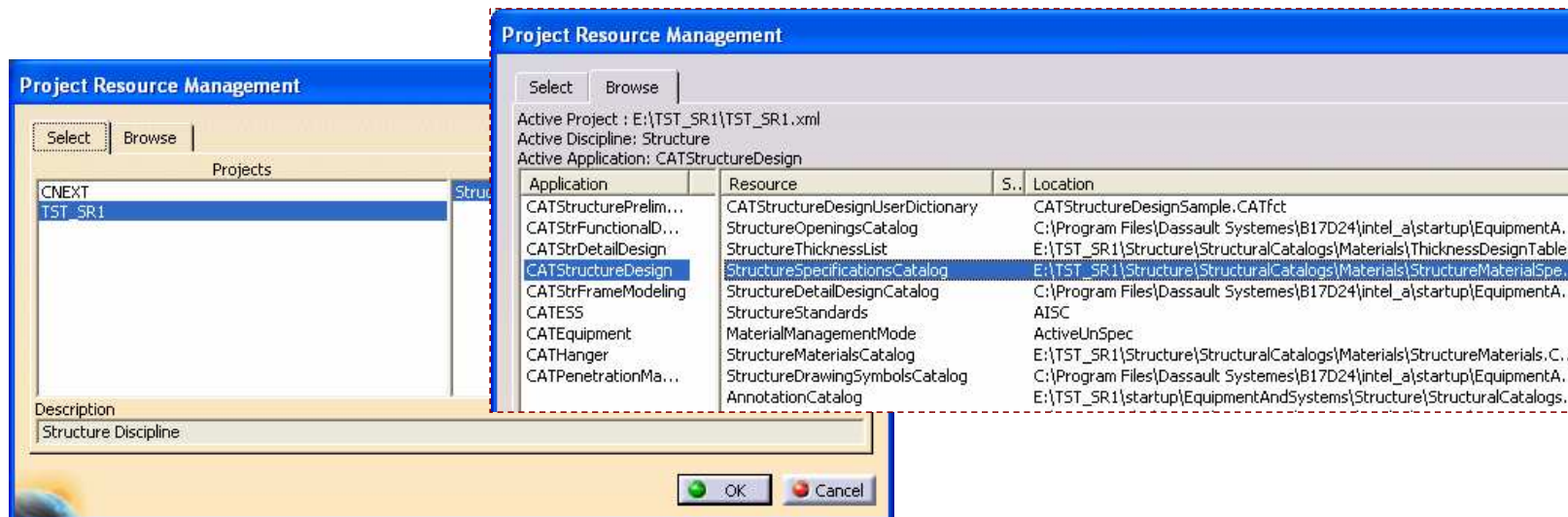
```
<!-- ***** Material Catalog ***** -->
<Resource Name="StructureMaterialsCatalog" Description="Structure Materials Catalog" Visible="yes">
  <ID Type="Catia" Driver="File" Location="E:\TST_SR1\Structure\StructuralCatalogs\Materials\StructureMaterials.CATMaterial" Access="R" />
</Resource>
```

- ◆ Search for `<!-- *****SR1 Thickness list ***** -->`
  - Modify the Location Variable

```
<!-- *****SR1 Thickness list ***** -->
<Resource Name="StructureThicknessList" Description="Structure Thickness List" Visible="yes">
  <ID Type="Catia" Driver="File" Location="E:\TST_SR1\Structure\StructuralCatalogs\Materials\ThicknessDesignTable.txt"/>
</Resource>
```

## Do It Yourself (3/3)

- ◆ Edit CATIA V5R18 txt environment file
  - ◆ Stored by default in C:\Documents and Settings\All Users\Application Data\DassaultSystemes\CATEnv
  - ◆ Search for CATDisciplinePath variable
    - Add the path of TST\_SR1.xml file
  
- ◆ Test your modification
  - ◆ Run CATIA
  - ◆ Open Structure Design workbench
  - ◆ Set up the correct project



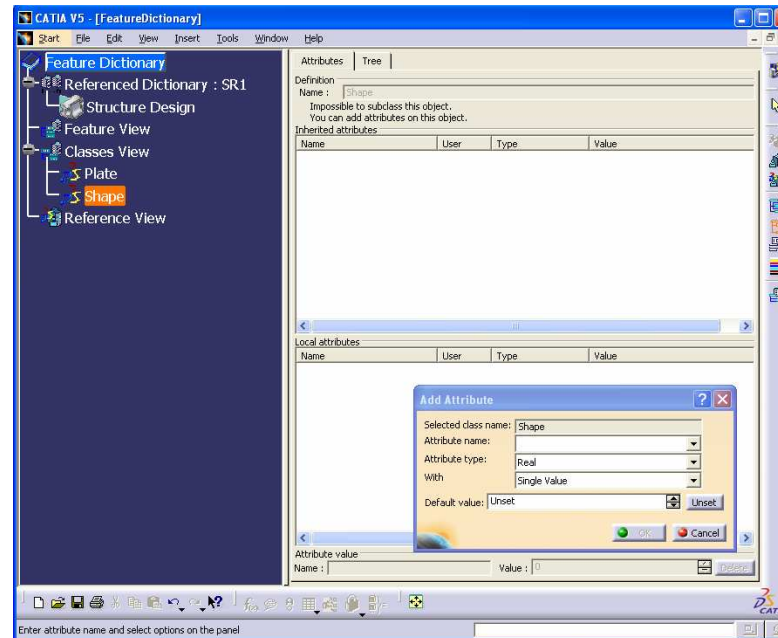
# Master Exercise: Administrating SR1

## Step 2: Adding New Attributes



In this exercise you will:

- Open the Structure Design Feature Dictionary
- Add new attributes to Shape Class
- Add new attributes to Plate Class
- Test your modifications



Student Notes:

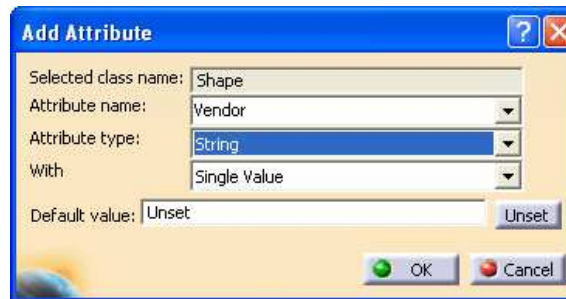
## Do It Yourself (1/3)

- Run CATIA
- Open CATStructureDesignSample.CATfct (...\\intel\_a\\resources\\graphic)

### • Select Shape

#### • Add a new attribute

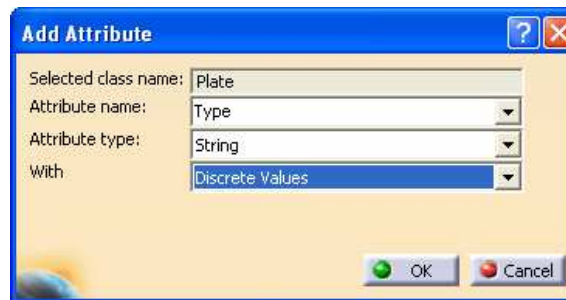
- Attribute name: Vendor
- Attribute type: String
- With: Single Value



### • Select Plate

#### • Add a new attribute

- Attribute name: Type
- Attribute type: String
- With: Discrete values

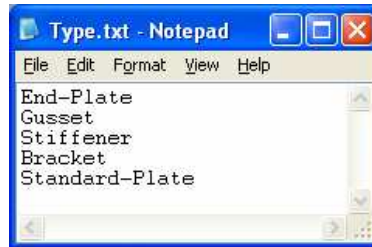


- Save your modifications and close the file



## Do It Yourself (2/3)

- Go to ...\\intel\_a\startup\EquipmentAndSystems\DiscreteValues
- Create a new text file
  - ◆ Call it: Type
- Open Type.txt
  - ◆ Key in the following text
    - End-Plate
    - Gusset
    - Stiffener
    - Bracket
    - Standard-Plate

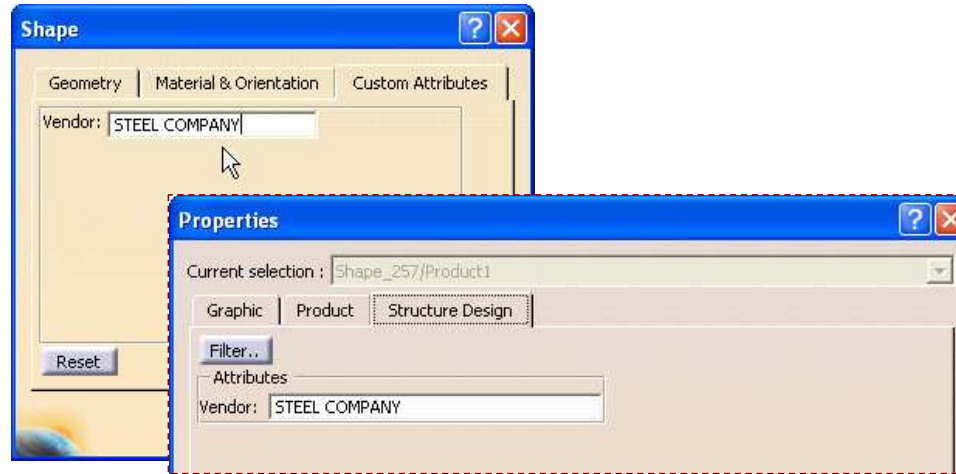


Use <Shift> <Enter> keys combination to jump to separate lines

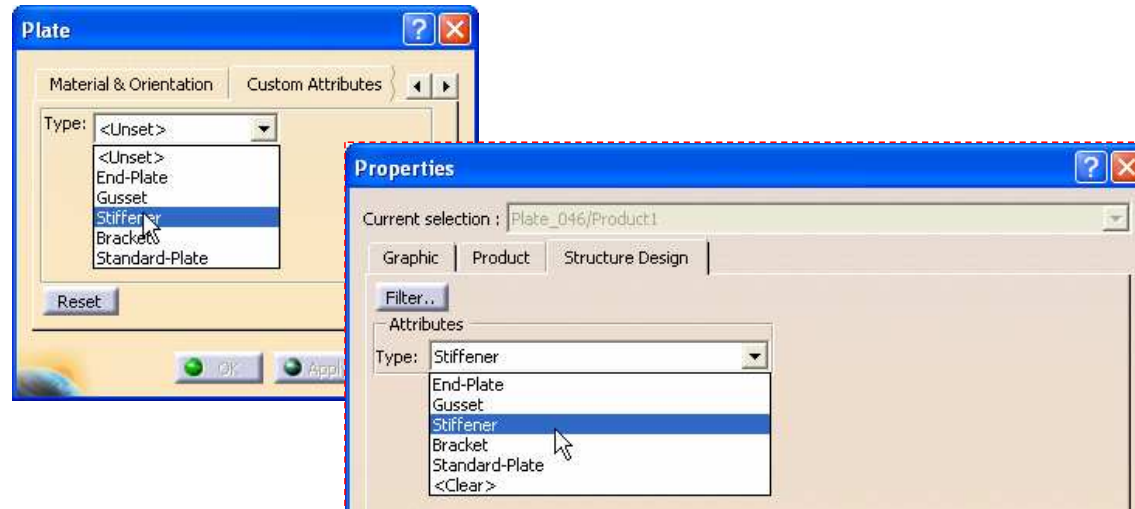
## Do It Yourself (3/3)

Test your modifications

- ◆ Create a Product
- ◆ Place a Shape



◆ Place a Plate



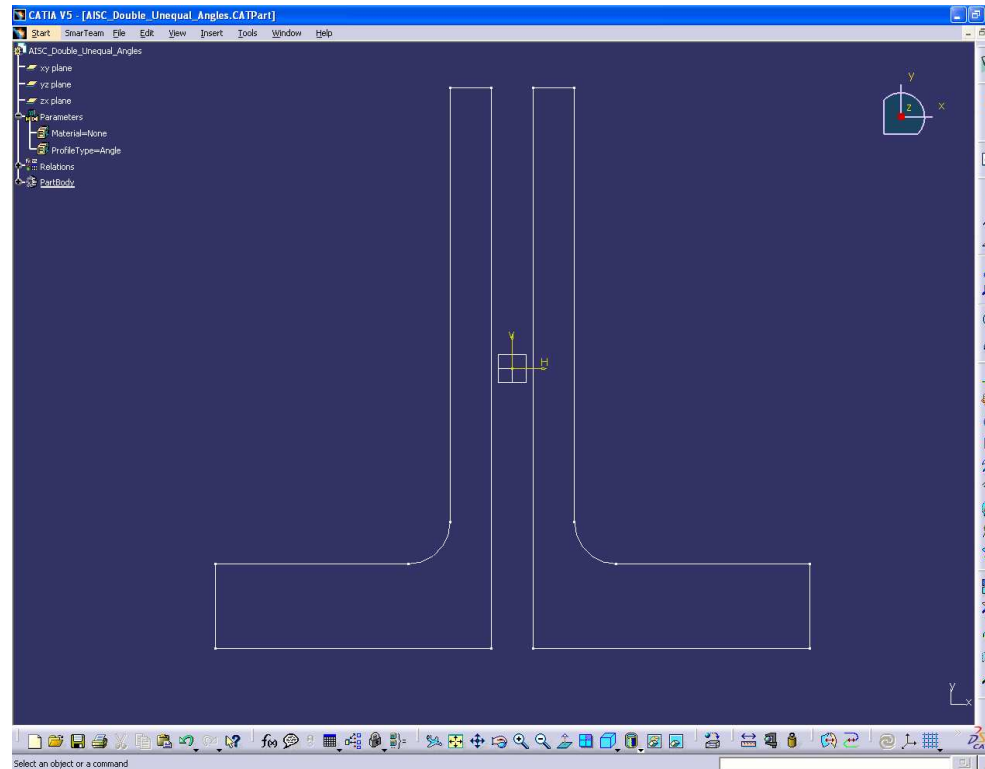
# Master Exercise: Administrating SR1

## Step 3: Creating a Resolved Standard Section



In this exercise you will:

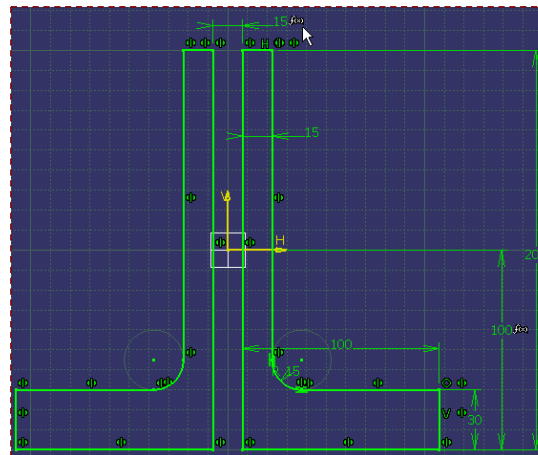
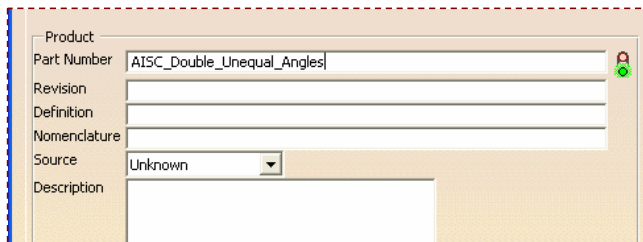
- Create a new Section
- Create a new Design Table
- Resolved the Sections



Student Notes:

## Do It Yourself (1/4)

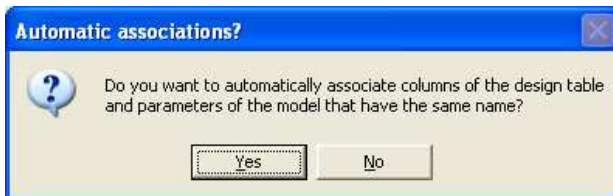
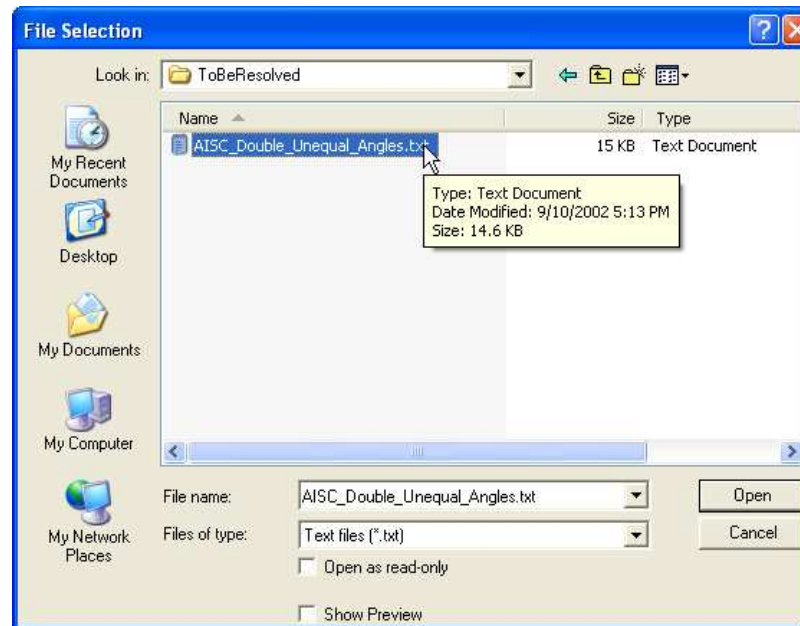
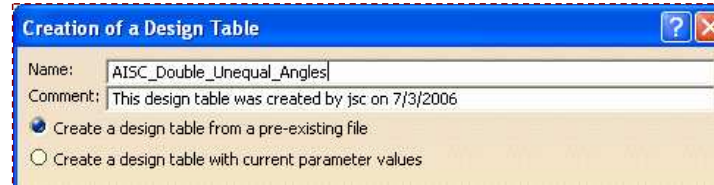
- Create 2 directories:
  - ◆ E:\ToBeResolved and E:\Resolved
- Copy AISC\_Unequal\_Angles.txt from ...\\intel\_a\startup\EquipmentAndSystems\Structure\StructuralCatalogs\AISC\DesignTables Into E:\ToBeResolved)
  - ◆ Rename it: AISC\_Double\_Unequal\_Angles.txt
  - ◆ Edit it:
    - Change PartNumber: Lxxx in 2Lxxxx
    - Remove 'Code' column
- Open in CATIA the CATPart LShapeRND.CATPart (...\\intel\_a\startup\EquipmentAndSystems\Structure\StructuralCatalogs\Sketchs)
- Change the Sketch of the section
  - ◆ Create a new constraint to pilot the Clearance
- Modify the CATPart properties
  - ◆ Product = AISC\_Double\_Unequal\_Angles



- Save as AISC\_Double\_Unequal\_Angles.CATPart Into E:\ToBeResolved)

## Do It Yourself (2/4)

- Select the 'Design Table' icon
  - Key-in 'AISC\_Double\_Unequal\_Angles' as Name
  - Select:
    - 'Create a design table from a pre-existing file'
      - Click OK button
- Select the file:
  - AISC\_Double\_Unequal\_Angles.txt
    - Look in E:\ToBeResolved
    - Files of type: Text files (\*.txt)
    - Click Open button
    - Click Yes button



If needed, you can open the AISC\_Double\_Unequal\_Angles.CATPart

## Do It Yourself (3/4)

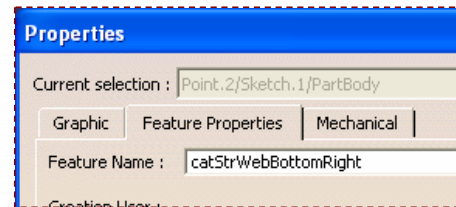
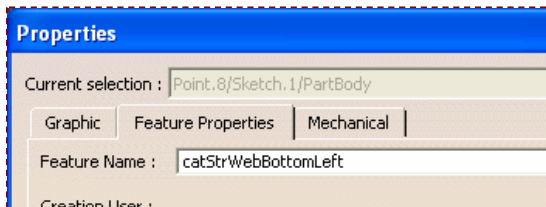
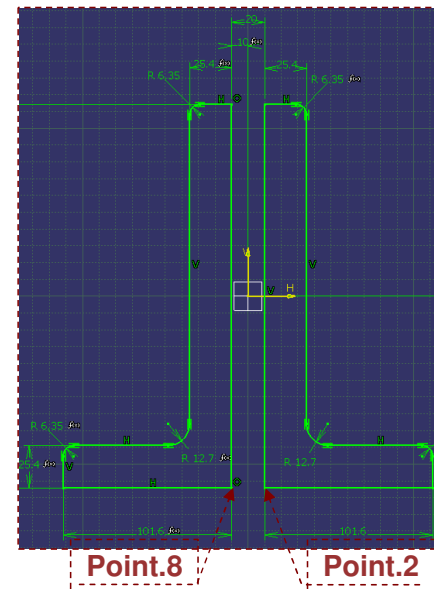


- Click OK button
- The sketch should update

### Edit the Sketch

#### Modify Point.2 and Point.8 Feature properties

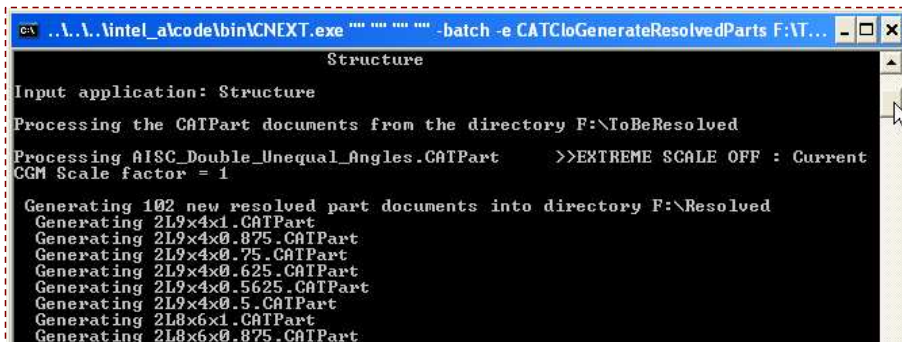
- catStrWebBottomLeft
  - catStrWebBottomRight
- } catStr prefix is mandatory.



## Do It Yourself (4/4)

- Save your modifications
- Open a command prompt window
  - ◆ Change to the directory ...intel\_a\code\command
  - ◆ Structure of command:  
`CATCtoGenerateResolvedParts.bat -env file [-direnv dir] [-installdir dir] DirectoryPathIn [DirectoryPathOut -appl applname]`
  - ◆ Type the following command line:  
`CATCtoGenerateResolvedParts.bat -env R18_GA -direnv "C:\Documents and Settings\otv\Application Data\DassaultSystemes\CATEnv"D:\R18GA D:\PIPING_\TST_SR1\ToBeResolved D:\PIPING_\TST_SR1\Resolved -appl Structure`
  - ◆ Press Enter

```
D:\R18GA\intel_a\code\command>CATCtoGenerateResolvedParts.bat -env R18_GA -direnv "C:\Documents and Settings\otv\Application Data\DassaultSystemes\CATEnv"D:\R18GA D:\PIPING_\TST_SR1\ToBeResolved D:\PIPING_\TST_SR1\Resolved -appl Structure
```



```
Structure
Input application: Structure
Processing the CATPart documents from the directory F:\ToBeResolved
Processing AISC_Double_Unequal_Angles.CATPart >>EXTREME SCALE OFF : Current CGM Scale factor = 1
Generating 102 new resolved part documents into directory F:\Resolved
Generating 2L9x4x1.CATPart
Generating 2L9x4x0.875.CATPart
Generating 2L9x4x0.75.CATPart
Generating 2L9x4x0.625.CATPart
Generating 2L9x4x0.5625.CATPart
Generating 2L9x4x0.5.CATPart
Generating 2L8x6x1.CATPart
Generating 2L8x6x0.875.CATPart
```



if process fails due to any reason, the env file gets consumed in process.

- Copy the resolved CATParts in: (E:\TST\_SR1\Structure\StructuralCatalogs\ModelsResolved).

# Master Exercise: Administrating SR1

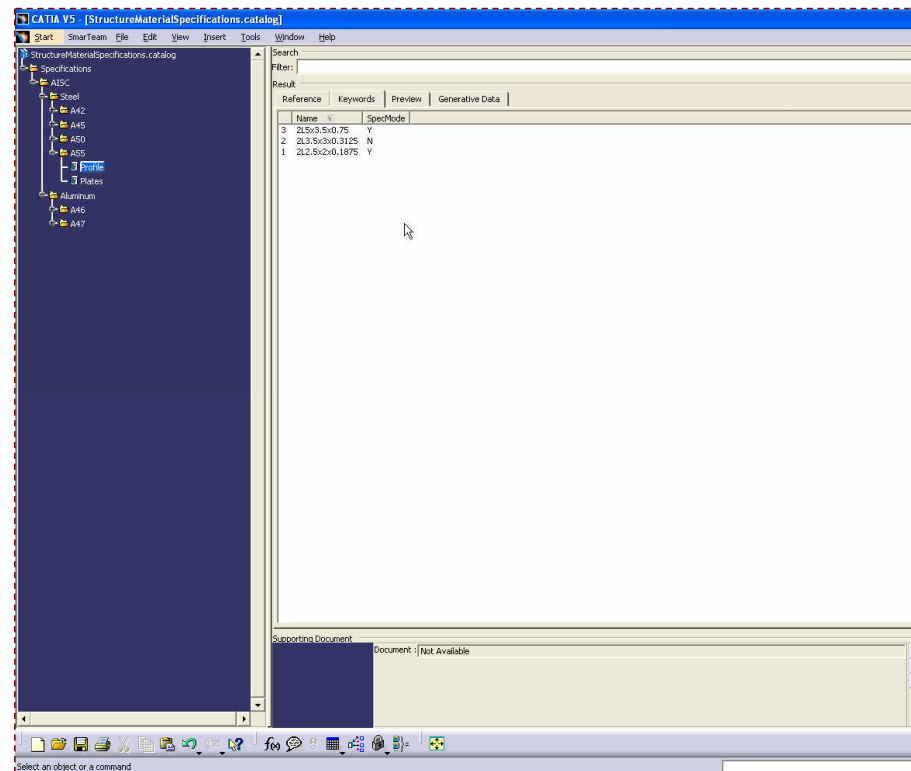
## Step 4: Modifying the Structure Specification Material Catalog



90 min

In this step you will:

- Create a new 'Grade' chapter
- Create two new 'Profile' and 'Plates' chapter
- Insert the newly resolved Sections
- Insert new Thicknesses
- manage a list of 'Favorite' profiles

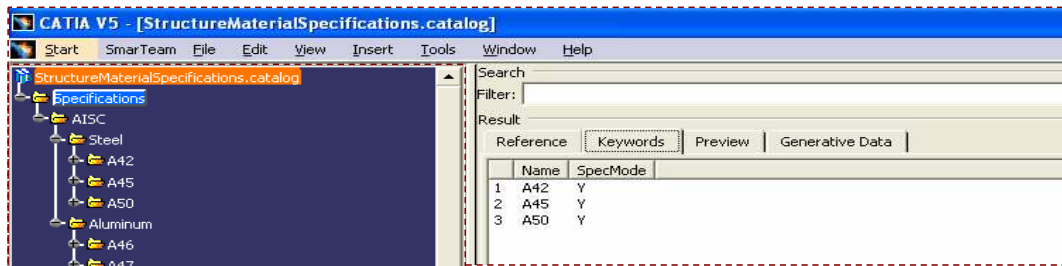


Student Notes:

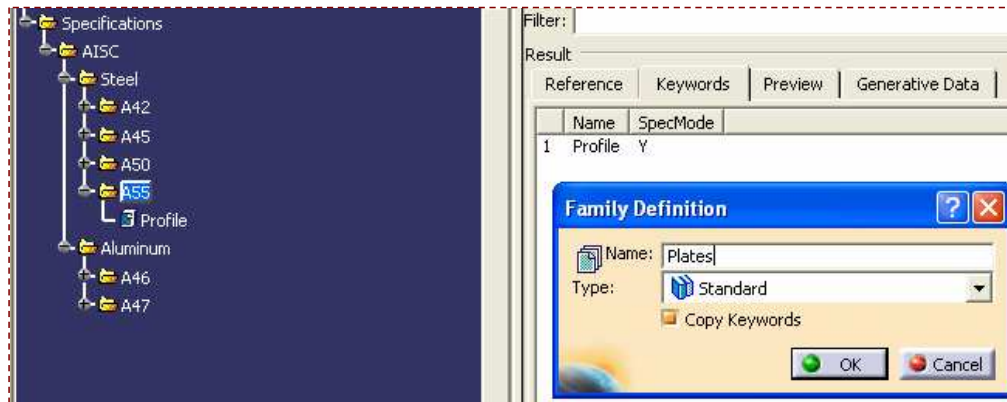


## Do It Yourself (1/5)

- Open the StructureSpecificationMaterial.catalog found in:  
 ...\\intel\_a\\startup\\EquipmentAndSystems\\Structure\\StructuralCatalogs\\Materials

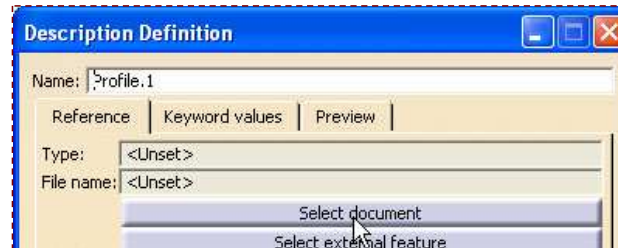


- Activate the AISC/Steel chapter
- Create a new 'Grade' chapter
  - Check the Copy Keywords option
- Activate the newly created Chapter
- Create 2 new Families:
  - Profile, and
  - Plates

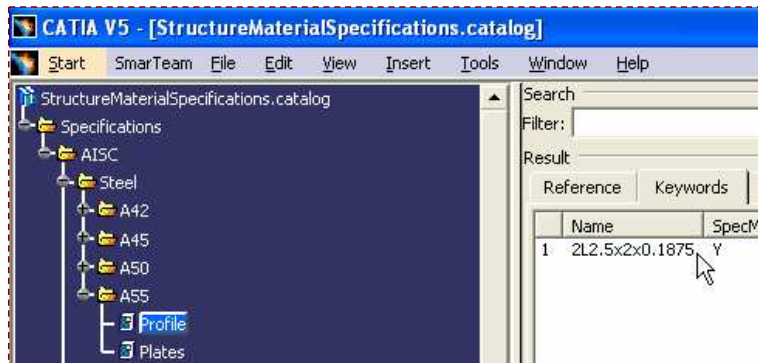


## Do It Yourself (2/5)

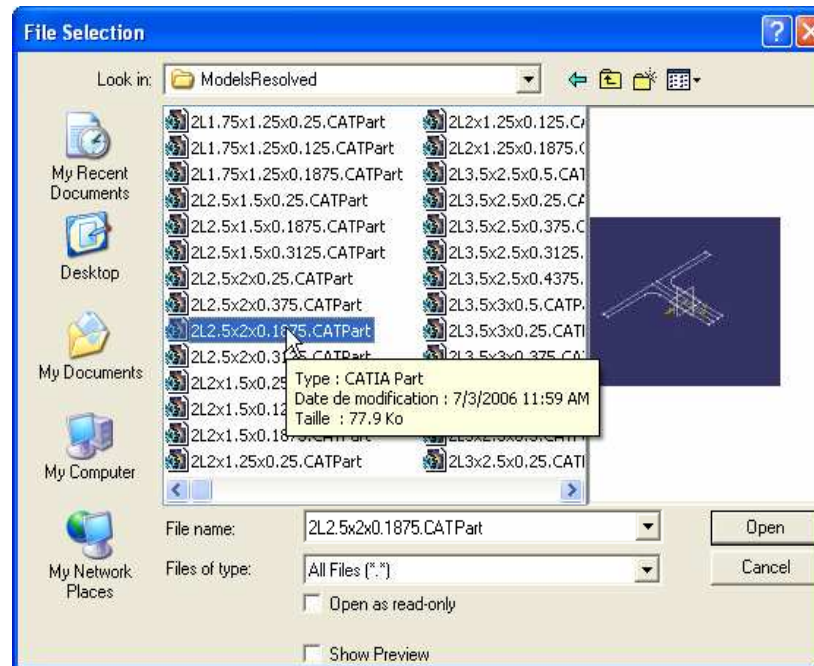
- Activate 'Profile' family
- Add new Components
  - ◆ Click 'Select Document'
  - ◆ Select a resolved section
    - Look in E:\TST\_SR1\Structure\StructuralCatalogs\ModelsResolved
    - Select the Sections previously created
    - Click 'Open' button
  - ◆ Click OK button



The section is added to the catalog



- Repeat the previous Steps to add more than one section into the 'Profile' family

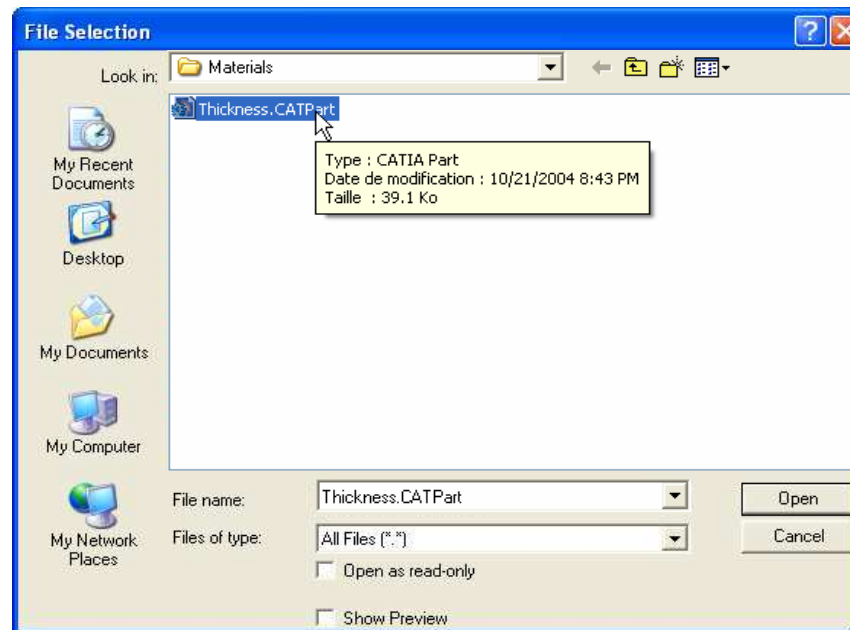
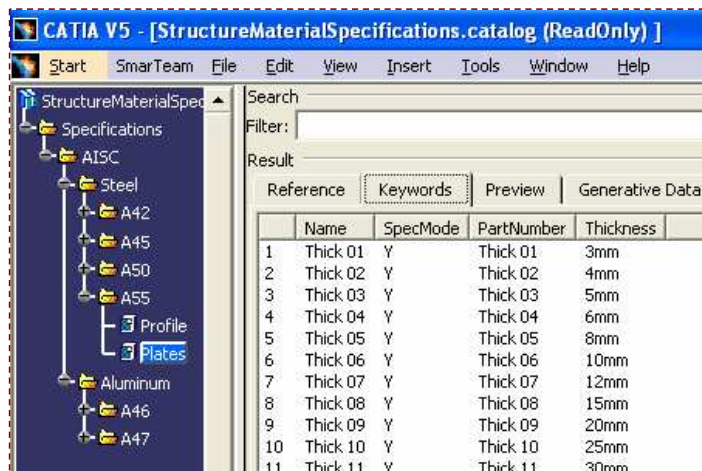
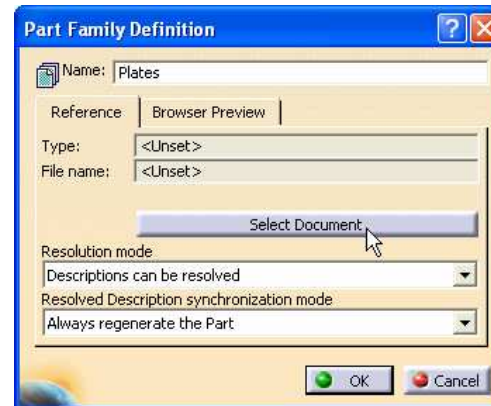


## Do It Yourself (3/5)

- Activate 'Plates' family
- Add new 'Generative Part'
  - ◆ Click 'Select Document'
  - ◆ Select the Thickness part
    - Look in  
E:\TST\_SR1\Structure\Structural Catalogs\Material
    - Click 'Open' button
  - ◆ Click OK button



The allowed thicknesses are added to the catalog




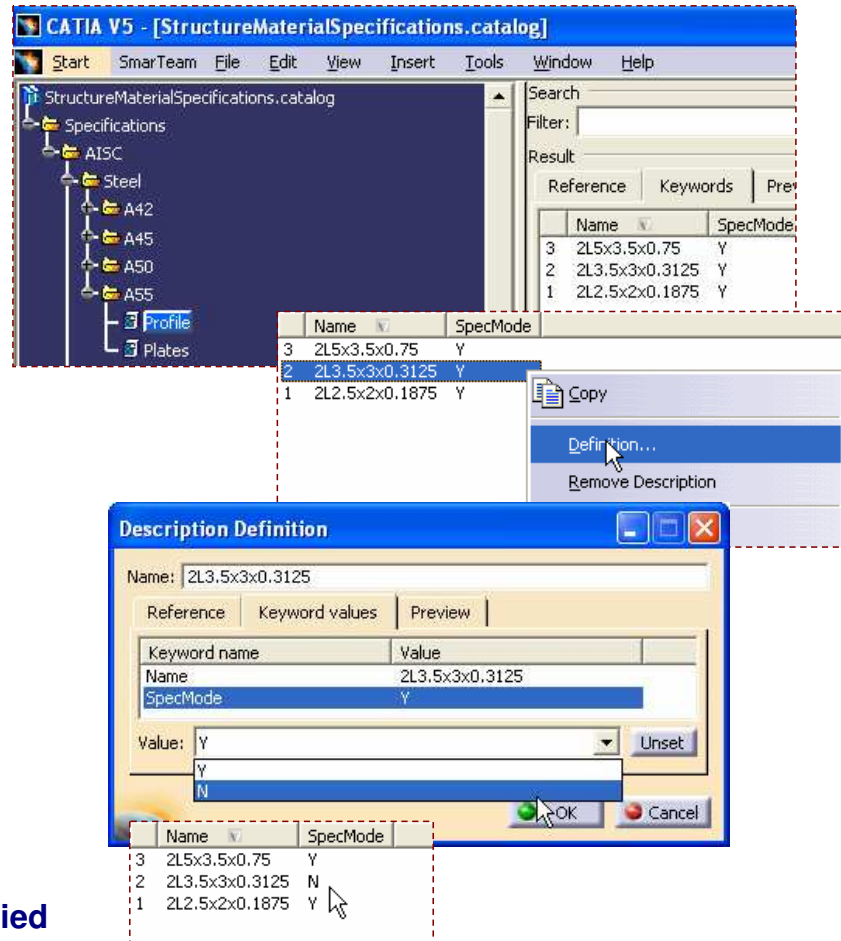
Student Notes:

## Do It Yourself (4/5)

- Activate 'Profile' family
- Select a profile in the list
  - ◆ Right-click to open the 'Description Definition' window

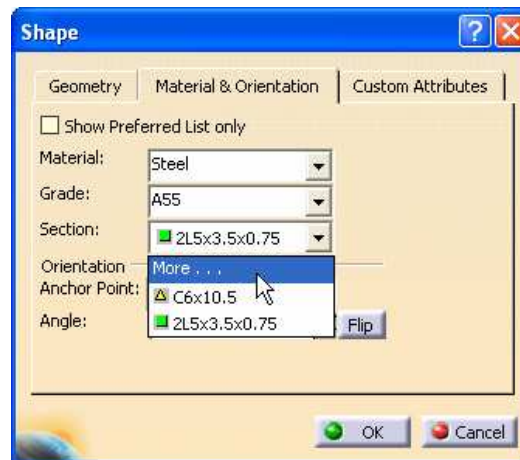
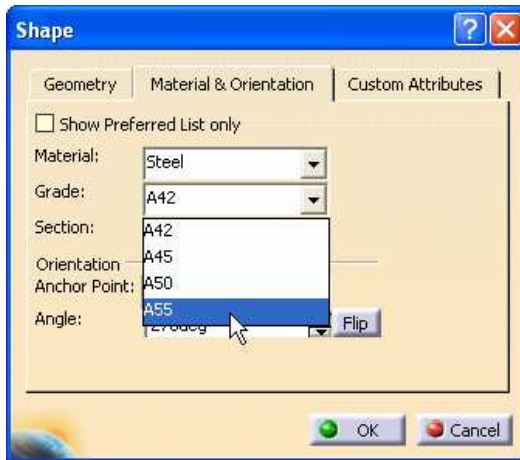


- ◆ Select 'Keyword values' tabpage
  - Select 'SpecMode' field
  - Click button 
  - Select N value
- ◆ Click OK button  
The SpecMode of the profile is modified



## Do It Yourself (5/5)

- Test your newly modified Catalog
  - ◆ Open a new Product
  - ◆ Create a Grid
  - ◆ Browse your Catalog
  - ◆ Change the Anchor point



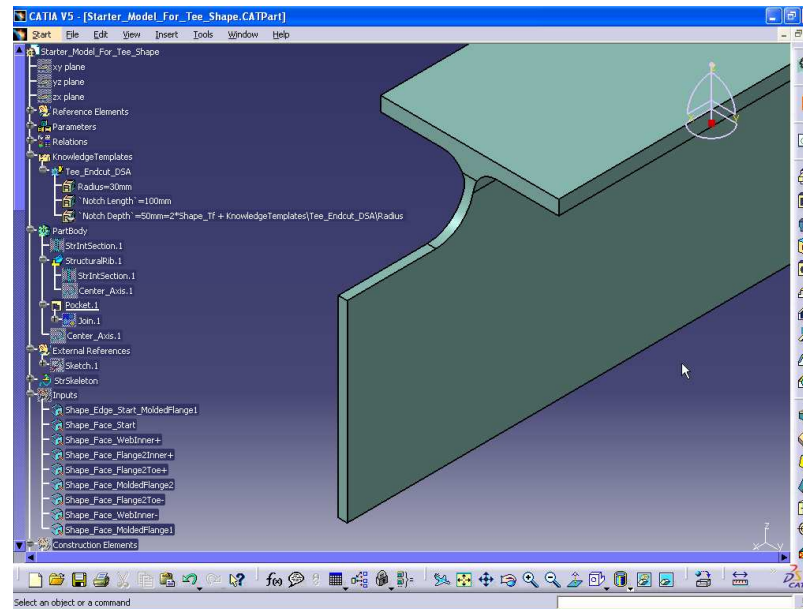
# Master Exercise: Administrating SR1

## Step 5: Creating a Standard End-Cut



In this step you will :

- Define the End-Cut Context
- Create End-Cut Inputs
- Create End-Cut Construction Elements
- Create End-Cut Geometry
- Create End-Cut User Define Feature (UDF)
- Test your UDF



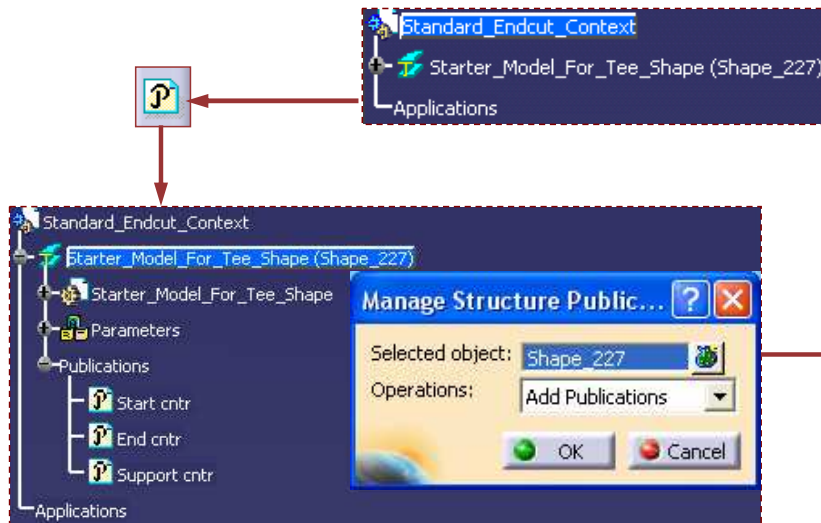
Student Notes:

Student Notes:

# Do It Yourself (1/10)

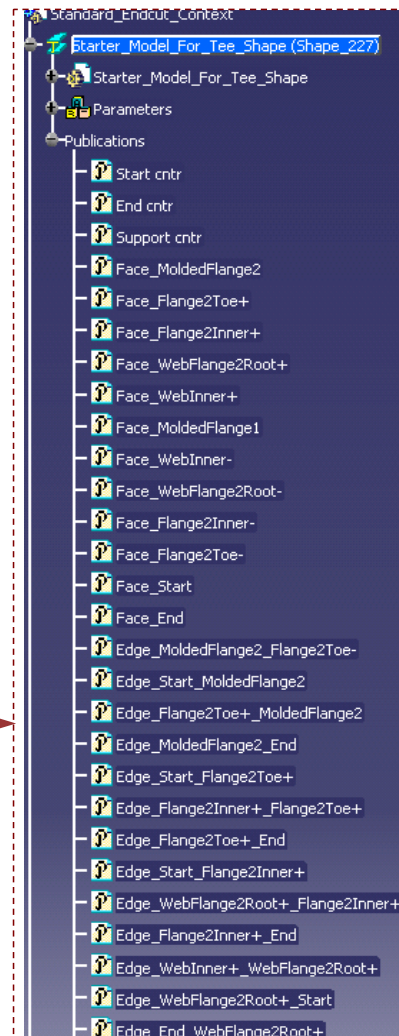
 **Load Standard\_Endcut\_Context.CATProduct**

 **Add Publications**



 **Save the model**

 **If needed, open Starter\_Model\_For\_Tee\_Shape\_Publications\_Creation.CATPart**



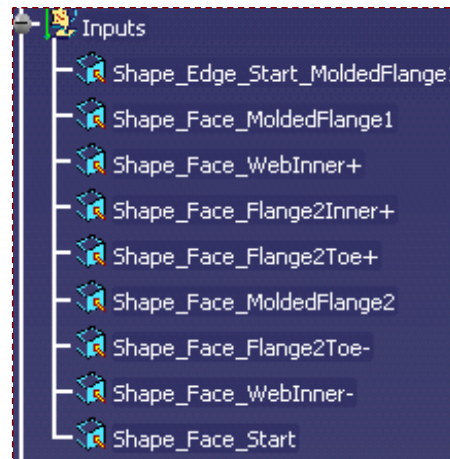
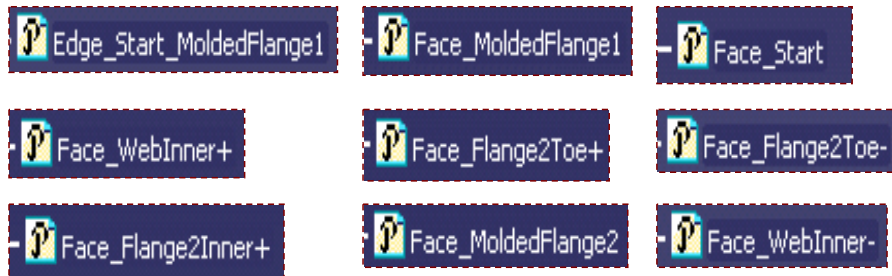
## Do It Yourself (2/10)

If needed refer Step1-Publications\_Creation.avi from downloaded files.

- Insert geometrical set 'Inputs'



- Extract the following edge/faces of the member, selecting from the publications:



- Rename them
- Save the model

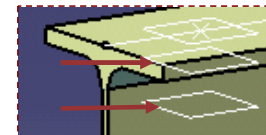
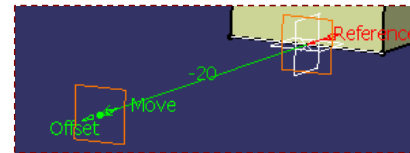
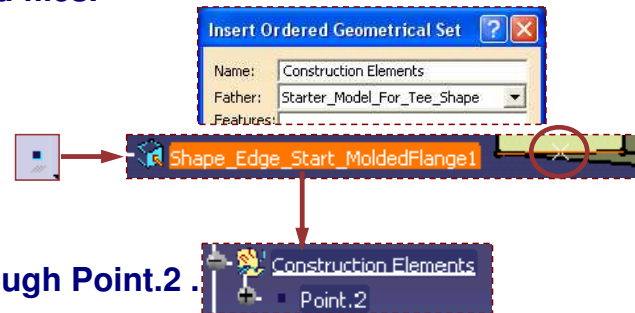
 If needed, open Starter\_Model\_For\_Tee\_Shape\_Inputs\_Creation.CATPart



## Do It Yourself (3/10)


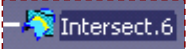
If needed refer Step2-Inputs\_Creation.avi from downloaded files.

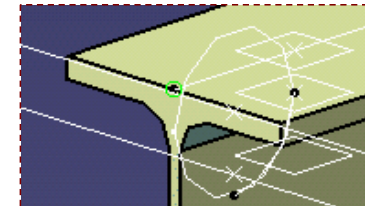
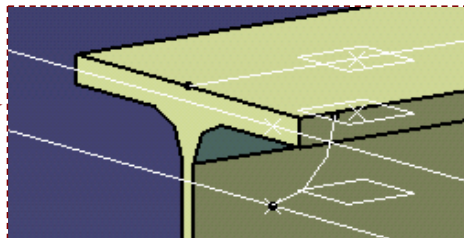
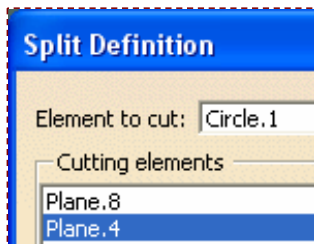
- 1. Insert 'Construction Elements' Geometrical Set.
- 2. Create the midpoint on Shape\_Edge\_MoldedFlange1.
- 3. Create Plane.1 normal to Shape\_Edge\_Start\_MoldedFlange1.
- 4. Create Plane.2 Tangent to surface Shape\_Face\_Start through Point.2.
- 5. Create Plane.3 Offset from Plane.2 at -20mm from it.
- 6. Create Plane.4 offset from Plane.2 at 40mm from it.
- 7. Create Plane.5 offset from Plane.2 at 80mm from it.
- 8. Create Plane.6 Parallel to Shape\_Face\_MoldedFlange1 through Point.2.
- 9. Create Intersect of Plane.1 with Shape\_FaceMoldedFlange2.
- 10. Create Intersect of Intersect.1 with Plane.5.
- 11. Create Plane.7 tangent to Shape\_FaceMoldedFlange2 through Intersect.2.
- 12. Create Plane.8 and Plane.9 at an offset of 20mm and 60mm from Plane.7.
- 13. Project Intersect.2 to Plane.8 (Project.1).
- 14. Intersect Plane.9 with Plane.4 (Intersect.3).
- 15. Intersect Intersect.3 with Plane.1 (Intersect.4).



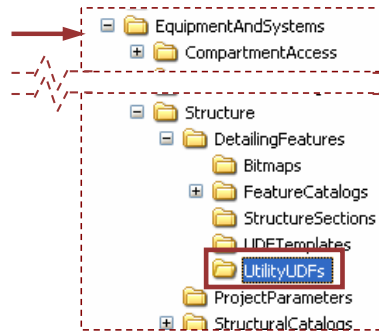
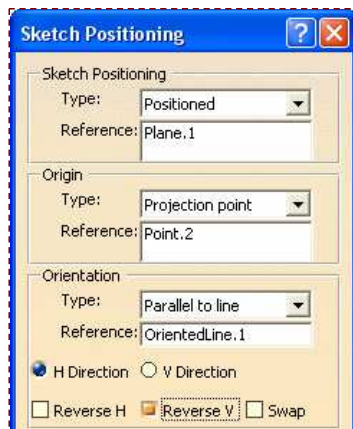
Student Notes:

# Do It Yourself (4/10)

- Intersect Plane.8 with Plane.4 
- Intersect Intersect.5 with Plane.1 
- Create a circle with center at Intersect.6 on Plane.1 with radius 40mm
- Split the Circle.1 with Plane.8 and Plane.4



- Insert Instantiate from document
- Insert Positioned Sketch

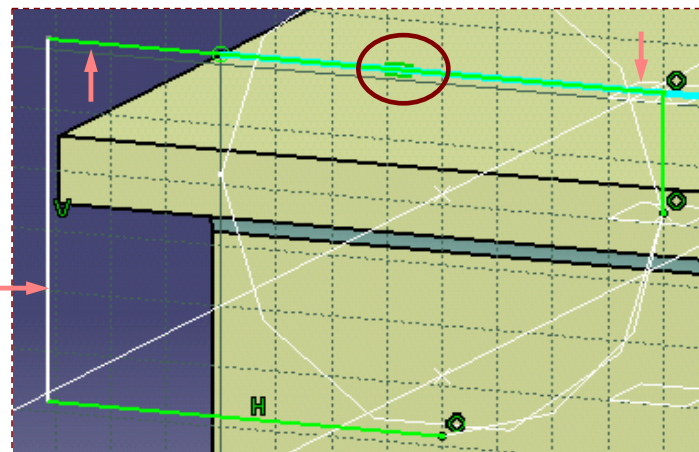
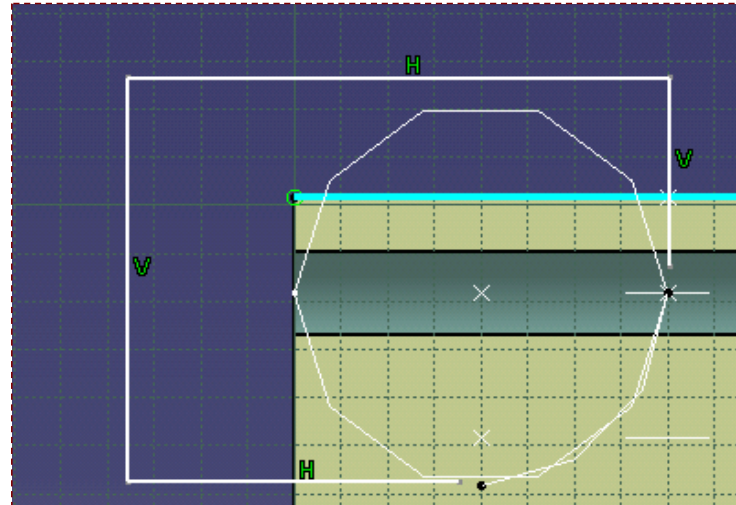
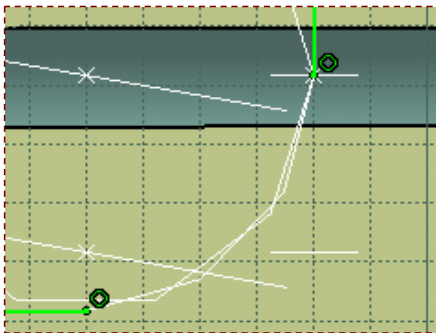
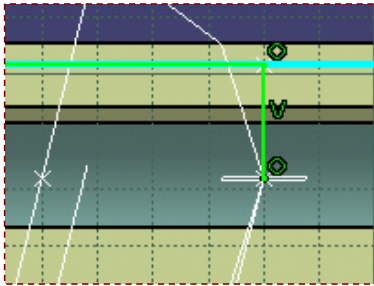


Inputs	Selected
Spline.1	Intersect.1;
Remplissage.1	Plane.2

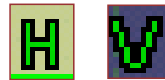
Student Notes:

## Do It Yourself (5/10)

- Start the sketch as per cutout expected
- Coincide the ends



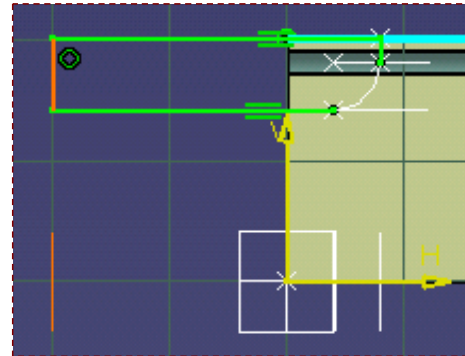
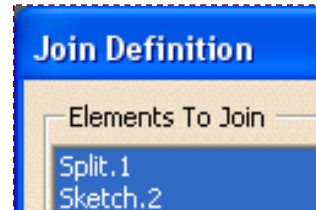
- Delete the H & V constrains
- Make top line of sketch to Plane.7



Student Notes:

## Do It Yourself (6/10)

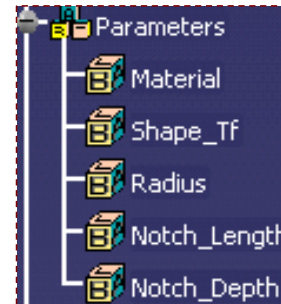
- Similarly make bottom line of sketch to Plane.9
- Coincide the straight side of sketch with Plane.3
- Join the circular split with Sketch.2



- Introduce Parameters

Parameter	Value
Shape_Tf	10mm
Radius	30mm
Notch_Length	100mm
Notch_Depth	50mm

- Associate Parameters



Parameter	Value	Formula	Active
Notch_Depth	50mm	= Radius + 2*Shape_Tf	yes
`Construction Elements\Circle.1\Radius`	30mm	= Radius	yes
`Construction Elements\Plane.4\Offset`	20mm	= Notch_Length - Radius	yes
`Construction Elements\Plane.5\Offset`	50mm	= Notch_Length	yes
`Construction Elements\Plane.9\Offset`	50mm	= 2*Shape_Tf + Radius	yes
`Construction Elements\Plane.8\Offset`	20mm	= 2*Shape_Tf	yes

- Save the model

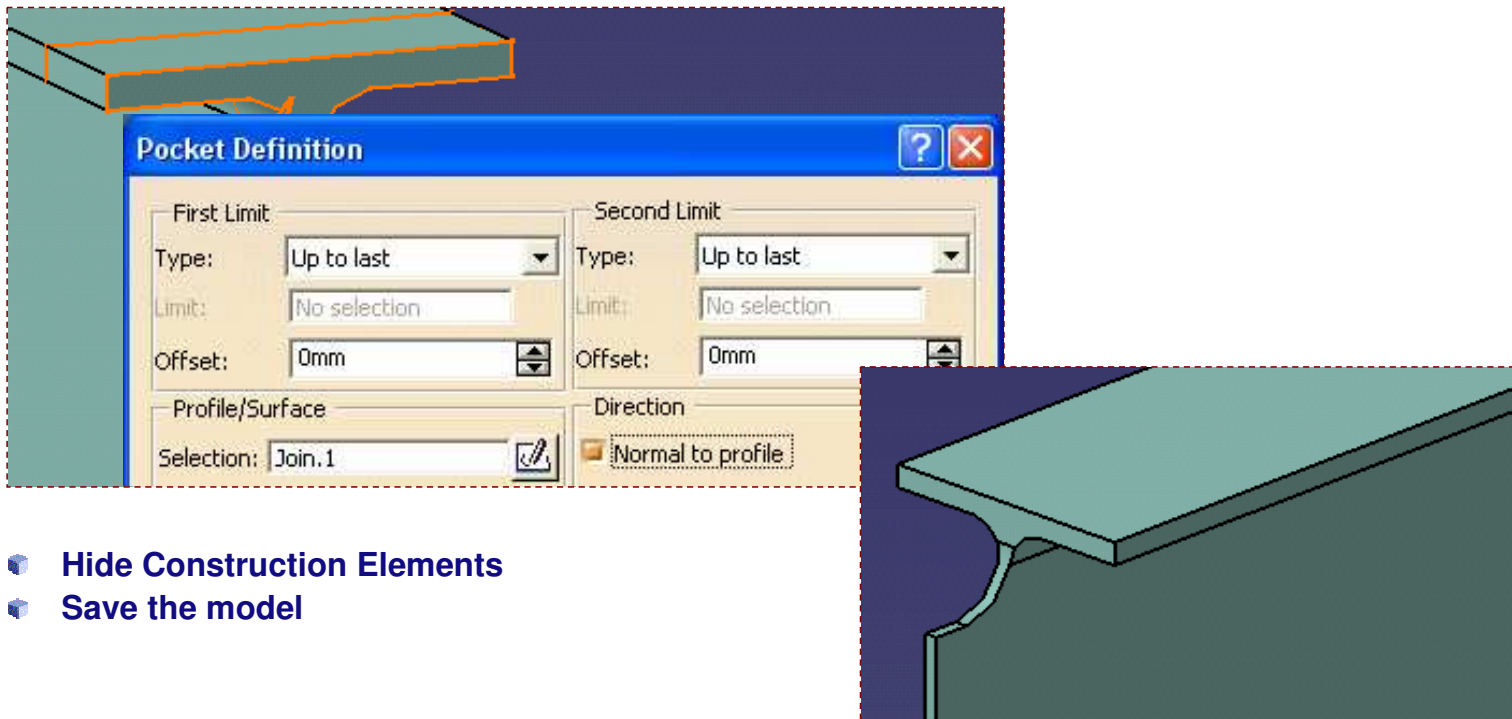


If needed, open Starter\_Model\_For\_Tee\_Shape\_Construction\_Elements.CATPart

## Do It Yourself (7/10)

If needed refer Step3-Construction\_Elements.avi from downloaded files.

- Select the Pocket command
- Create the pocket using Join.1



- Hide Construction Elements
- Save the model

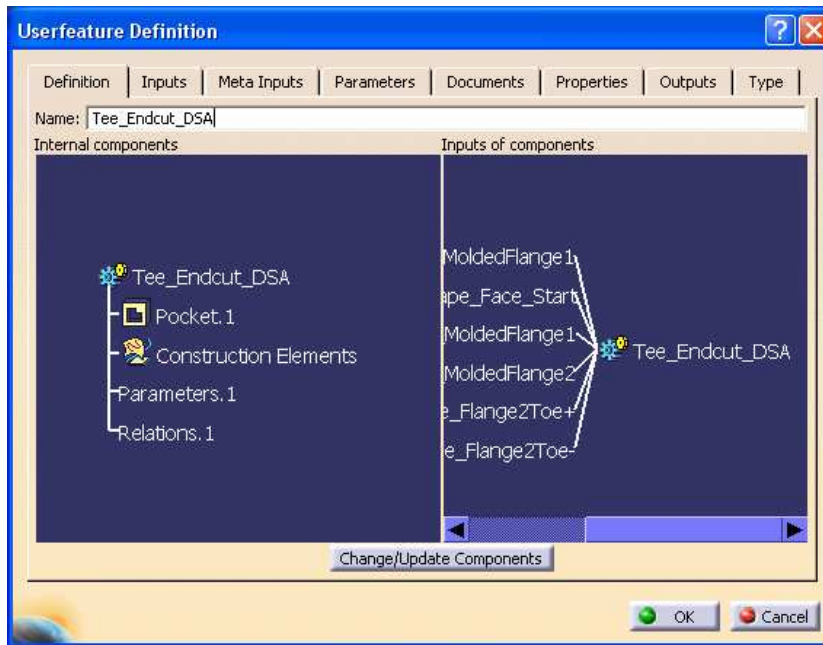
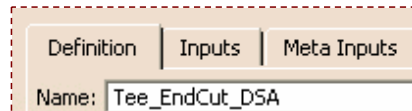


If needed, open Starter\_Model\_For\_Tee\_Shape\_Poket\_Definition.CATPart

## Do It Yourself (8/10)

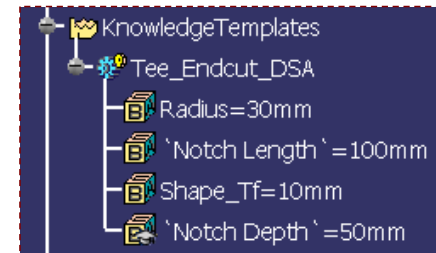
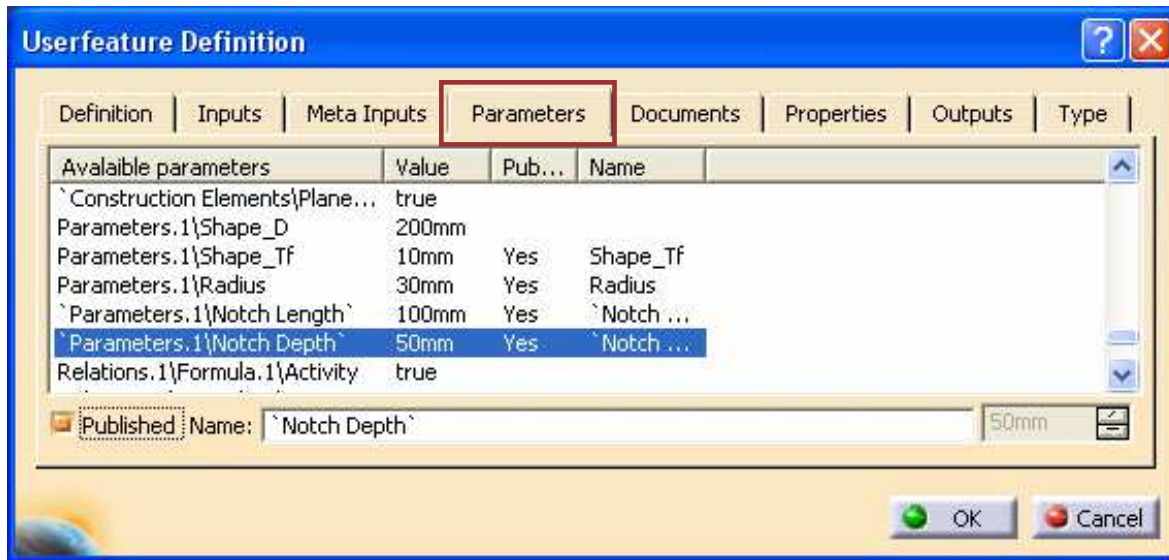
If needed refer Step4-Pocket\_Definition.avi from downloaded files.

- Select Insert > Knowledge Template
- Rename the Userfeature
- Select the Pocket, Construction Elements, Parameters, relations



## Do It Yourself (9/10)

### ■ Publish Necessary Parameters




### ■ Save the model

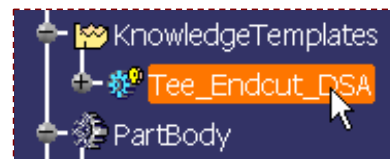
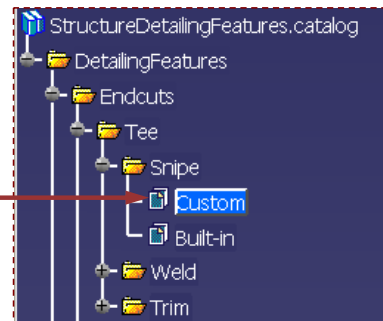


If needed, open Starter\_Model\_For\_Tee\_Shape\_UDF\_Definition.CATPart

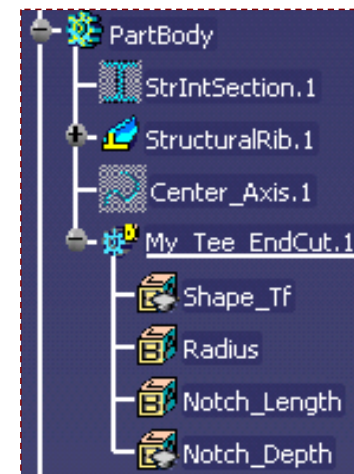
## Do It Yourself (10/10)

If needed refer Step5-UDF\_Definition.avi from downloaded files.

- Open StructureDetailingFeatures.catalog available in  
...\\intel\_a\\startup\\EquipmentAndSystems\\Structure\\DetailingFeatures
  - The working model should also be open in same session
- Activate the family to house the EndCut
- Select the add components icon
- Click on Select external feature 
- Select The Endcut in the working CATPart
- Check the Path in the Catalog



Reference	Keywords	Preview	Generative Data
Name	Type	Object Name	



- Click OK and Save the Catalog
- Open a new session, Test for integrity
- Change Necessary Parameters for expected results



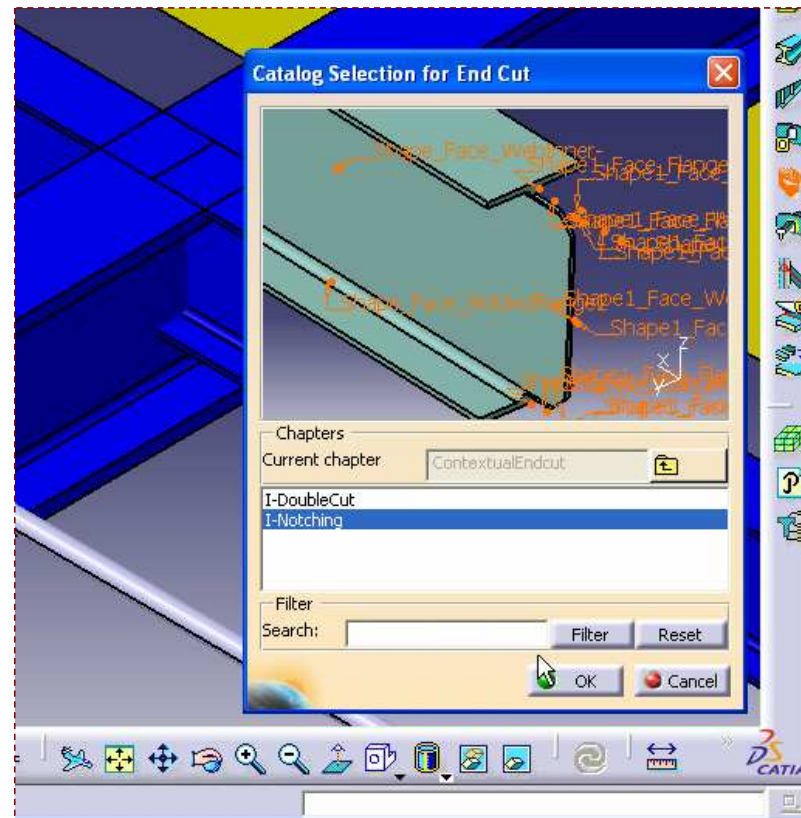
# Master Exercise: Administrating SR1

## Step 6: Creating a Contextual End-Cut



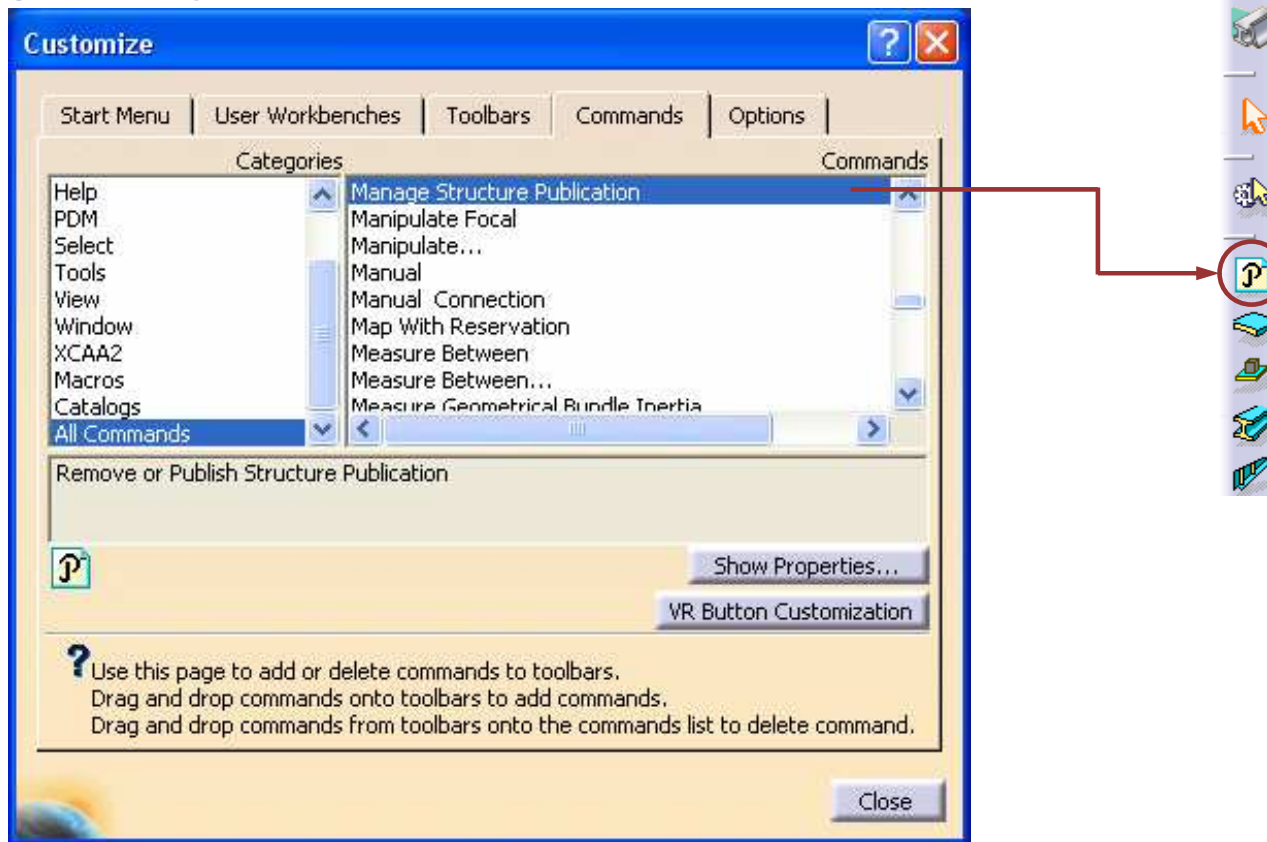
In this step you will create:

- Define the End-Cut Context
- Create End-Cut Inputs
- Create End-Cut Construction Elements
- Create End-Cut Geometry
- Create End-Cut User Define Feature (UDF)
- Test your UDF



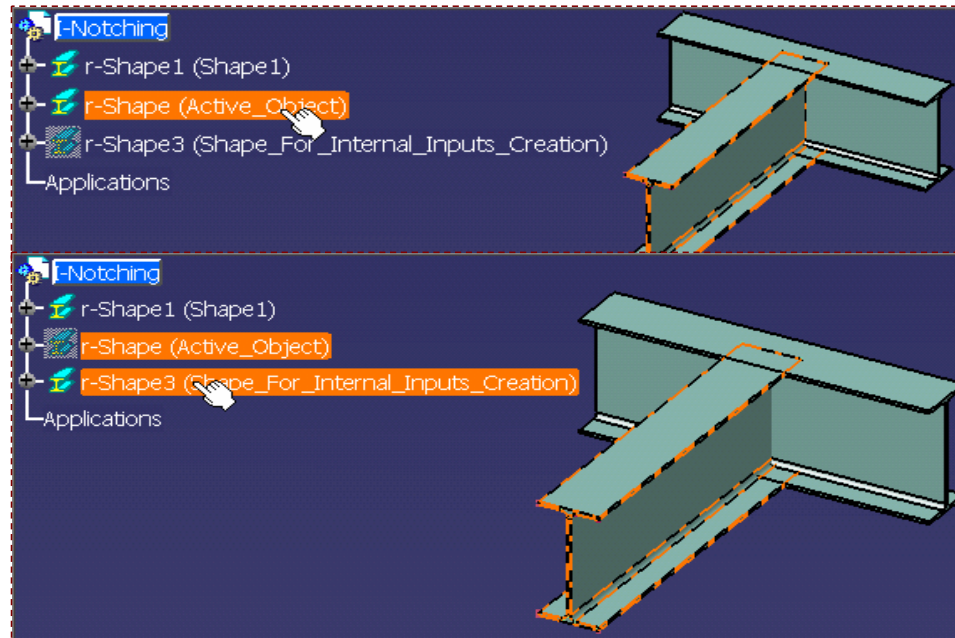
## Do It Yourself (1/31)

- Note: In this example an I section is shown
- First, Ensure that Managing Publications is on (SR1 workbench must be active)
- Go to Tools\Customize\Commands\All Commands
- Drag and drop the Manage Structure Publication command into the session toolbar



## Do It Yourself (2/31)

- Create the three shapes under a product and rename them as shown, 1000mm long
- Note that the second and the third shapes overlap in space
- Save the model

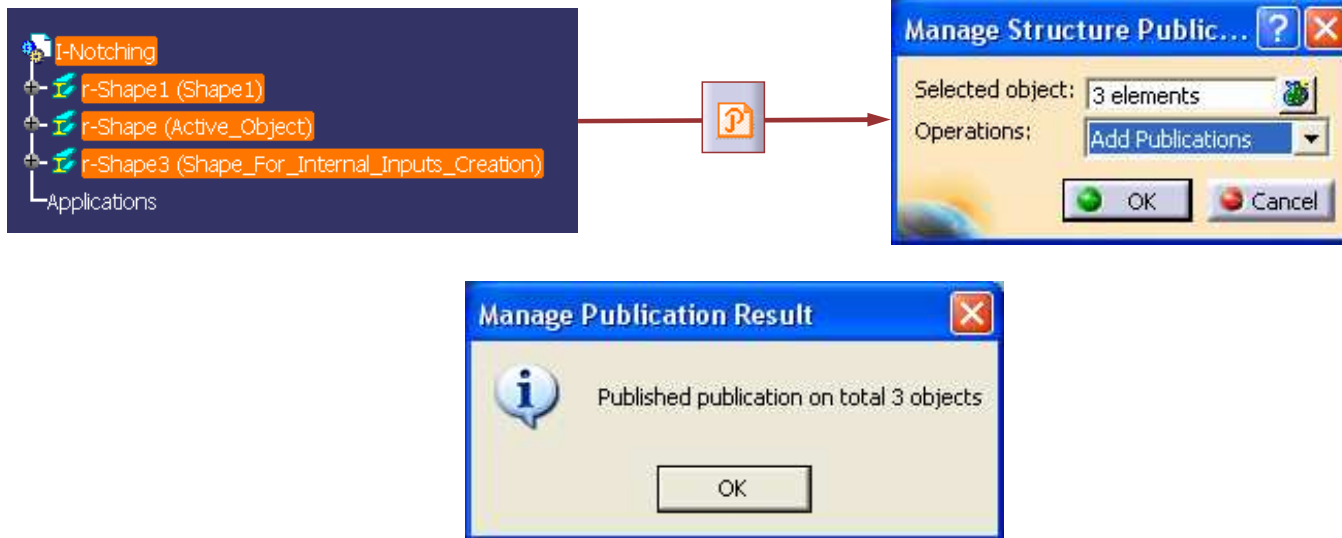


If needed, open I-Notching\_Environment\_Definition.CATProduct

## Do It Yourself (3/31)

If needed refer Step1-Environment\_Definition.avi from downloaded files.

- Activate the Root product and select all members
- Click Manage Structure Publication command and add 3 publications



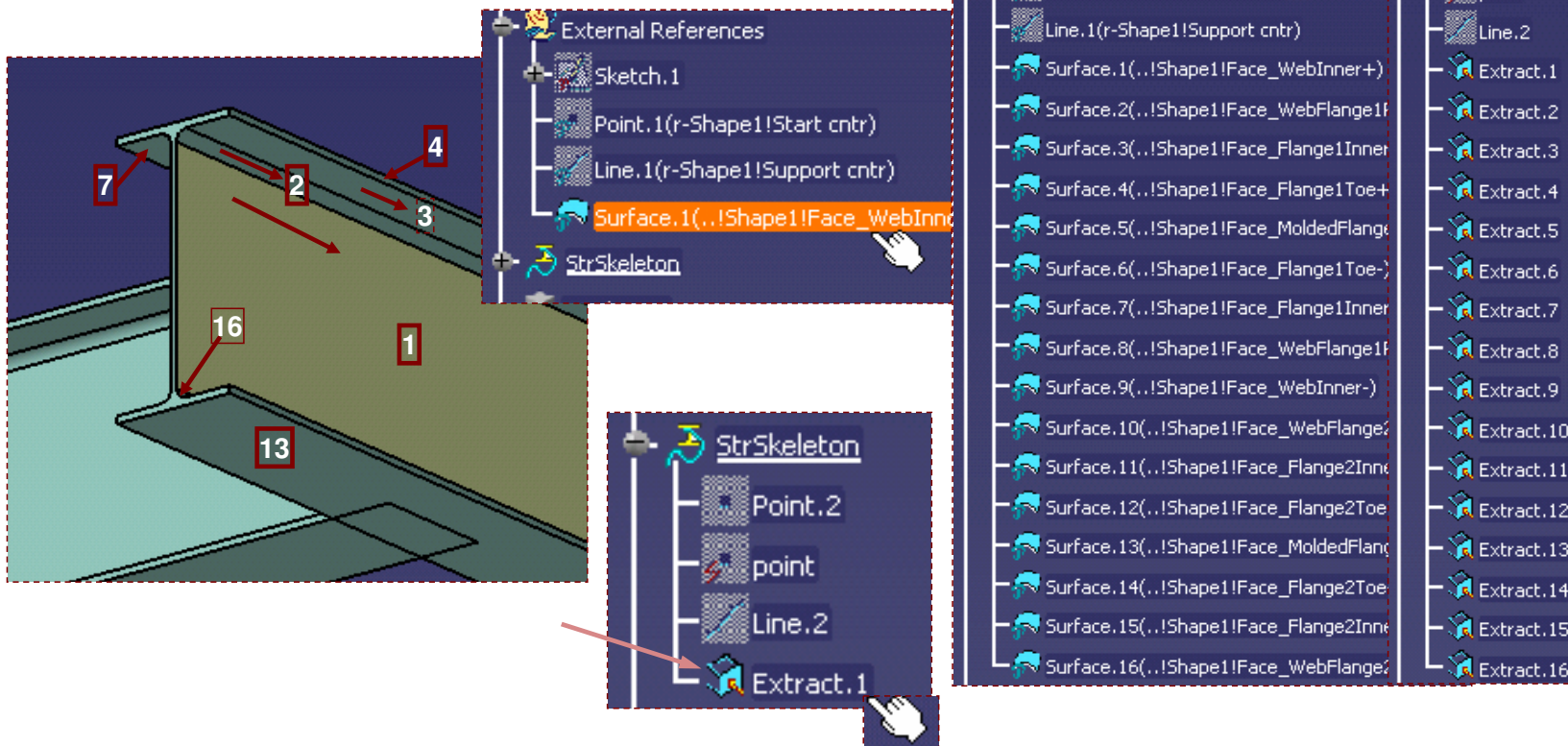
- Save the model

## Do It Yourself (4/31)

- Activate the Part of the Active Object section
- Change the workbench to GSD if necessary
- Double-click the Extract command
- Start with the face of the Shape1 as shown, Click OK

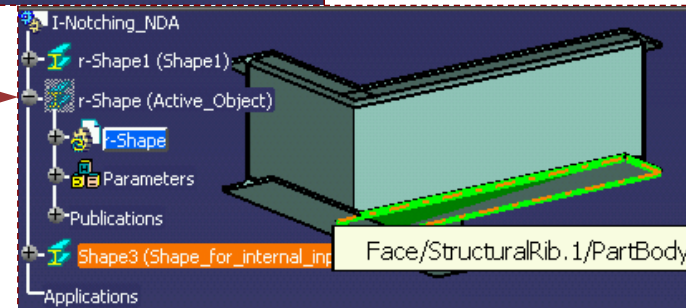
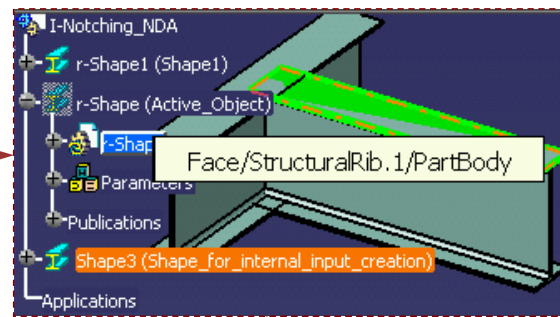
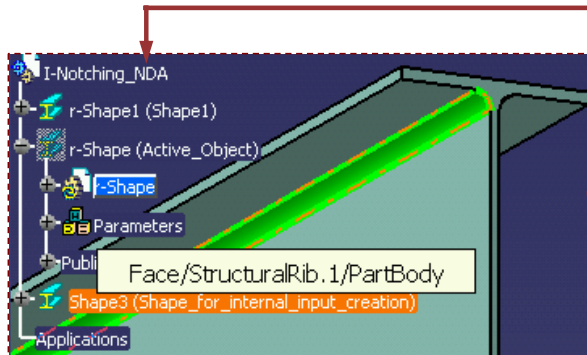
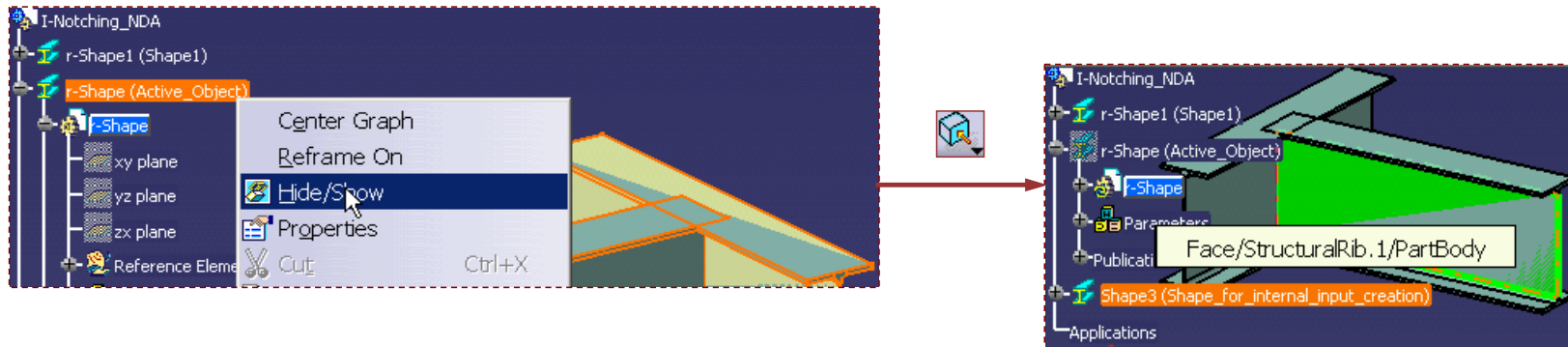
## Do It Yourself (5/31)

- Create extracts for all 16 faces of the section moving counterclockwise
- Note the surfaces added under External References and Extracts under StrSkeleton
- Complete the 16 extracts



Student Notes:

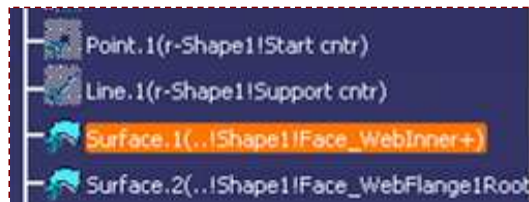
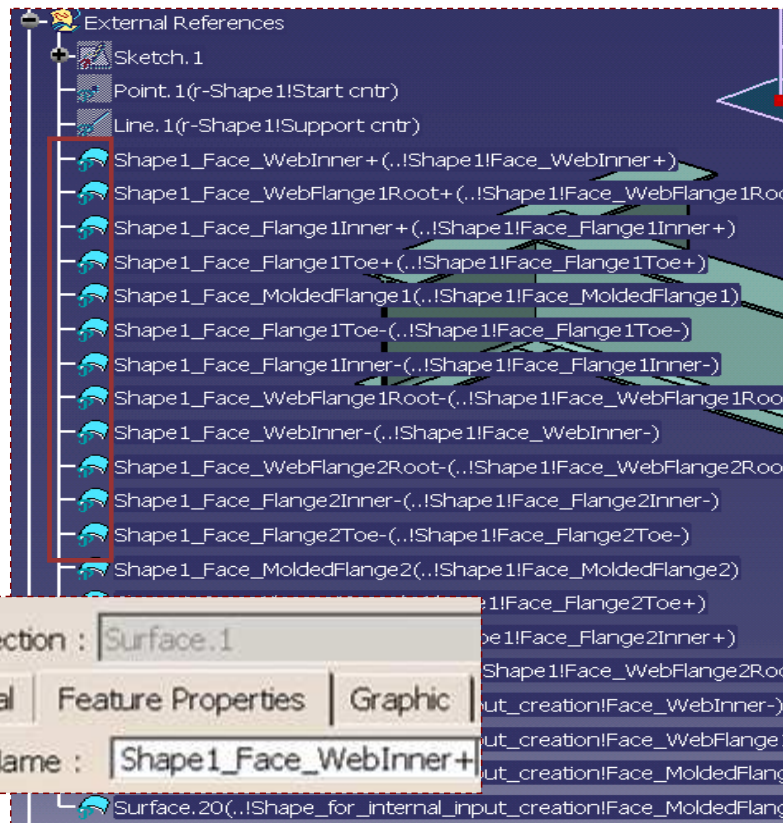
# Do It Yourself (6/31)



- Hide the Active Object member
- Keep the Part of the hidden 'r-Shape' activated
- Continue Extracting the four sides of the 'shape for Input creation' as shown

## Do It Yourself (7/31)

- Start renaming the External Reference surfaces as per their publication nomenclature, via contextual menu \ Properties, starting with 'Shape1\_'
- Note that for multiple shapes, the convention is to start with 'Shape\_'
- Repeat for the first 16 references created from the active object





## Do It Yourself (8/31)

- Use the 'Shape\_' starting syntax to similarly name the References created from the 'shape for Input creation'

The screenshot displays a CAD software interface with a tree view on the left and a Properties panel on the right. The tree view lists several surfaces and shapes, including:

- Surface.17(...!Shape\_for\_internal\_input\_creation!Face\_WebInner-)
- Surface.18(...!Shape\_for\_internal\_input\_creation!Face\_WebFlange1Root-)
- Surface.19(...!Shape\_for\_internal\_input\_creation!Face\_MoldedFlange1)
- Surface.20(...!Shape\_for\_internal\_input\_creation!Face\_WebInner-)
- Shape1\_Face\_WebInner+(...!Shape1!Face\_WebInner+)
- Shape1\_Face\_WebFlange1Root+(...!Shape1!Face\_WebFlange1Root+)
- Shape1\_Face\_Flange1Inner+(...!Shape1!Face\_Flange1Inner+)
- Shape1\_Face\_Flange1Toe+(...!Shape1!Face\_Flange1Toe+)
- Shape1\_Face\_MoldedFlange1(...!Shape1!Face\_MoldedFlange1)
- Shape1\_Face\_Flange1Toe-(...!Shape1!Face\_Flange1Toe-)
- Shape1\_Face\_Flange1Inner-(...!Shape1!Face\_Flange1Inner-)
- Shape1\_Face\_WebFlange1Root-(...!Shape1!Face\_WebFlange1Root-)
- Shape1\_Face\_WebInner-(...!Shape1!Face\_WebInner-)
- Shape1\_Face\_WebFlange2Root-(...!Shape1!Face\_WebFlange2Root-)
- Shape1\_Face\_Flange2Inner-(...!Shape1!Face\_Flange2Inner-)
- Shape1\_Face\_Flange2Toe-(...!Shape1!Face\_Flange2Toe-)
- Shape1\_Face\_MoldedFlange2(...!Shape1!Face\_MoldedFlange2)
- Shape1\_Face\_Flange2Toe+(...!Shape1!Face\_Flange2Toe+)
- Shape1\_Face\_Flange2Inner+(...!Shape1!Face\_Flange2Inner+)
- Shape1\_Face\_WebFlange2Root+(...!Shape1!Face\_WebFlange2Root+)
- Shape\_Face\_WebInner-(...!Shape\_for\_internal\_input\_creation!Face\_WebInner-)
- Shape\_Face\_WebFlange1Root-(...!Shape\_for\_internal\_input\_creation!Face\_WebFlange1Root-)
- Shape\_Face\_MoldedFlange1(...!Shape\_for\_internal\_input\_creation!Face\_MoldedFlange1)
- Shape\_Face\_MoldedFlange2(...!Shape\_for\_internal\_input\_creation!Face\_MoldedFlange2)

The Properties panel shows the current selection as 'Surface.17' and the name 'Shape\_Face\_WebInner-'. The panel includes tabs for Mechanical, Feature Properties, and Graphic.

## Do It Yourself (9/31)

- Select the first set of references created from the 'Active Object' and Isolate them

The screenshot shows a CAD software interface with a list of references on the left and an 'Isolate' menu on the right. The 'Isolate' menu is open, showing options like 'Open the Pointed Document', 'Deactivate', and 'Isolate'. The 'Isolate' option is selected, and a list of 'Isolated External References' is shown on the right.

**Selected objects**

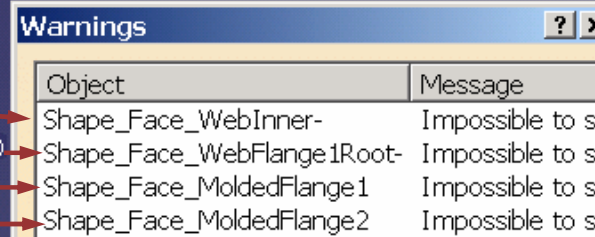
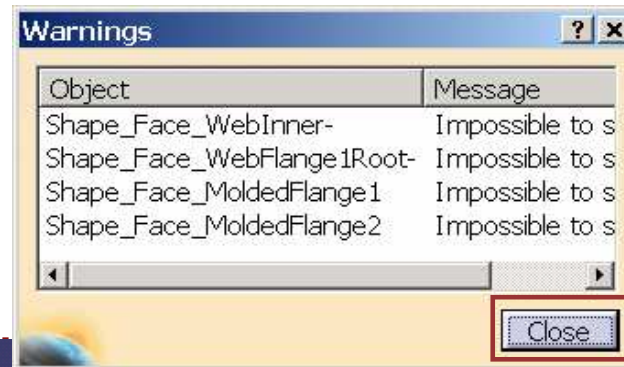
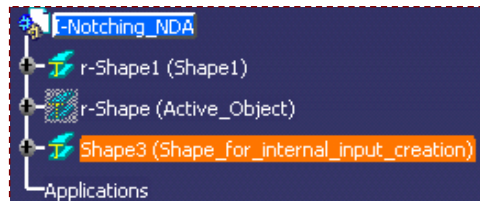
- Shape1\_Face\_WebInner+(...!Shape1!Face\_WebInner+)
- Shape1\_Face\_WebFlange1Root+(...!Shape1!Face\_WebFlange1Root+)
- Shape1\_Face\_Flange1Inner+(...!Shape1!Face\_Flange1Inner+)
- Shape1\_Face\_Flange1Toe+(...!Shape1!Face\_Flange1Toe+)
- Shape1\_Face\_MoldedFlange1(...!Shape1!Face\_MoldedFlange1)
- Shape1\_Face\_Flange1Toe-(...!Shape1!Face\_Flange1Toe-)
- Shape1\_Face\_Flange1Inner-(...!Shape1!Face\_Flange1Inner-)
- Shape1\_Face\_WebFlange1Root-(...!Shape1!Face\_WebFlange1Root-)
- Shape1\_Face\_WebInner-(...!Shape1!Face\_WebInner-)
- Shape1\_Face\_WebFlange2Root-(...!Shape1!Face\_WebFlange2Root-)
- Shape1\_Face\_Flange2Inner-(...!Shape1!Face\_Flange2Inner-)
- Shape1\_Face\_Flange2Toe-(...!Shape1!Face\_Flange2Toe-)
- Shape1\_Face\_MoldedFlange2(...!Shape1!Face\_MoldedFlange2)
- Shape1\_Face\_Flange2Toe+(...!Shape1!Face\_Flange2Toe+)
- Shape1\_Face\_Flange2Inner+(...!Shape1!Face\_Flange2Inner+)
- Shape1\_Face\_WebFlange2Root+(...!Shape1!Face\_WebFlange2Root+)
- Shape\_Face\_WebInner-(...!Shape\_for\_internal\_input\_creation!Face\_WebInner-)
- Shape\_Face\_WebFlange1Root-(...!Shape\_for\_internal\_input\_creation!Face\_WebFlange1Root-)
- Shape\_Face\_MoldedFlange1(...!Shape\_for\_internal\_input\_creation!Face\_MoldedFlange1)
- Shape\_Face\_MoldedFlange2(...!Shape\_for\_internal\_input\_creation!Face\_MoldedFlange2)

**Isolated External References**

- Shape1\_Face\_WebInner+
- Shape1\_Face\_WebFlange1Root+
- Shape1\_Face\_Flange1Inner+
- Shape1\_Face\_Flange1Toe+
- Shape1\_Face\_MoldedFlange1
- Shape1\_Face\_Flange1Toe-
- Shape1\_Face\_Flange1Inner-
- Shape1\_Face\_WebFlange1Root-
- Shape1\_Face\_WebInner-
- Shape1\_Face\_WebFlange2Root-
- Shape1\_Face\_Flange2Inner-
- Shape1\_Face\_Flange2Toe-
- Shape1\_Face\_MoldedFlange2
- Shape1\_Face\_Flange2Toe+
- Shape1\_Face\_Flange2Inner+
- Shape1\_Face\_WebFlange2Root+

## Do It Yourself (10/31)


- Activate the Root product and Delete the 'Shape\_for\_Internal\_Input\_Creation'.
- Select all the Extracts under the StrSkeleton of the Active Object and Delete them .
- Close the warning message. Note that they are in relation to the external references.
- Save the product.

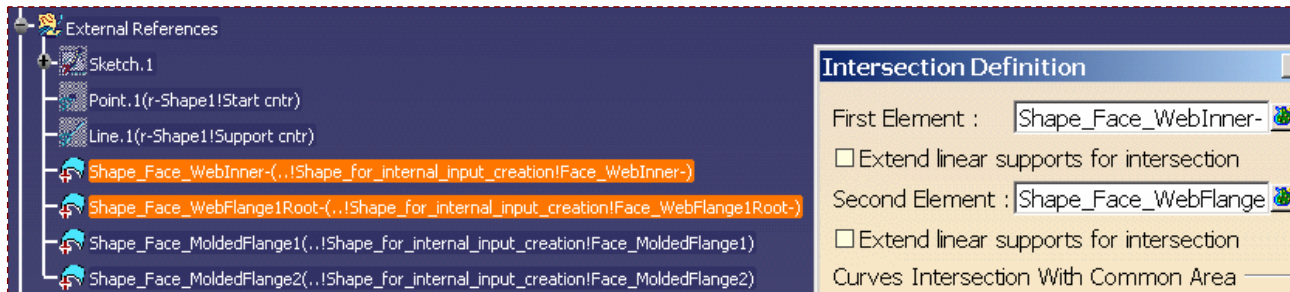
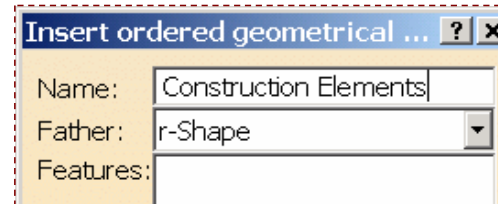
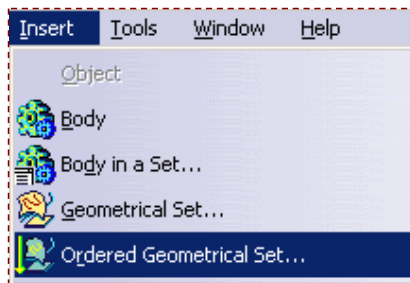
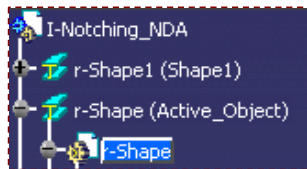


**If needed, open I-Notching\_Inputs\_Creation.CATProduct**

## Do It Yourself (11/31)

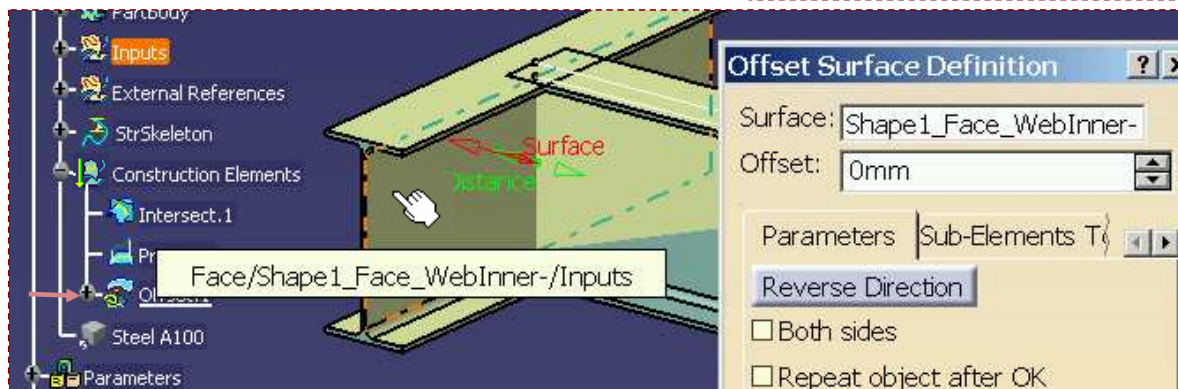
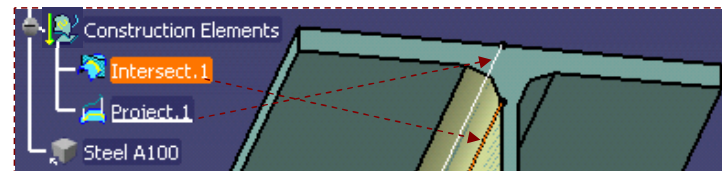
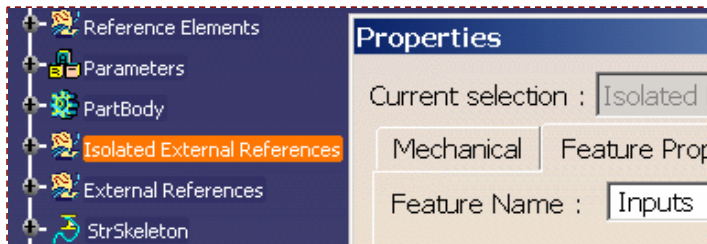
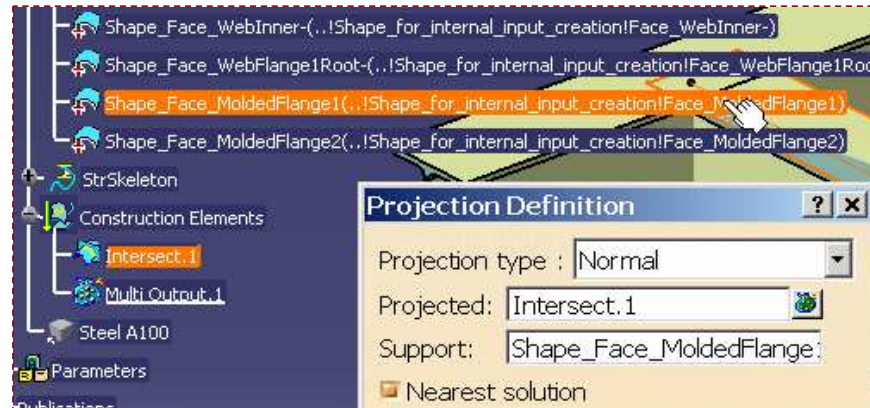
If needed refer Step2-Inputs\_Creation.avi from downloaded files.

- Activate the r-Shape part of the Active Object
- Insert an 'Ordered Geometrical Set' and name it Construction Elements
- Create an intersect between the first two elements of the External References 




## Do It Yourself (12/31)

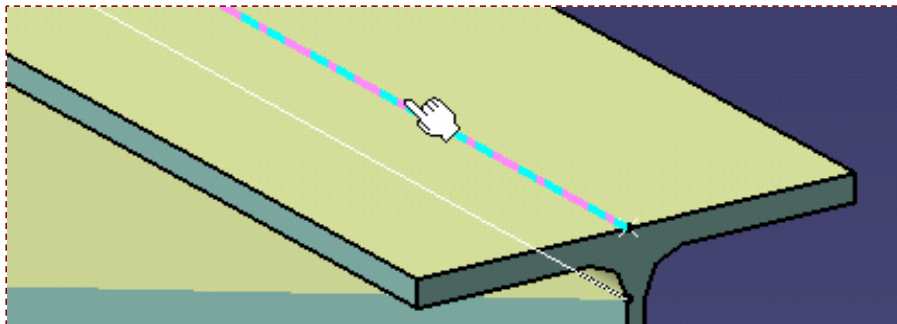
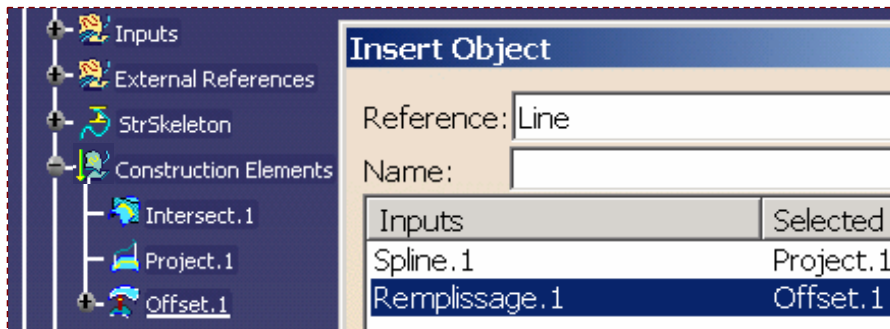
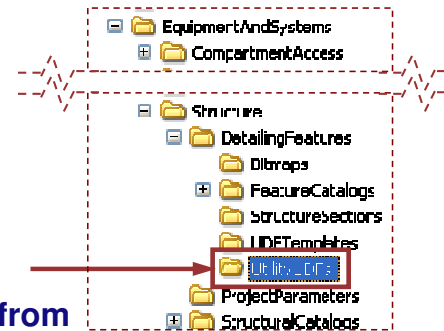
- Project the intersect to the Shape\_Face\_MoldedFlange1
- Rename the Isolated External References to 'Inputs'
- Create an Offset of 0mm from the Input element as shown



Student Notes:

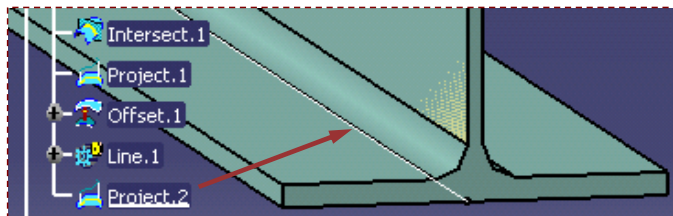
## Do It Yourself (13/31)

- Activate the r-Shape part of the Active Object
- Select Insert \  Instantiate From Document...
- Select 'OrientedCurve.CATPart' from the path shown
- Associate the Project.1 and Offset.1 as shown (select from the Product Tree), Click OK



## Do It Yourself (14/31)

- Similarly, project the Intersect.1 onto the Shape\_Face\_MoldedFlange2, Insert Curve Orientation



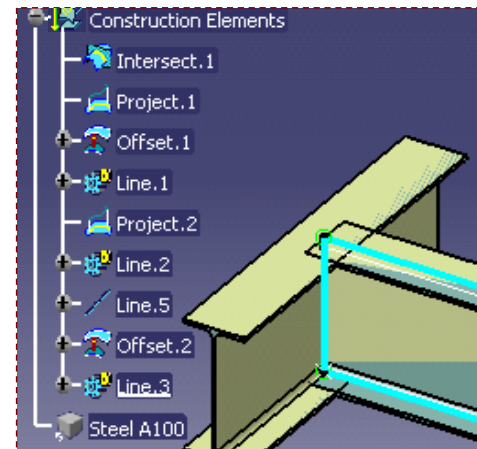
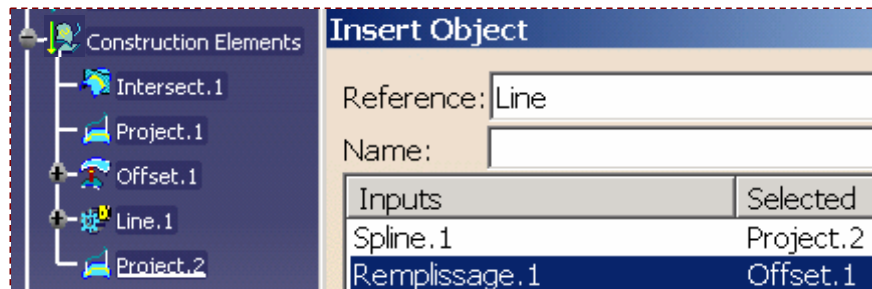
- Create a line between the starting points of the Curve Orientation lines



- Create an offset of 0mm from Shape\_Face\_MoldedFlange2

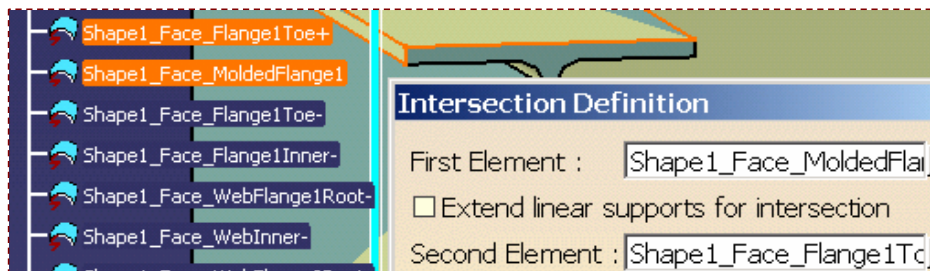
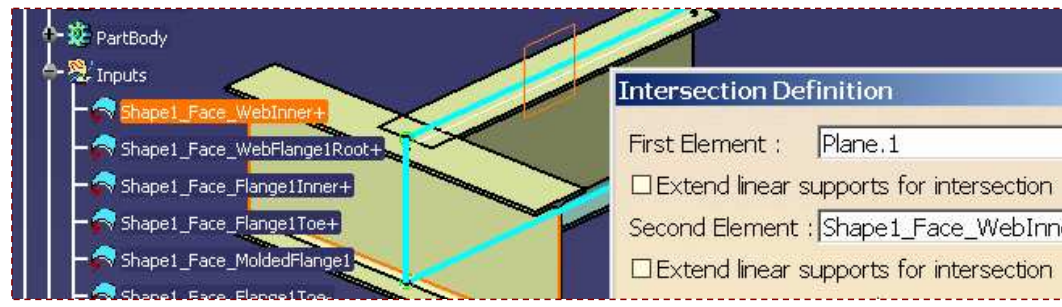
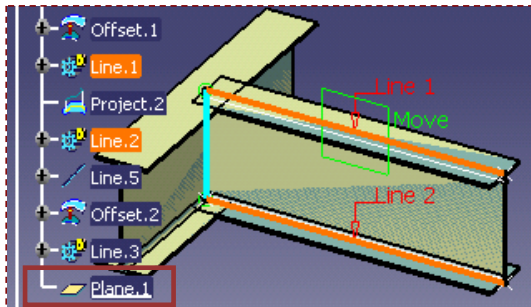
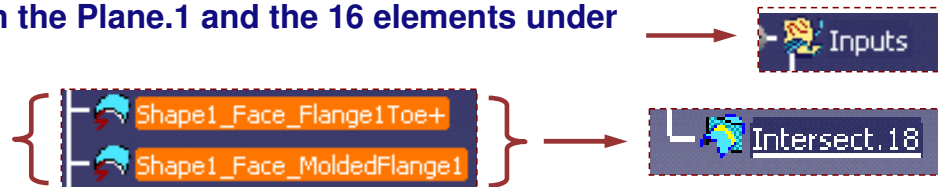


- Instantiate 'OrientedCurve.CATPart' between the Line.5 and Offset.2 to create Line.3



## Do It Yourself (15/31)

- Create a plane (Plane.1) through the Line.1 and Line.2
- Create Intersections between the Plane.1 and the 16 elements under
- Create Intersection between



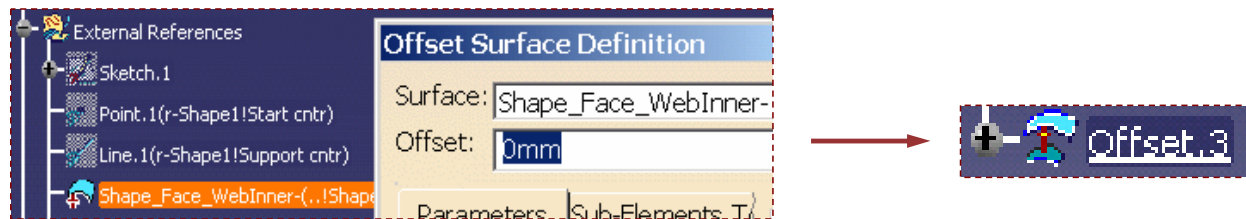


## Do It Yourself (16/31)

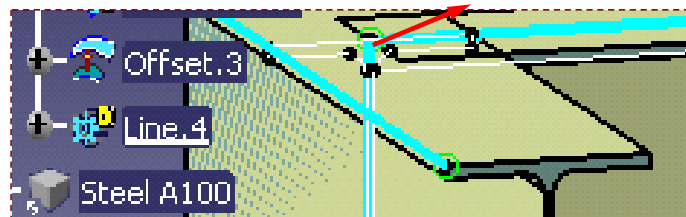
- Create Intersection between



- Create Offset of 0mm from Shape\_Face\_WebInner-



- Instantiate 'CurveOrientation.CATPart' between the Intersect.18 and Offset.3 to create Line.4

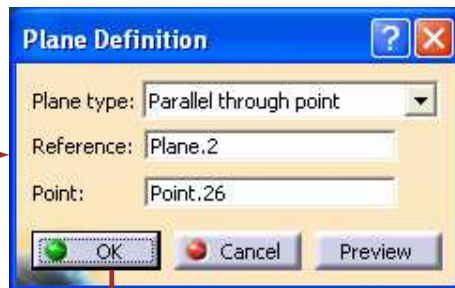
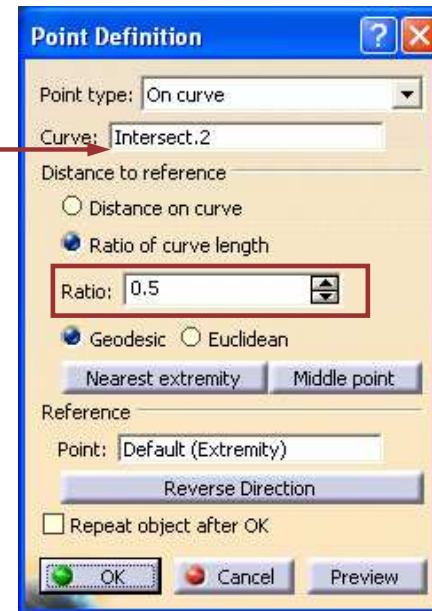


- Instantiate 'CurveOrientation.CATPart' between the Intersect.19 and Offset.3 to create Line.5



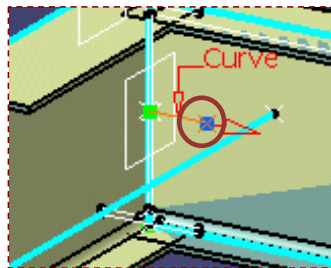
## Do It Yourself (17/31)

- Create a plane (Plane.2) through the Line.4 and Line.5
- Content>Create 2 middle points on Multi Output.1\ Intersect.2 and on Multi Output.1\ Intersect.10
- Create the midpoint of the above two points
- Create a plane through Point.26 parallel to Plane.2



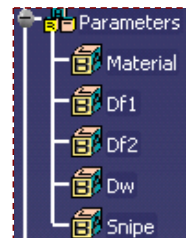
## Do It Yourself (18/31)

- Create a Line.9 from Point.26 in the direction of Line.1, 100mm long
- Create a Point.27 using Point on Curve Line.9, Geodesic, Ratio=1



- Create Plane.4 through Point.27 parallel to Plane.3
- Intersect Plane.4 with Line.1  
- Create using  four parameters of type length with default values as shown

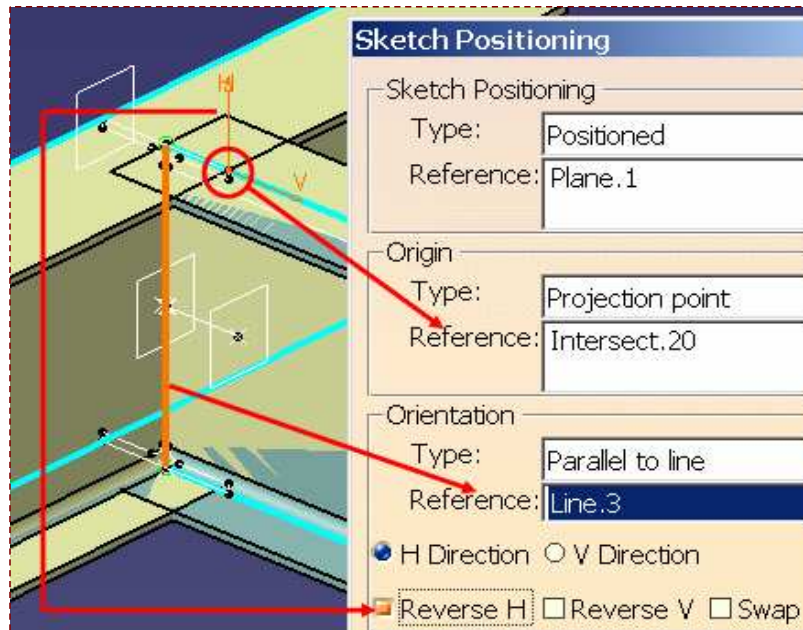
Parameter	Value
Df1	10mm
Df2	10mm
Dw	10mm
Spine	80mm



Student Notes:

## Do It Yourself (19/31)

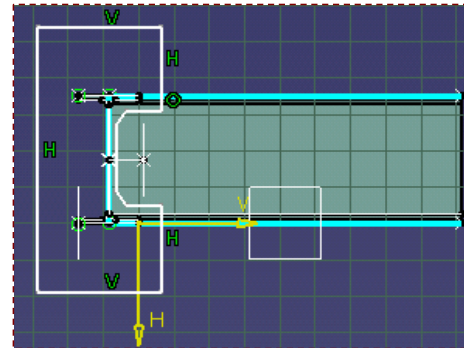
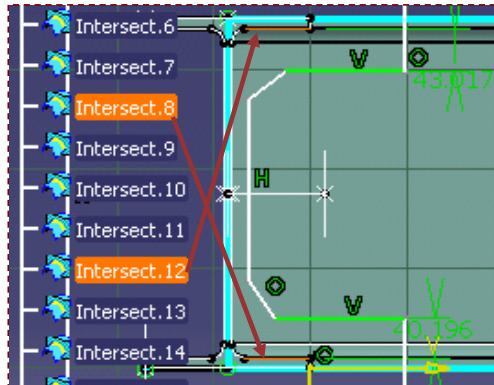
- Select the button 
- Position the sketch as shown



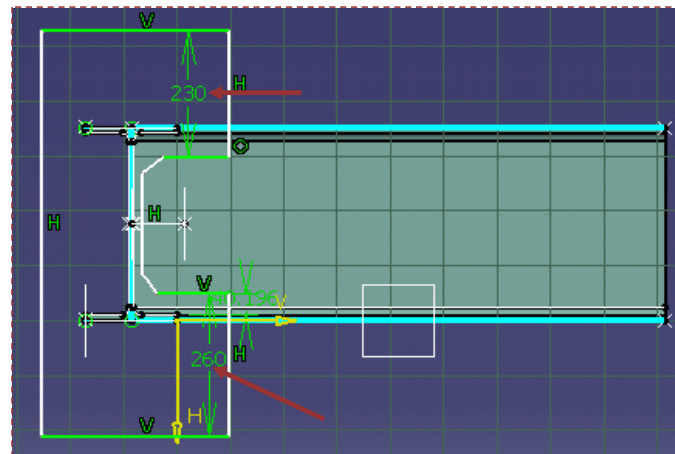
Student Notes:

## Do It Yourself (20/31)

- Create the basic sketch as per the cutout expected
- Constrain the top and bottom of the cutout with the intersects parallel to the Flange1\2Inner-



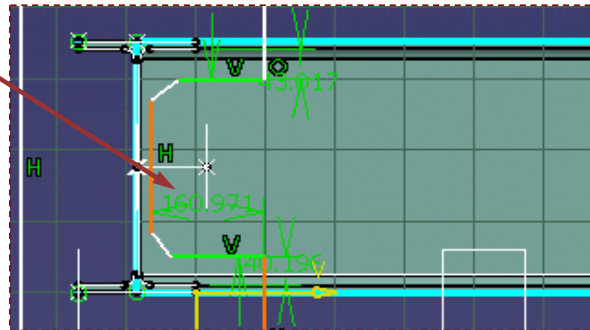
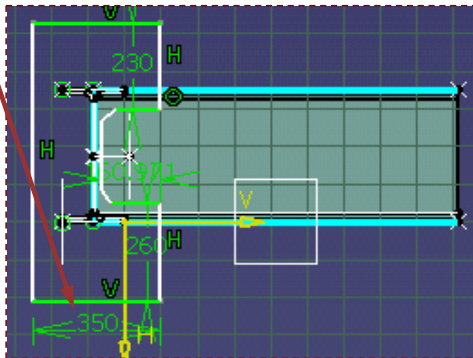
- Constrain the cutout top & bottom ends with their respective parallel sketch exteriors



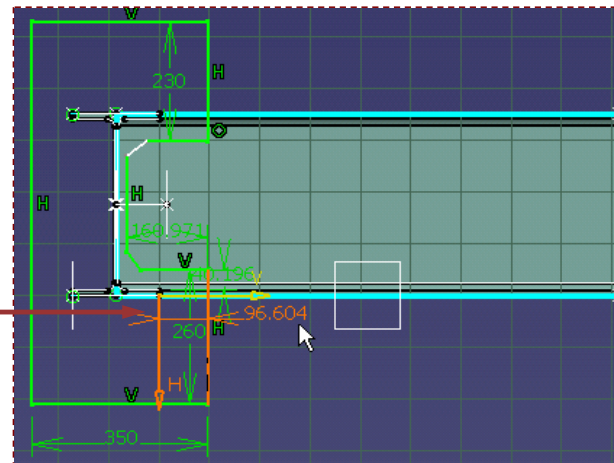
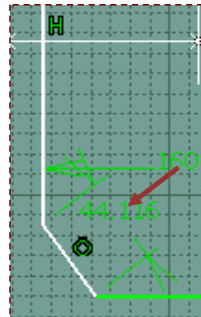
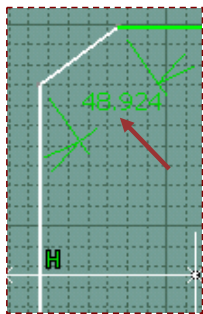
Student Notes:

## Do It Yourself (21/31)

- Constrain the horizontal depth of the cutout
- Constrain the horizontal dimension of the sketch



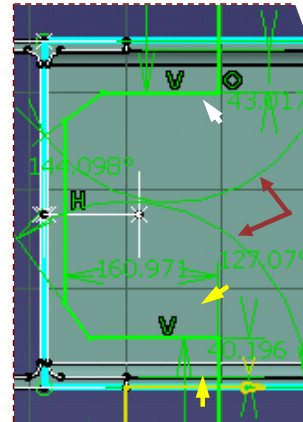
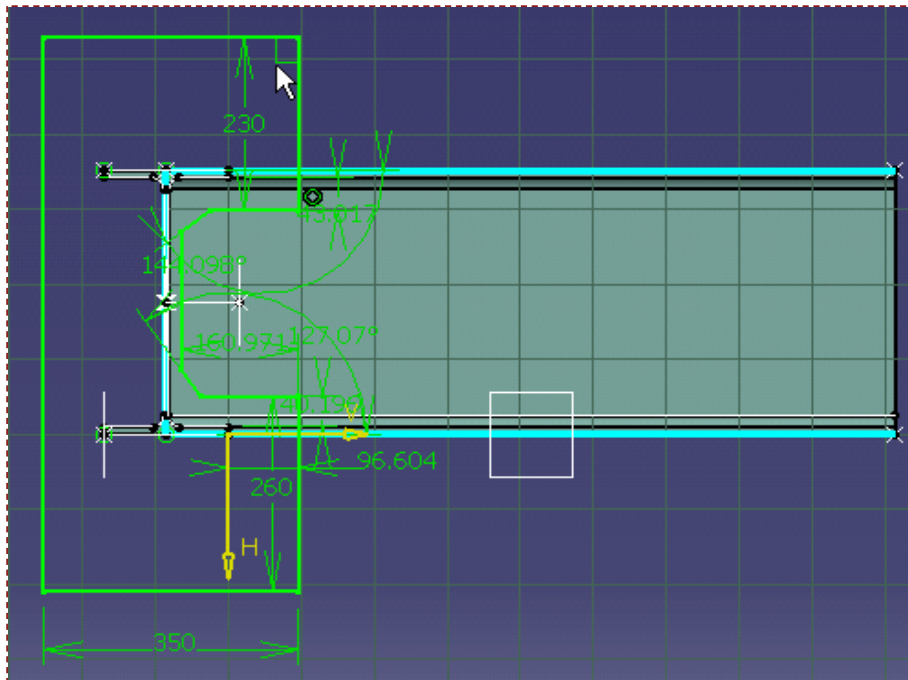
- Constrain the end of the sketch with
- Constrain the two snipes of the cutout



Student Notes:

## Do It Yourself (22/31)

- Set angular constraints between the snipes and Line.1 \ Line.2
  - ◆ Note: Delete a coincident constrain if necessary
- The sketch should be fully constrained now (green)
- Now, delete all **H** & **V** constrains
- Re-constrain to add an angle as necessary

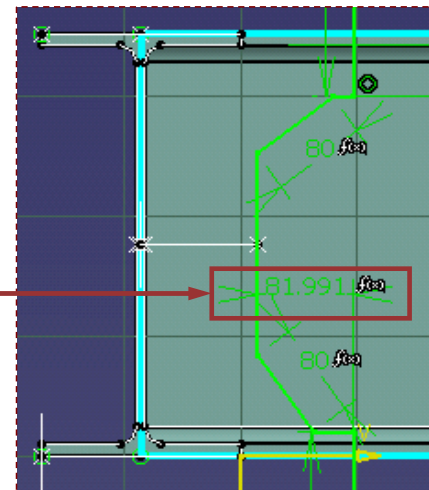
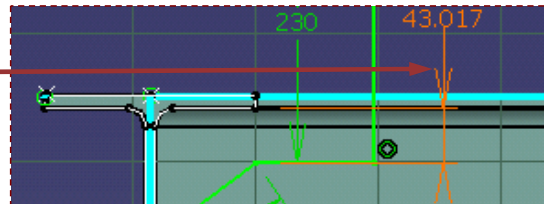
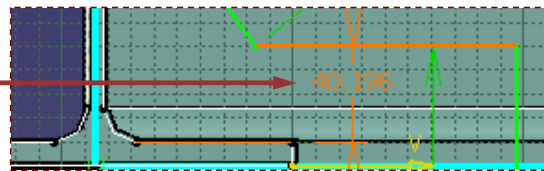
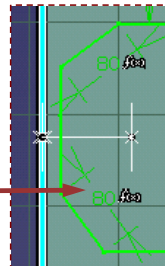


Student Notes:

## Do It Yourself (23/31)

- Associate the length of the 'snipes' of the sketch with the 'Snipe' parameter
- Associate the constrain 'cutout top\bottom with the intersect parallel to the Flange1Inner-'with Df1
- Associate the constrain 'cutout bottom with the intersect parallel to the Flange2Inner-' with Df2
- Apply the following formula  


$$\left( \text{distance}(\text{Construction Elements}\backslash\text{Multi Output.4 (Intersect)}\backslash\text{Intersect.7} , \text{Construction Elements}\backslash\text{Multi Output.4 (Intersect)}\backslash\text{Intersect.5} ) / 2 + Df2 \right) - \left( \text{distance}(\text{Construction Elements}\backslash\text{Multi Output.4 (Intersect)}\backslash\text{Intersect.10} , \text{Construction Elements}\backslash\text{Multi Output.4 (Intersect)}\backslash\text{Intersect.2} ) / 2 + Dw \right)$$

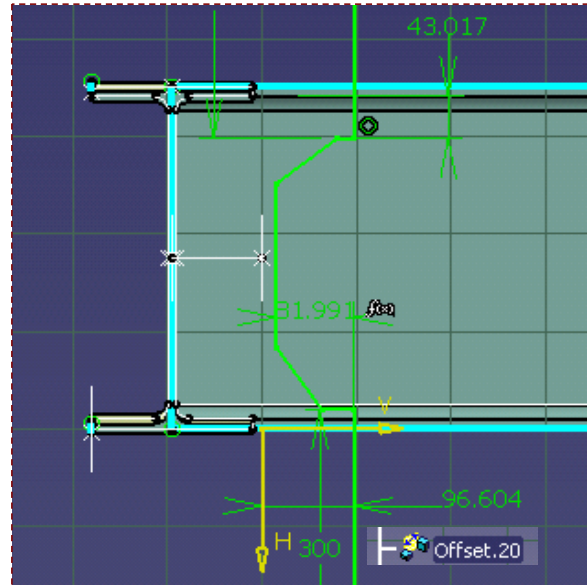
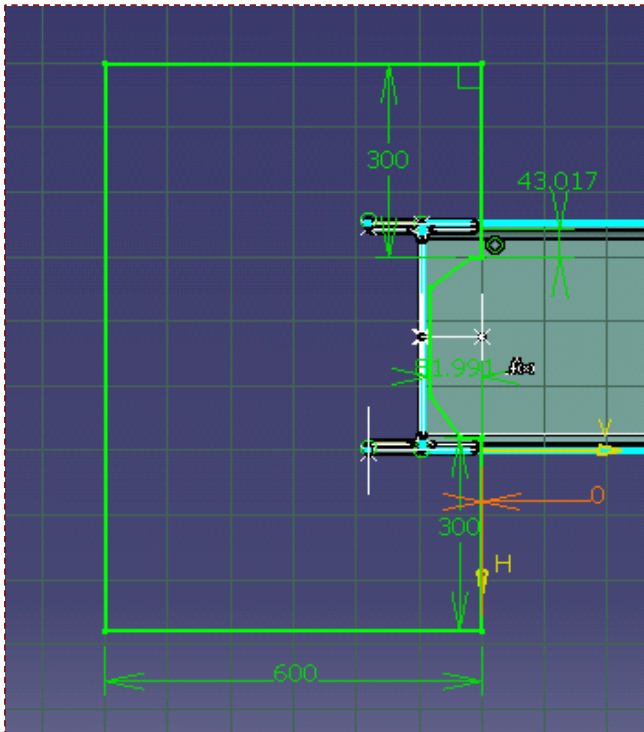


Use Step3-Elements\_of\_Construction.avi from downloaded files for details of above formula creation.



## Do It Yourself (24/31)

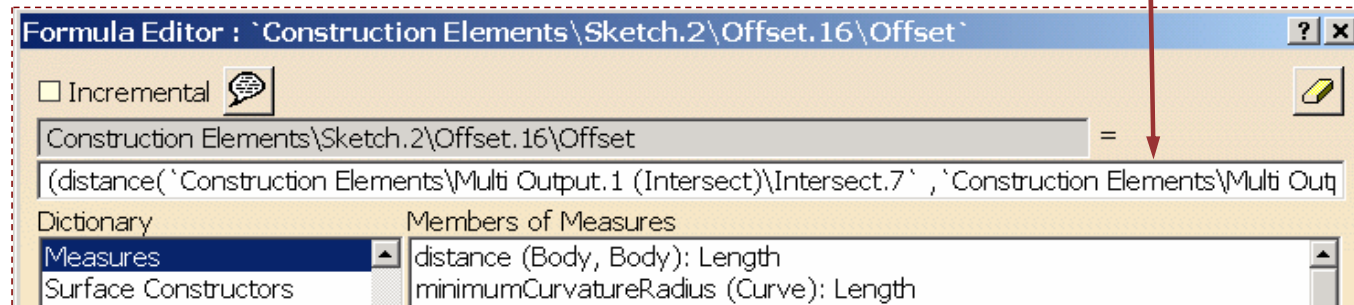
- Modify the constrain between the side of the Endcut and  of the sketch to zero.
  - ◆ The farthest side of the Endcut should be inline with Plane.4



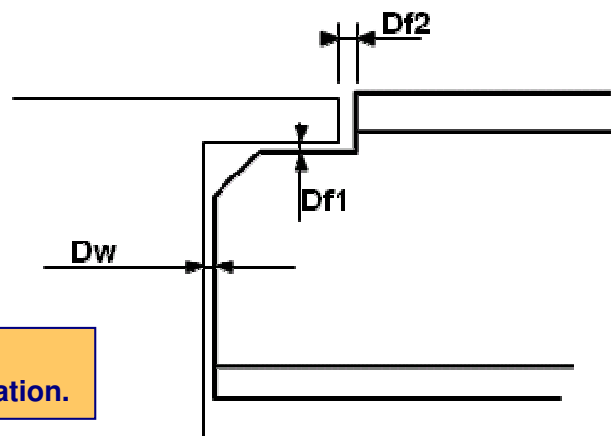
## Do It Yourself (25/31)

• Add formula as below

- ◆  $(\text{distance}(\text{Construction Elements}\backslash\text{Multi Output.1 (Intersect)}\backslash\text{Intersect.7} \text{ , } \text{Construction Elements}\backslash\text{Multi Output.1 (Intersect)}\backslash\text{Intersect.5} \text{ )}^2 + \text{Df2}) - (\text{distance}(\text{Construction Elements}\backslash\text{Multi Output.1 (Intersect)}\backslash\text{Intersect.10} \text{ , } \text{Construction Elements}\backslash\text{Multi Output.1 (Intersect)}\backslash\text{Intersect.2} \text{ )}^2 + \text{Dw})$



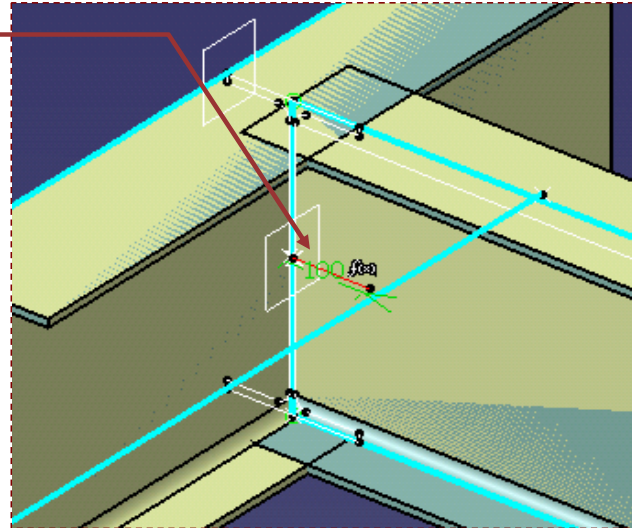
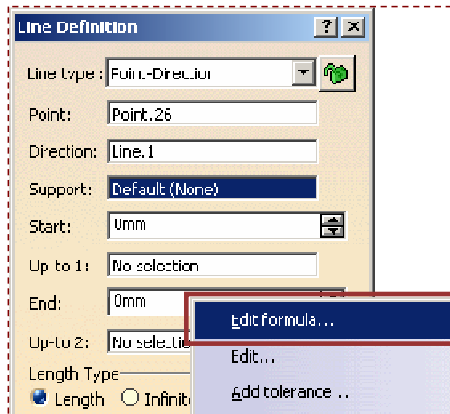
- Note the conventions followed
- Exit the sketcher



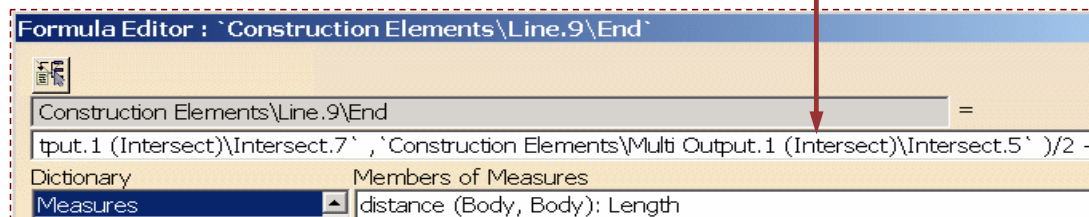
Use Step3-Elements\_of\_Construction.avi from downloaded files for details of above formula creation.

## Do It Yourself (26/31)

- Select Line.9
- Add a formula:



- distance( `Construction Elements\Multi Output.1 (Intersect)\Intersect.7` ,  
`Construction Elements\Multi Output.1 (Intersect)\Intersect.5` )/2 + Df2



- Save the Product

If needed, open I-Notching\_Elements\_of\_Construction.CATProduct

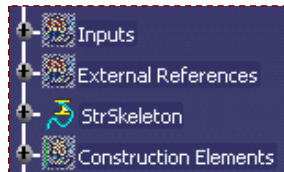
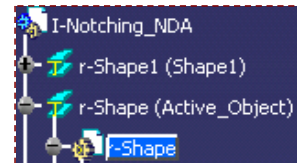


Use Step3-Elements\_of\_Construction.avi from downloaded files for details of above formula creation.

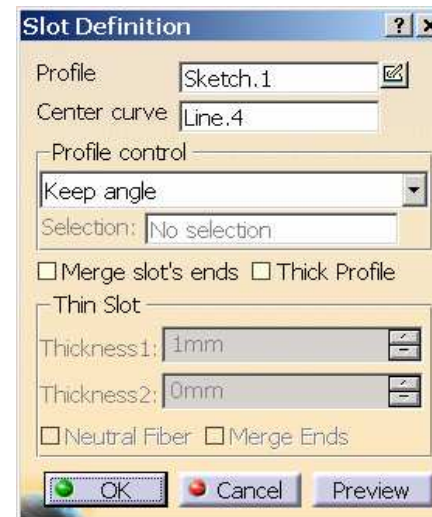
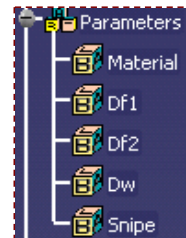
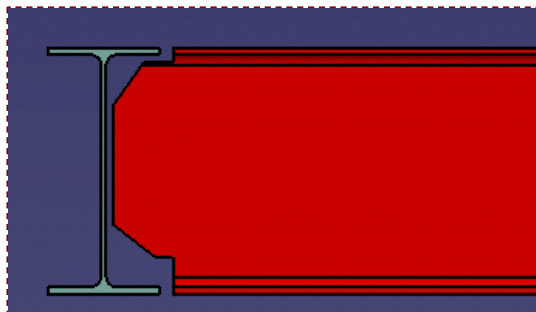
## Do It Yourself (27/31)

If needed refer Step3-Elements\_of\_Construction.avi from downloaded files.

- Ensure that the r-shape Part is activated in the Active Object
- Change workbench to Part Design 
- Select the Slot command 
  - ◆ Select the Sketch.2 for Profile and Line.6 for Center curve
- Hide Inputs, External Refs and Construction Elements



- Change Parameters to manipulate geometry



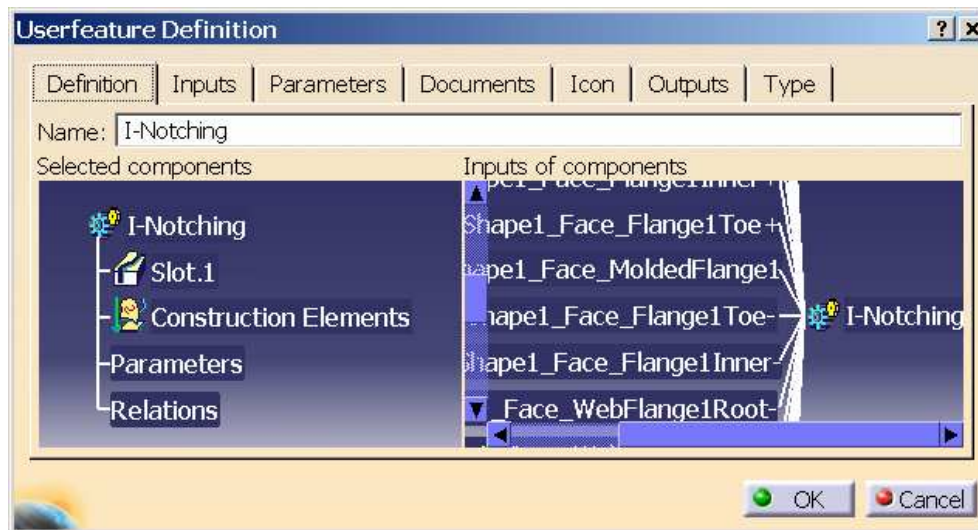
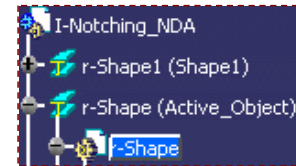
- Save the product

 If needed, open I-Notching\_Slot\_Creation.CATProduct

## Do It Yourself (28/31)

If needed refer Step4-Slot\_Creation.avi from downloaded files.

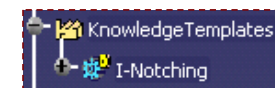
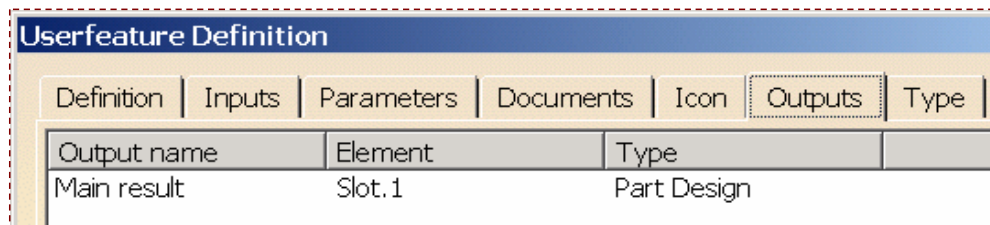
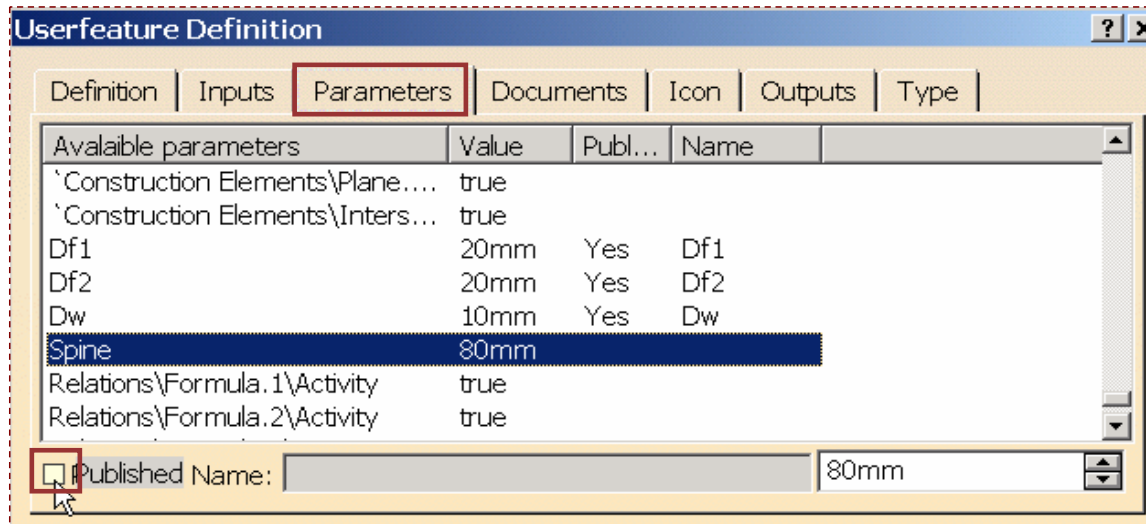
- Ensure that the r-shape Part is activated in the Active Object
- Select Insert > Knowledge Templates > UserFeature...
- Rename the Userfeature as necessary
- Select    



Student Notes:

## Do It Yourself (29/31)

- Publish the Parameters that will drive the UDF
- Check Outputs
- Save the product



If needed, open I-Notching\_UDF\_Creation.CATProduct

## Do It Yourself (30/31)

If needed refer Step5-UDF\_Creation.avi and Step6-UDF\_Instantiation.avi from downloaded files.

- Open StructureDetailingFeatures.catalog available in ...\\intel\_a\startup\EquipmentAndSystems\Structure\DetailingFeatures

- The working model must also be open in same session

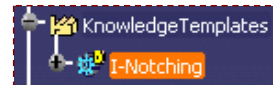
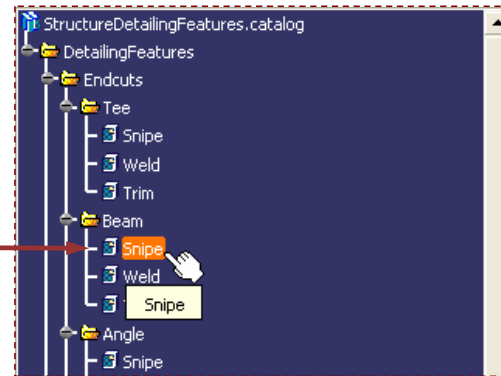
- Activate the family to house the EndCut

- Select the add components icon 

- Click 

- Select The I-Notching UDF in the working CATPart

- Check the Path in the Catalog



Reference	Keywords	Preview	Generative Data
Name	Type	Object Name	

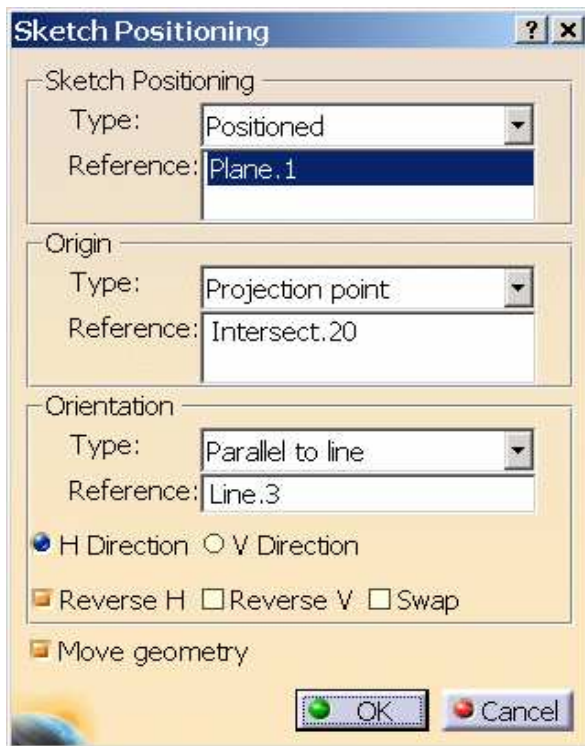
- Click OK and Save the Catalog
- Close the opened documents
- Open a new session, Test for integrity
- Change Necessary Parameters for expected results

# Do It Yourself (31/31)

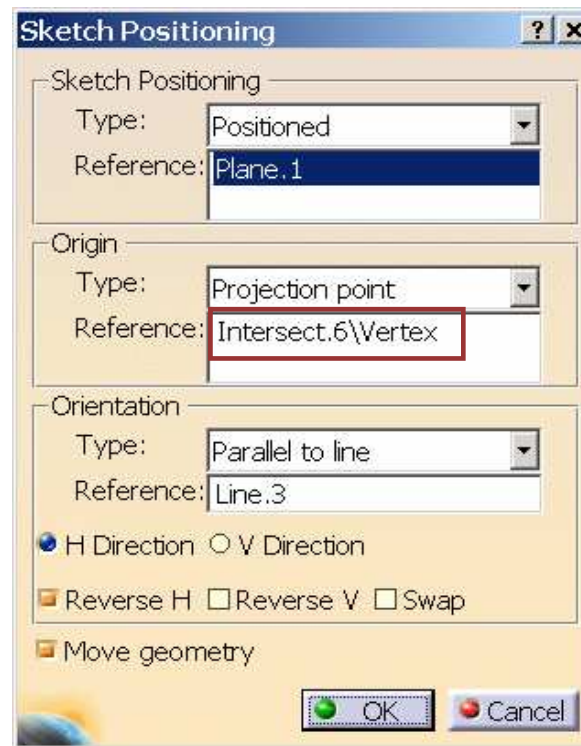


There Must not be any Internal Part object associated to the sketch

**CORRECT**



**WRONG**





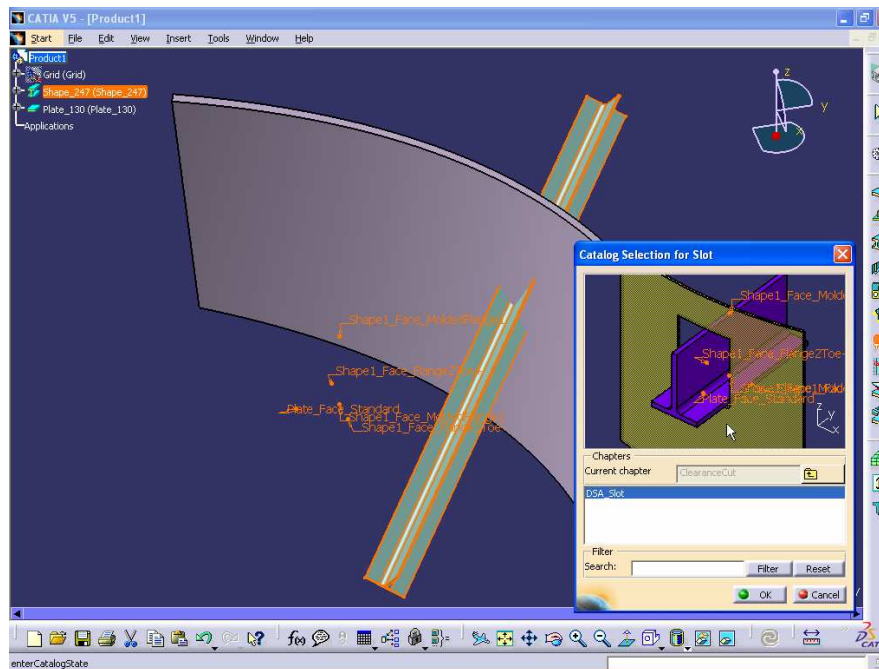
# Master Exercise: Administrating SR1

## Step 7: Creating a Slot







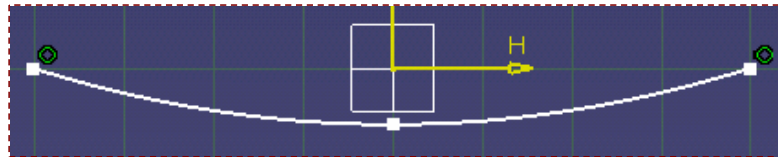
In this step you will create :

- Define the Slot Context
- Create Slot Inputs
- Create Slot Construction Elements
- Create Slot Geometry
- Create Slot User Define Feature (UDF)
- Test your UDF

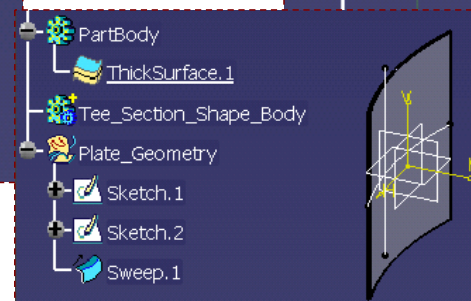
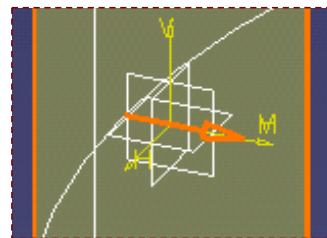
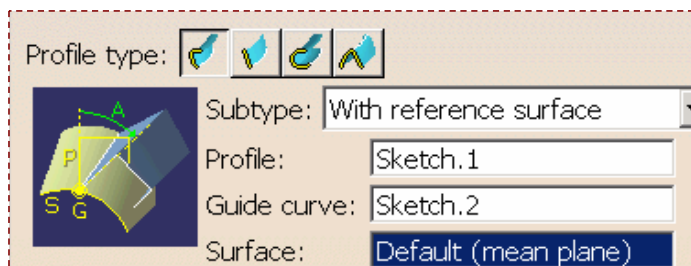
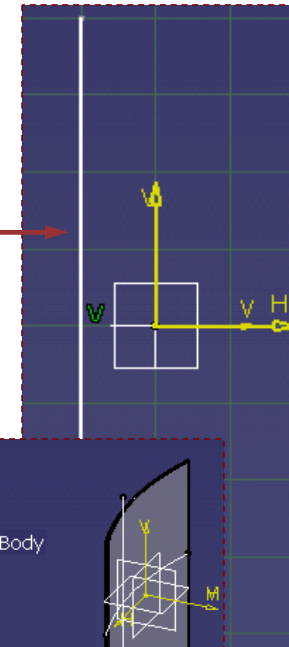


## Do It Yourself (1/15)

- Open a new CATPart, name it  DSA\_Slot
- Insert a  Body rename it as Tee\_Section\_Shape\_Body
- Insert Geometrical Set after changing to  rename it to  Plate\_Geometry (Plate\_Geometry)
- Select the xy plane and sketch the plate section (in this case, the ends are 800mm apart)



- Select the yz plane and sketch the height of the plate (800 mm length)
- Select the sweep button and create the plate surface 



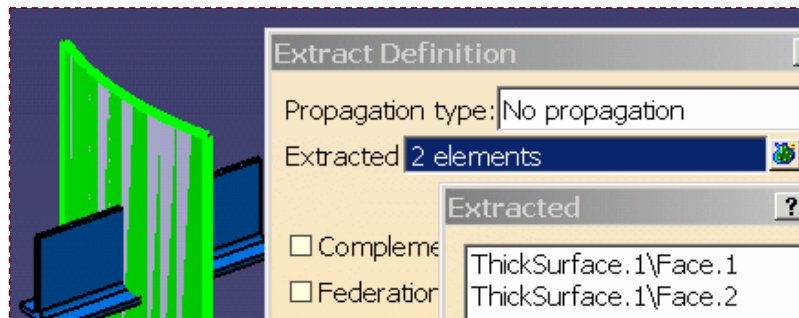
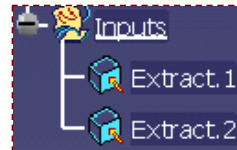
- Change to  and create a 10mm thick surface
- Save the model

Student Notes:

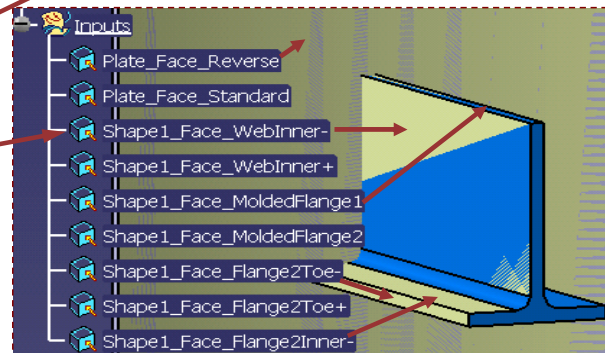
## Do It Yourself (2/15)

 Open DSA\_SLOT\_Environment\_Definition.CATPart

- Change to  if necessary and create a new geometrical Set
- Extract the two faces of the plate thick surface



- Rename them as necessary
- Similarly extract and rename to create the following:
- Refer 'Step1-Environment\_Definition.avi' from downloaded files.
- Save

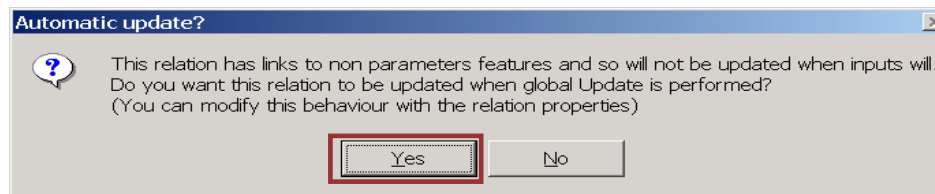


 If needed, open DSA\_SLOT\_Inputs\_Creation.CATPart

## Do It Yourself (3/15)

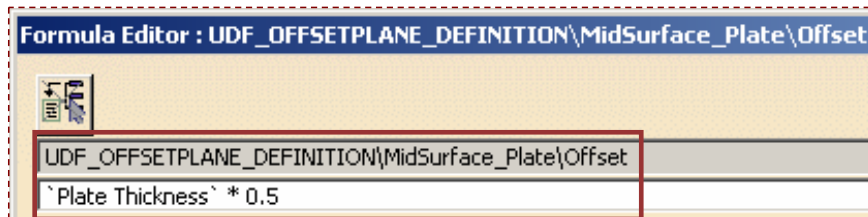
If needed refer Step2-Inputs\_Creation.avi from downloaded files.

- Create new Geometrical set 
- Create 0mm offsets from  to create 
- Insert a new Length Parameter 'Plate Thickness'
- Associate it to the distance between the offsets created (Refer AVI )

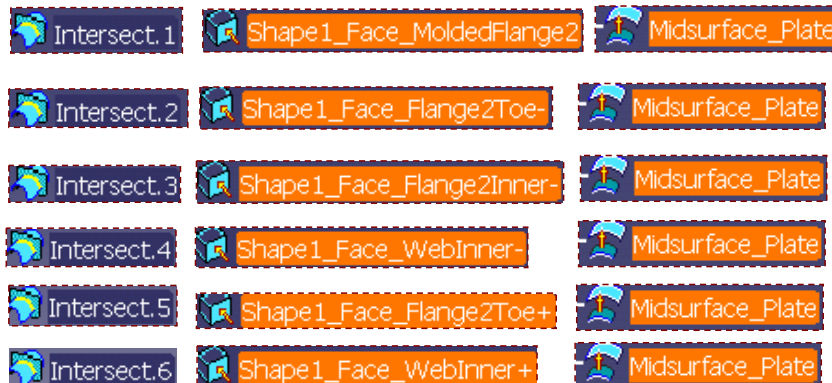


## Do It Yourself (4/15)

- Create another offset from  CopyofSurface\_Plate\_Face\_Standard
- Associate it to  $\frac{1}{2}$  Plate Thickness and rename to Midsurface\_Plate

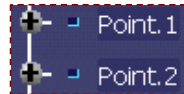


- Create the following Intersects:



## Do It Yourself (5/15)

- Create the midpoints of Intersect.2 and Intersect.5:
- Create the following Planes and rename



InfinitePlaneForShape1\_Face\_MoldedFlange1

Plane type:	Offset from plane
Reference:	Shape1_Face_MoldedFlange1
Offset:	0mm

InfinitePlaneForShape1\_Face\_MoldedFlange2

Plane type:	Offset from plane
Reference:	Shape1_Face_MoldedFlange2
Offset:	0mm

InfinitePlaneForShape1\_Face\_Flange2Toe-

Plane type:	Offset from plane
Reference:	Shape1_Face_Flange2Toe-

InfinitePlaneForShape1\_Face\_Flange2Toe+

Plane type:	Offset from plane
Reference:	Shape1_Face_Flange2Toe+

InfinitePlaneForShape1\_Face\_Flange2Inner-

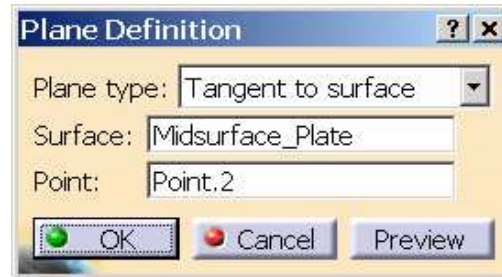
Plane type:	Offset from plane
Reference:	Shape1_Face_Flange2Inner-

InfinitePlaneForMidSurface\_PlateAtFlange2Toe-

Plane Definition	
Plane type:	Tangent to surface
Surface:	Midsurface_Plate
Point:	Point.1
<input type="button" value="OK"/> <input type="button" value="Cancel"/> <input type="button" value="Preview"/>	

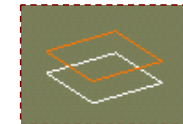
## Do It Yourself (6/15)

InfinitePlaneForMidSurface\_PlateAtFlange2Toe+



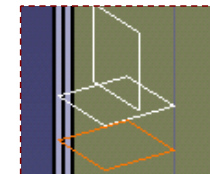
OffsetToShape1\_Face\_MoldedFlange1

Plane type: Offset from plane  
 Reference: InfinitePlaneForShape1\_Face\_MoldedFlange1  
 Offset: 20mm



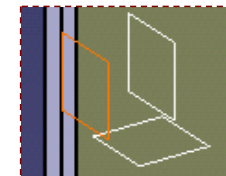
OffsetToShape1\_Face\_MoldedFlange2

Plane type: Offset from plane  
 Reference: InfinitePlaneForShape1\_Face\_MoldedFlange2  
 Offset: 20mm



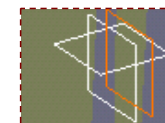
OffsetToShape1\_Face\_Flange2Toe-

Plane type: Offset from plane  
 Reference: InfinitePlaneForShape1\_Face\_Flange2Toe-  
 Offset: 20mm



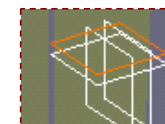
OffsetToShape1\_Face\_Flange2Toe+

Plane type: Offset from plane  
 Reference: InfinitePlaneForShape1\_Face\_Flange2Toe+  
 Offset: 20mm



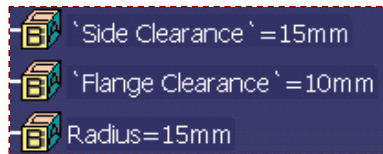
OffsetToShape1\_Face\_Flange2Inner-

Plane type: Offset from plane  
 Reference: InfinitePlaneForShape1\_Face\_Flange2Inner-  
 Offset: 10mm



## Do It Yourself (7/15)

- Insert 3 New Parameters of Type Length



- Associate the Parameters to existing planes
- Create UDF\_GEOMETRY\_DEFINITION ('\_' in-between)
- Create the following Intersects





Student Notes:

## Do It Yourself (8/15)

Insert a Polyline 

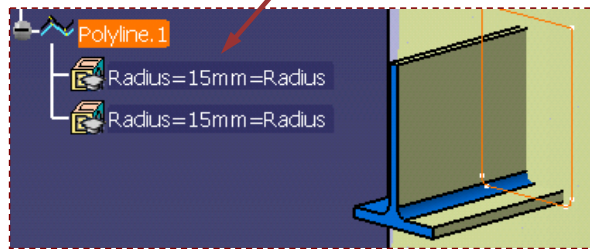
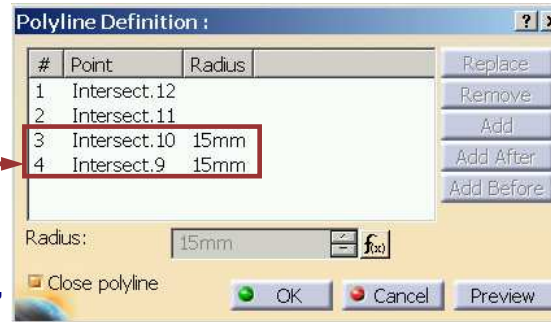
Close Polyline

Edit formula for:

◆ Intersect.9

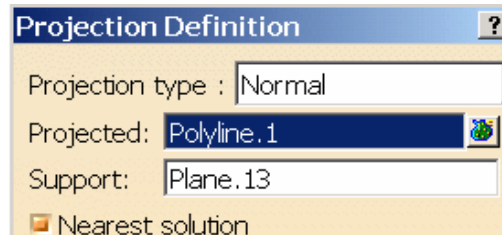
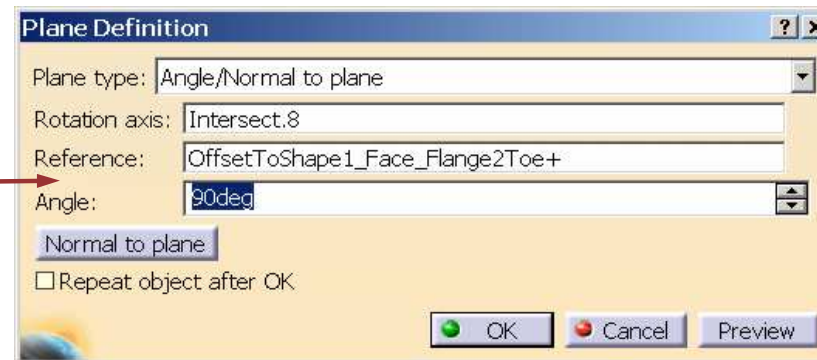
◆ Intersect.10

associate with 'Renamed Parameter' "Radius"



Create Plane.13

Create Project.1



Save the model

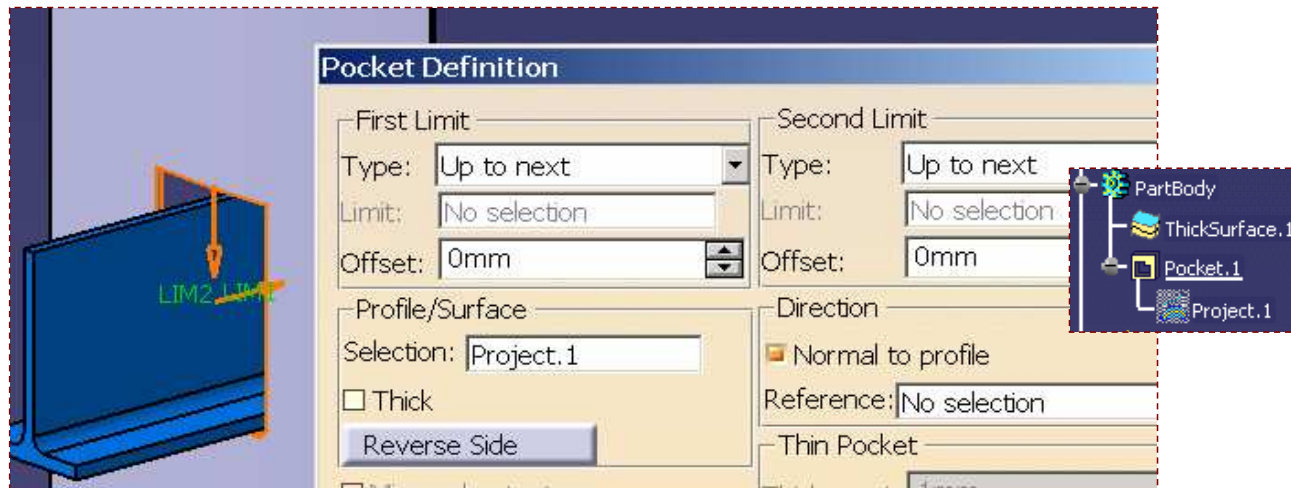


If needed, open DSA\_SLOT\_Elements\_of\_Construction.CATPart

## Do It Yourself (9/15)

If needed refer Step3-Elements\_of\_Construction\_1.avi from downloaded files.

- Hide  and all except  under 
- Change to  if necessary
- Select 
- Create Pocket as follows

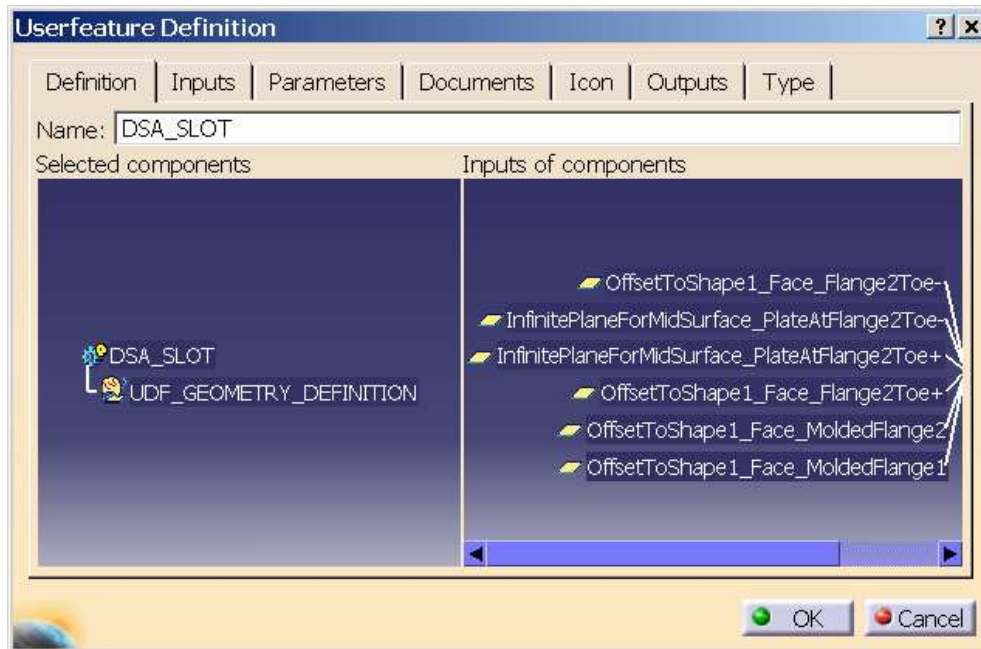


- Save the model
-  If needed, open DSA\_SLOT\_Slot\_Creation.CATPart

## Do It Yourself (10/15)

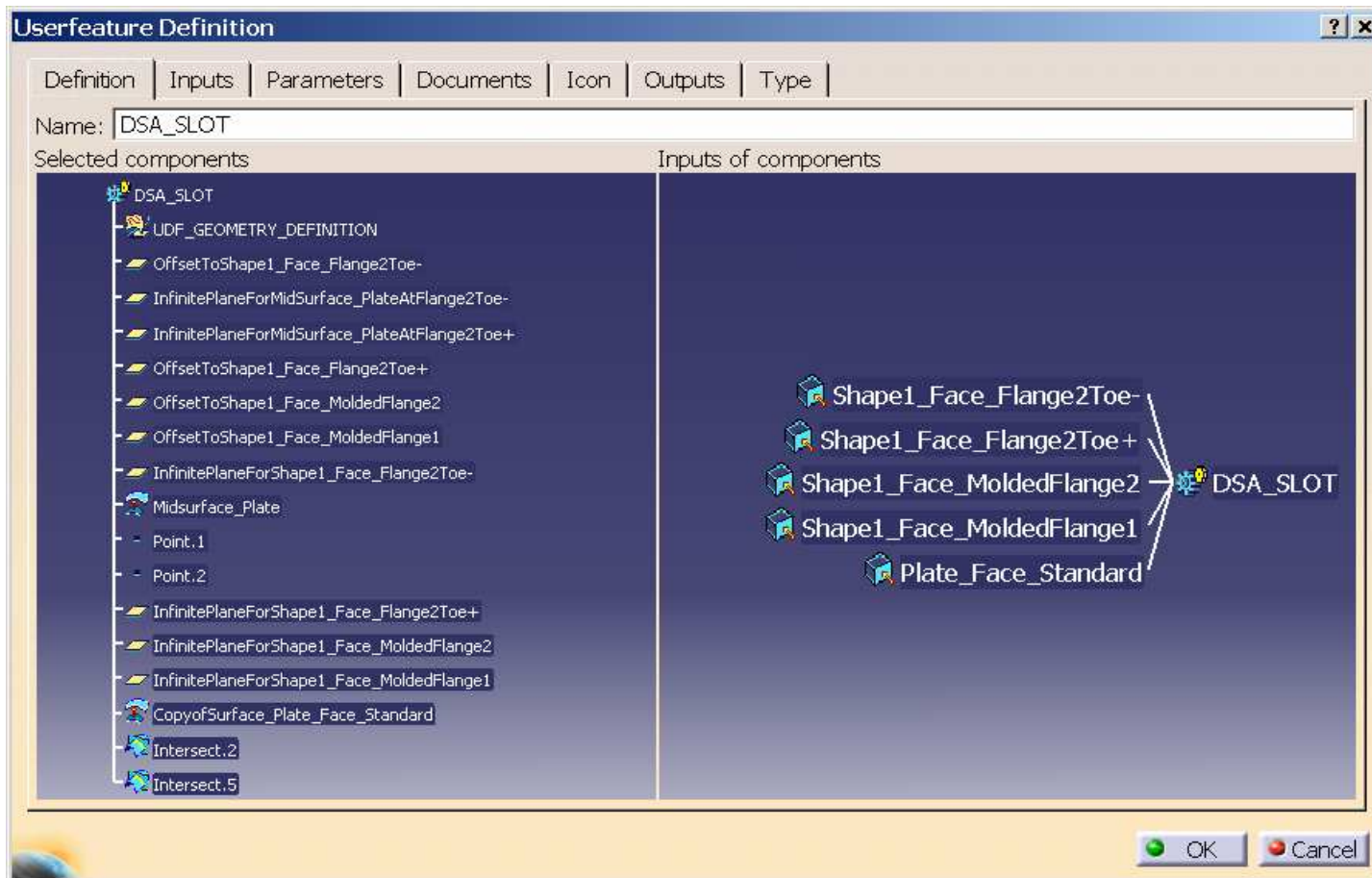
If needed refer Step4-Slot\_Creation.avi from downloaded files.

- Insert  
- Key in a new name 
- Select 'UDF\_GEOMETRY\_DEFINITION' to get the following



## Do It Yourself (11/15)

- Click on the elements under 'Inputs of Contents' to switch them to 'Selected components'.



Student Notes:

## Do It Yourself (12/15)

Next select each of

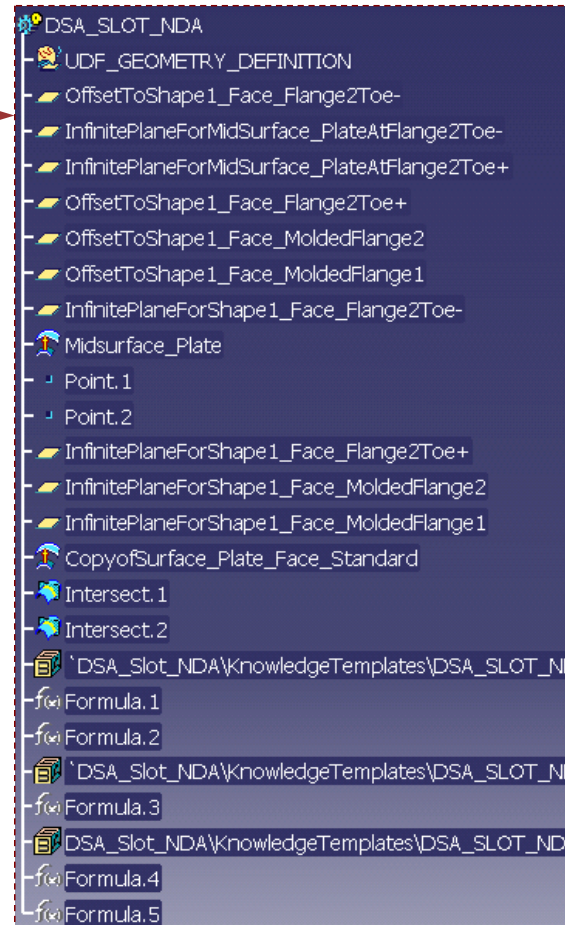


The Internal Components section should include

Publish the following in Parameters tab

Available parameters	Value	Publ...	Name
Radius	15mm	Yes	Radius
'Flange Clearance'	10mm	Yes	'Flange Clearance'
'Side Clearance'	15mm	Yes	'Side Clearance'

Save the model.



 If needed, open DSA\_SLOT\_UDF\_Creation.CATPart

## Do It Yourself (13/15)

If needed refer Step5-UDF\_Creation\_Create UDF - Slot.avi and Step5-UDF\_Creation\_Look\_For\_Unused\_Geometry.avi from downloaded files.

- Open StructureDetailingFeatures.catalog available in  
 \intel\_a\startup\EquipmentAndSystems\Structure\DetailingFeatures

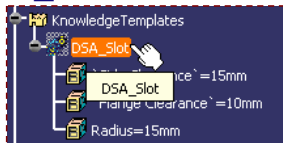
- The working model should also be open in same session

- Activate the family to house the Slot

- Select the add components icon 

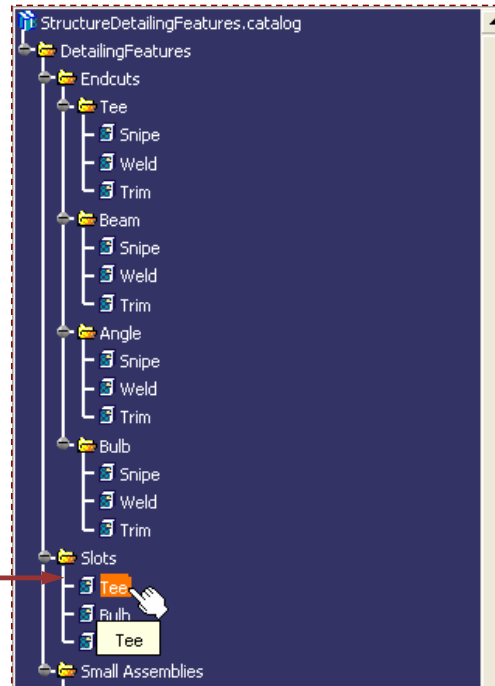
- Click on Select external feature

- Select The DSA\_Slot in the working CATPart



- Check the Path in the Catalog

Reference			
Keywords			
Preview			
Generative Data			
Name	Type	Object Name	

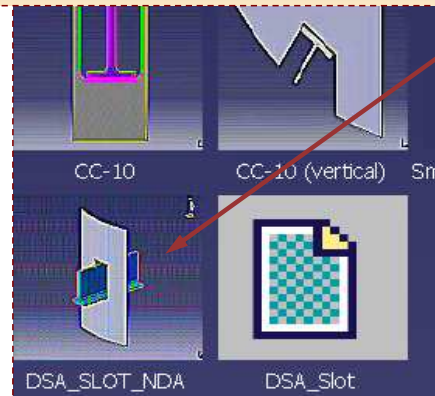
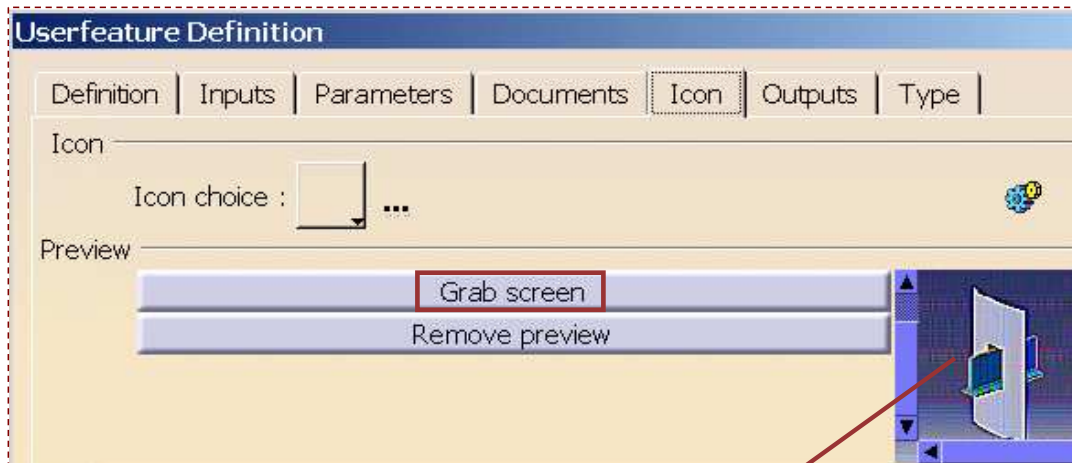


- Click OK and Save the Catalog
- Close the opened documents
- Open a new session, Test for integrity
- Change Necessary Parameters for expected results

## Do It Yourself (14/15)

If needed, open Step6-UDF\_Instaniation.avi

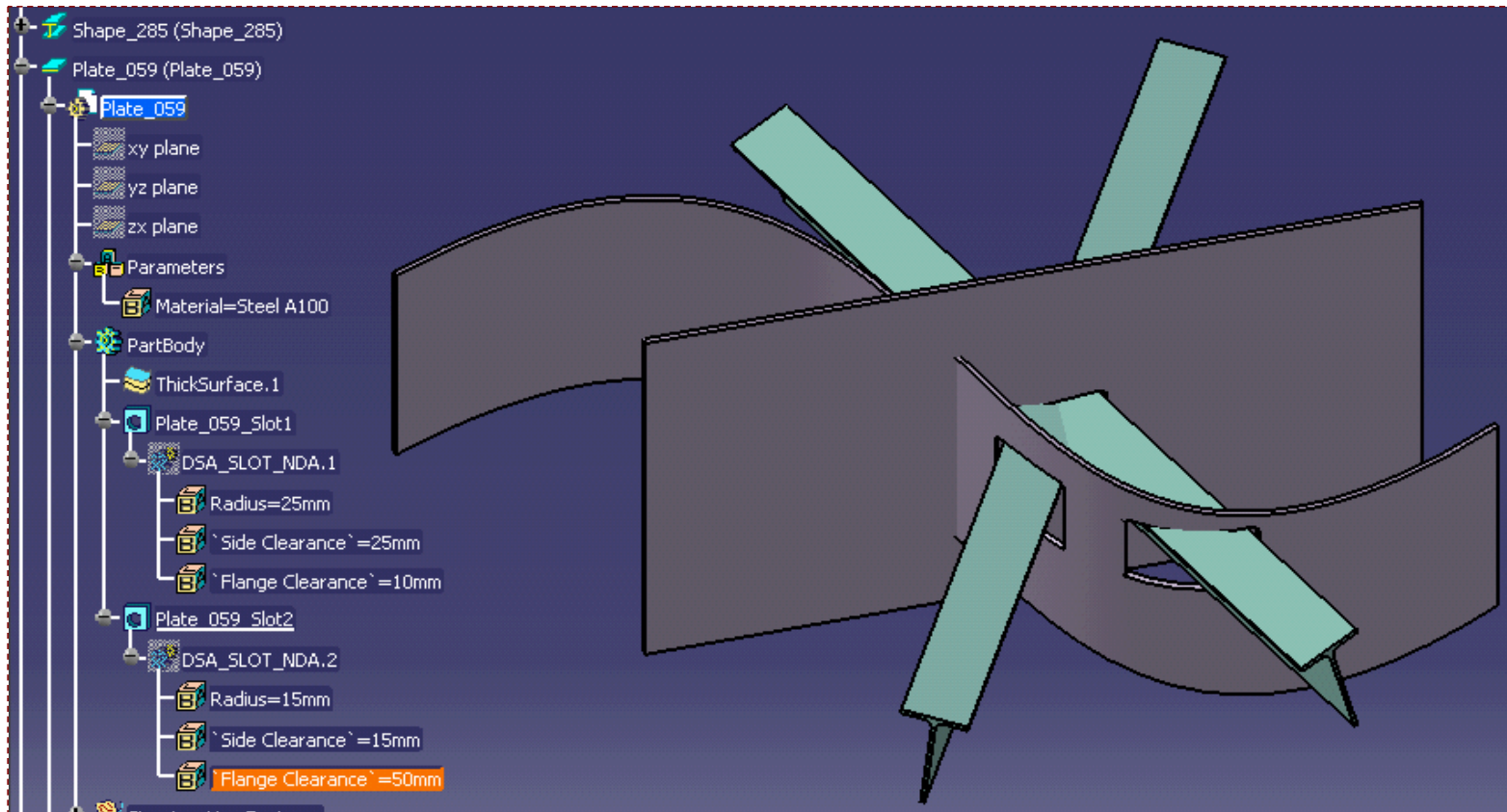
- Note that if an icon was created during Template creation, it will show up under Preview in the Catalog



## Do It Yourself (15/15)

Student Notes:

- The slot should be ready to instantiate on straight \ curved plates





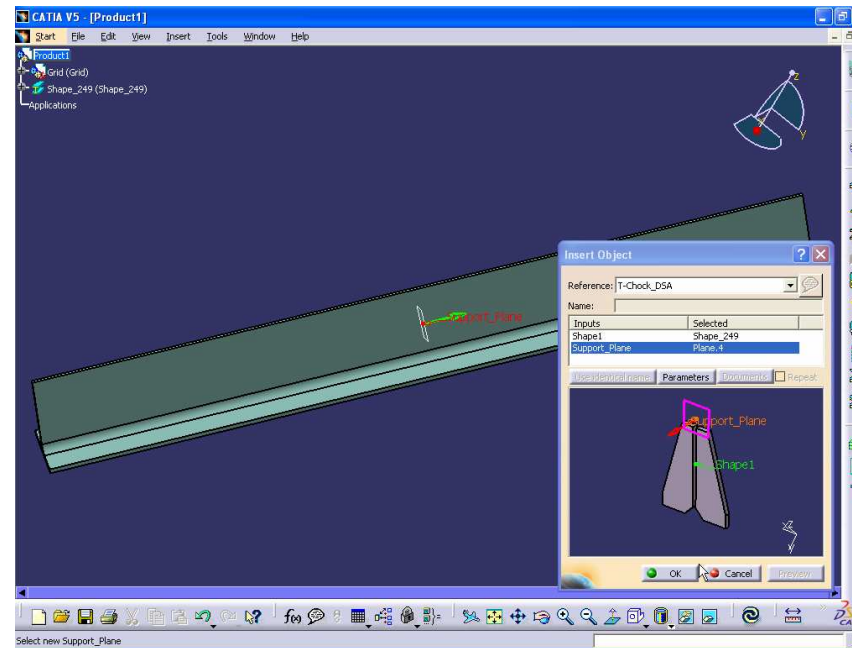
# Master Exercise: Administrating SR1

## Step 8: Creating a Small Assembly (T-Chock)



In this step you will create :

- Define the Assembly Context
- Create T-Chock Inputs
- Create T-Chock Construction Elements
- Create T-Chock Geometry
- Create T-Chock Document Template
- Test your Assembly

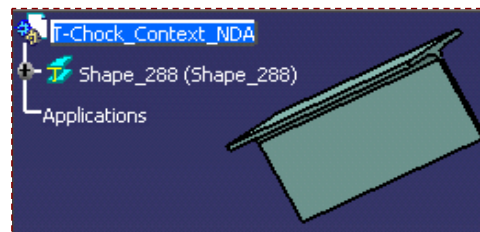
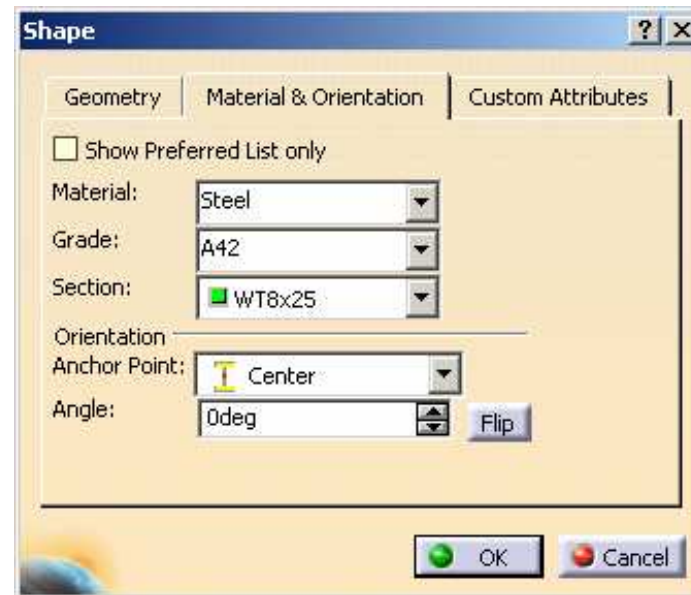
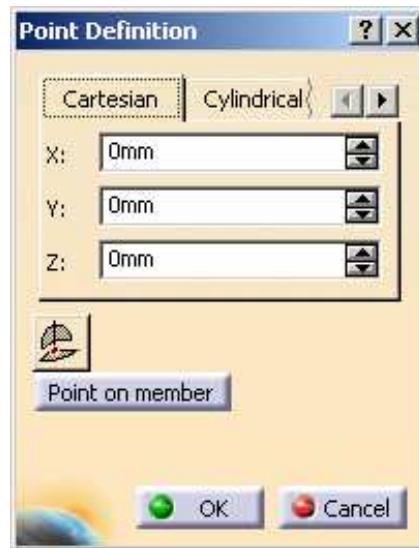
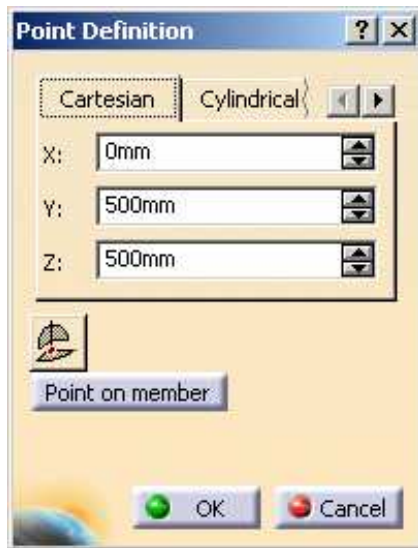
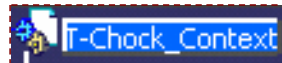


Student Notes:

## Do It Yourself (1/20)

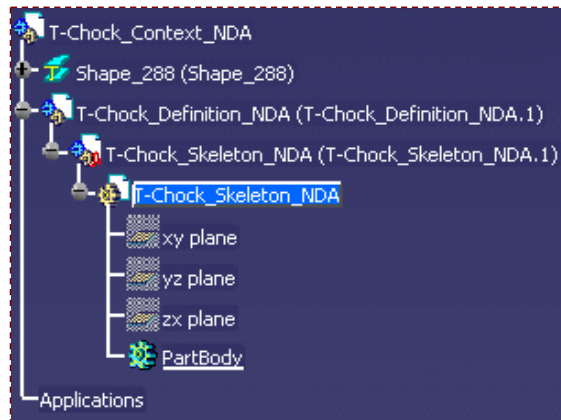
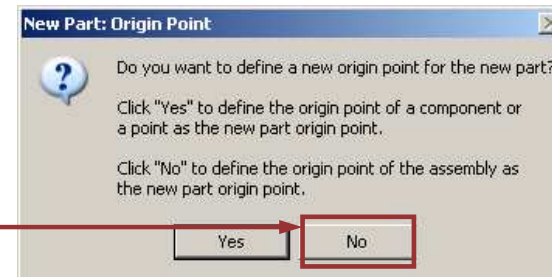
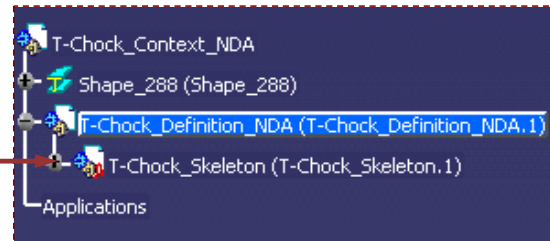
If needed refer Step1-Context\_Definition.avi from downloaded files.

- Start with a new CATProduct, naming it
- Create a WT8X25 section



## Do It Yourself (2/20)

- ❏ Introduce a new CATProduct and name it T-Chock\_Definition\_NDA
- ❏ Introduce a new CATPart under the above CATProduct
- ❏ Click No in the New Part prompt
- ❏ Hide the xyz planes in the T-Chock\_Skeleton.CATPart



- ❏ Save the Product

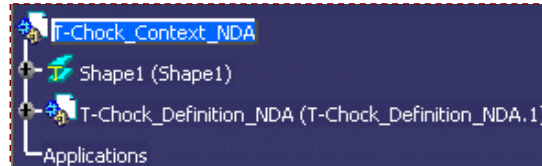


If needed, open T-Chock\_Context\_Context\_Definition.CATProduct

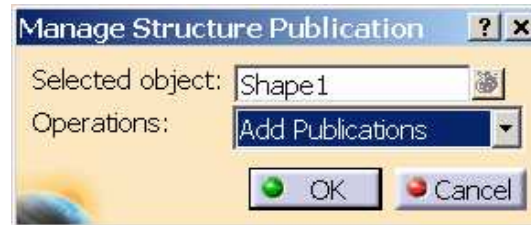
## Do It Yourself (3/20)

If needed refer Step2-Inputs\_Creation.avi from downloaded files.







- Rename the shape to Shape1

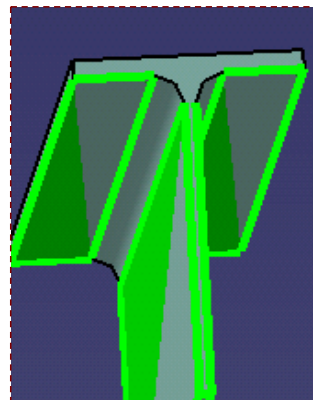


- Add Publication  for Shape1



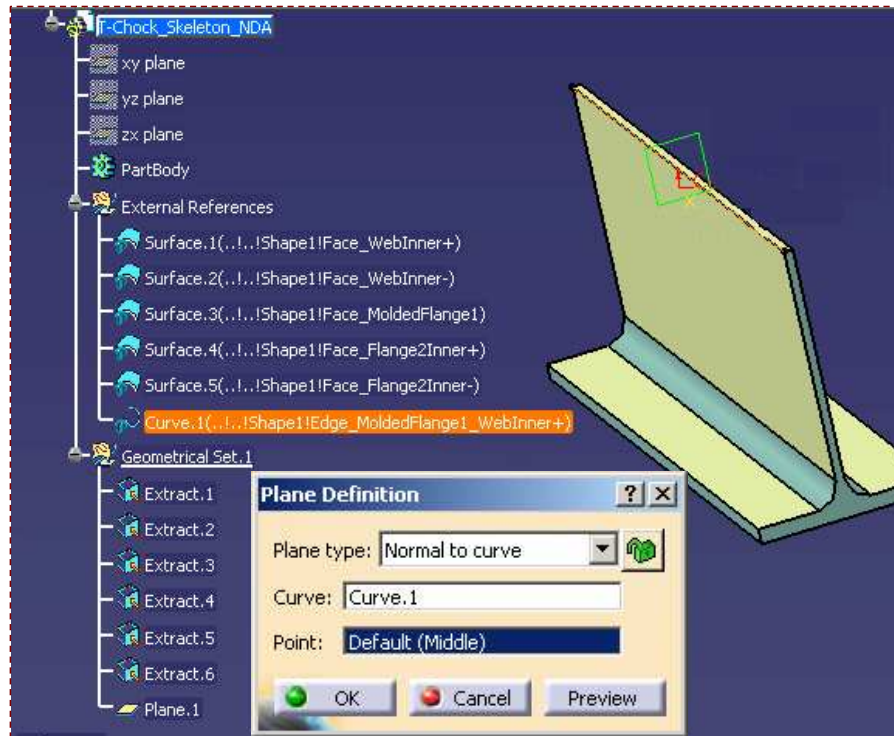
- Extract the following from the Shape1 \ Publications

-  Face\_WebInner+
-  Face\_WebInner-
-  Face\_MoldedFlange1
-  Face\_Flange2Inner+
-  Face\_Flange2Inner-
-  Edge\_MoldedFlange1\_WebInner+



## Do It Yourself (4/20)

- Create a Plane.1 using the options shown

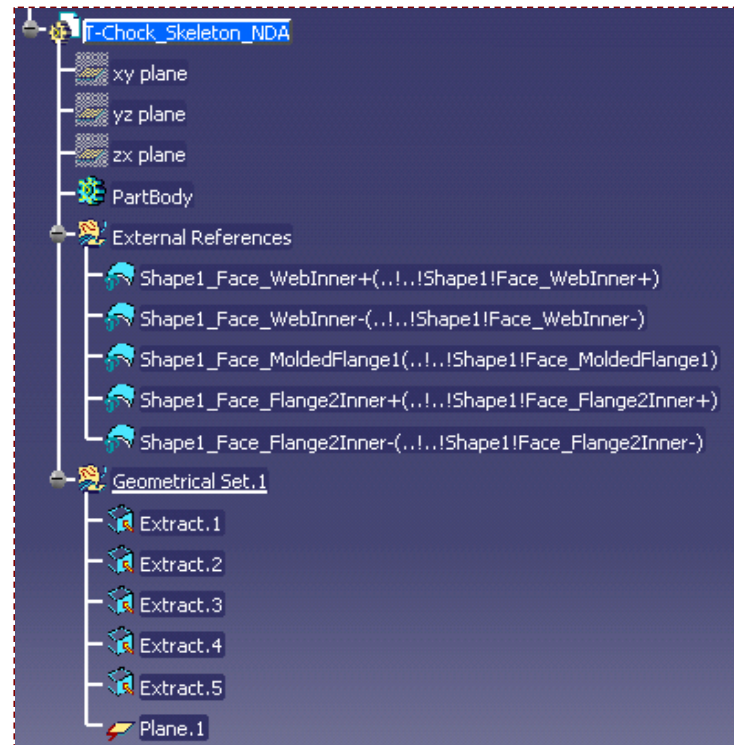
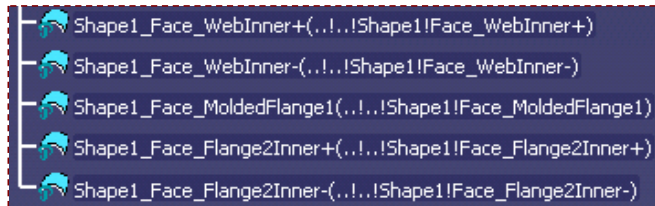
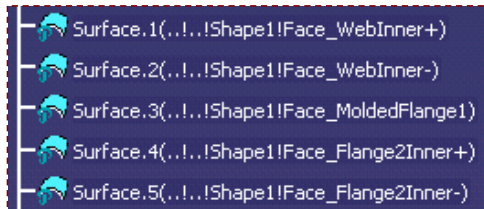


- Isolate the Plane



## Do It Yourself (5/20)

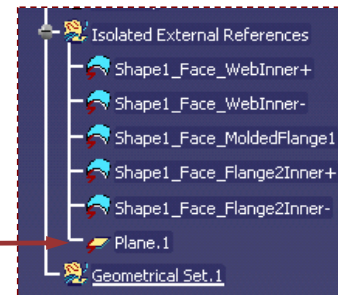
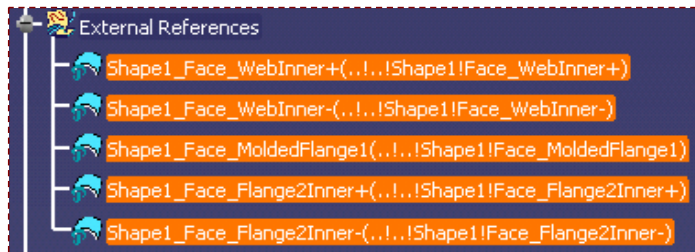
- Replace the Shape.x with the respective ref surface names in Feature Properties



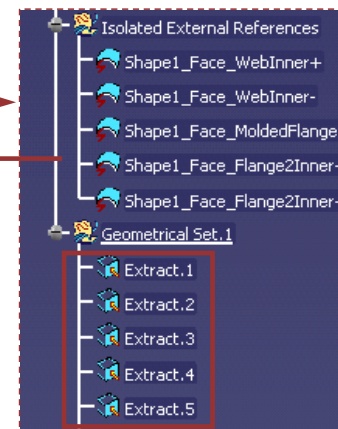
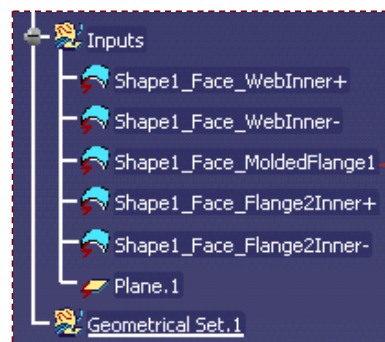
- Delete the Curve.1(...!Shape1!Edge\_MoldedFlange1\_WebInner+)

## Do It Yourself (6/20)

- Select the contents of the External references and Isolate them



- Cut Paste the Plane.1 into Isolated External References
- Delete all extracts
- Rename Isolated External References to Inputs
- Save the product
- Close Session



 If needed, open T-Chock\_Definition\_Inputs\_Creation.CATProduct


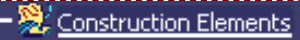
Student Notes:

## Do It Yourself (7/20)



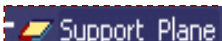
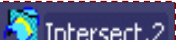
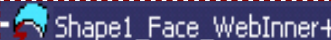
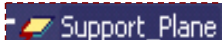





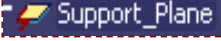
If needed refer Step3-Construction\_Elements\_Creation.avi from downloaded files.

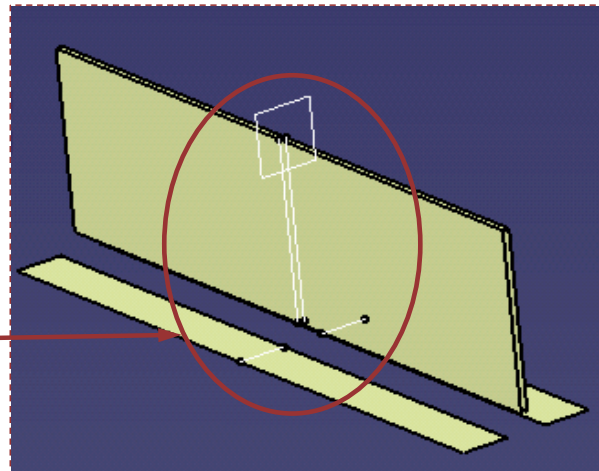
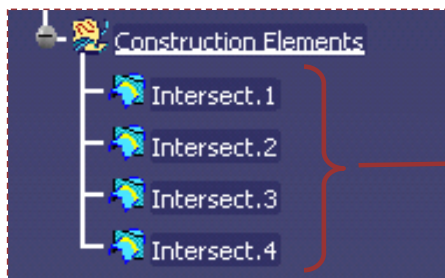
Open only the  T-Chock\_Definition\_NDA.CATProduct

Rename Plane.1 to 

Rename the existing  Geometrical Set.1 to 

Create intersects as follows





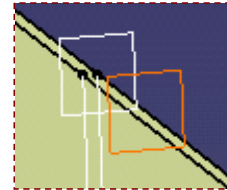
## Do It Yourself (8/20)

- Create Plane.2 100mm offset from 'Support\_Plane'

- Create



Surface:	Shape1_Face_MoldedFlange1
Offset:	0mm



- Insert



Insert geometrical set	
Name:	Construction Geometry Lef
Father:	T-Chock_Skeleton



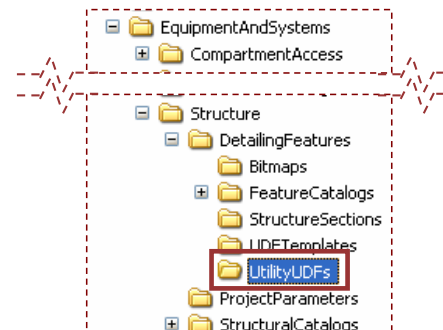
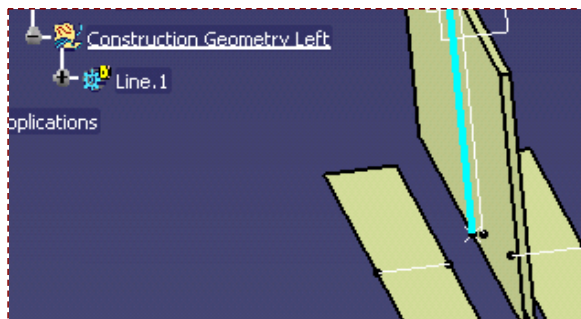
- Insert



**OrientedCurve.CATPart from**

...\\intel\_a\\startup\\EquipmentAndSystems\\Structure\\DetailingFeatures\\UtilityUDFs.  
Rename it as Line.1

Function	Value
Spline.1	Intersect.1
Remplissage.1	Offset.1

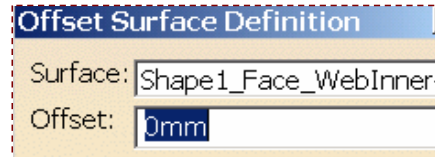


## Do It Yourself (9/20)

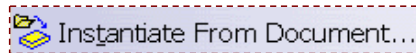
- Create an Offset.2



from

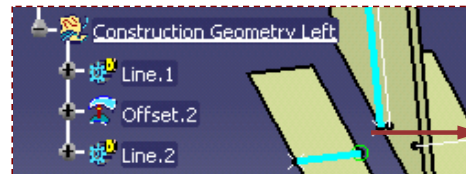


- Insert

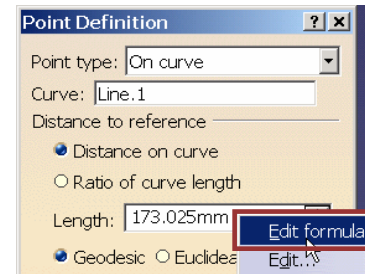
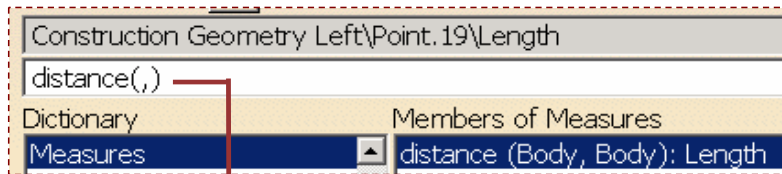


OrientedCurve.CATPart and rename as Line.2

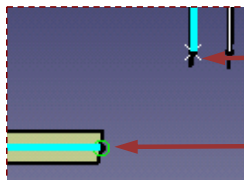
Inputs	Selected
Spline.1	Intersect.4
Remplissage.1	Offset.2



- Create a Point on Line.1 (in this case it is shown as Point.19)
- Refer avi file.



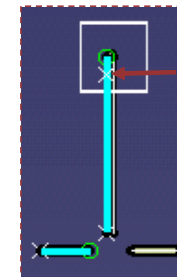
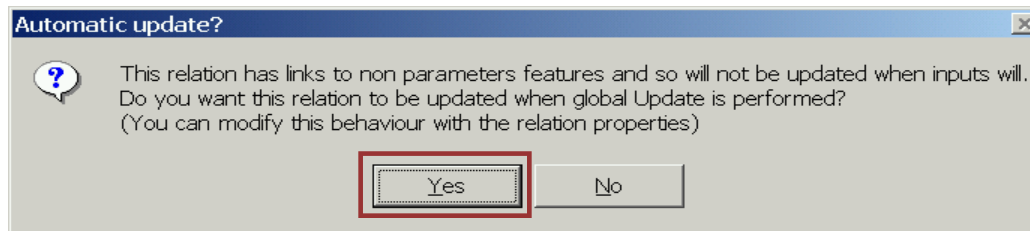
$\text{distance}(\text{'Construction Geometry Left\Line.1\End' , 'Construction Geometry Left\Line.2\Start' }) * \cos(45\text{deg})$



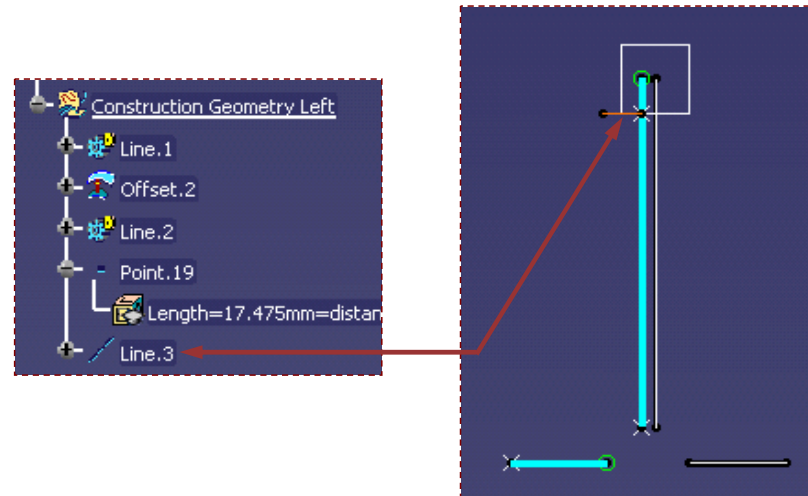
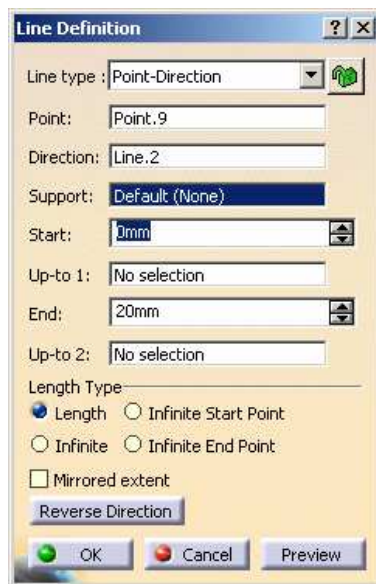
## Do It Yourself (10/20)



- Click Yes at the following prompt

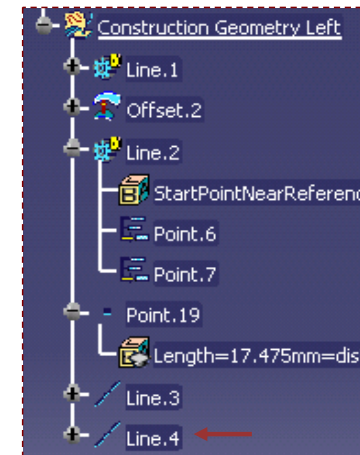
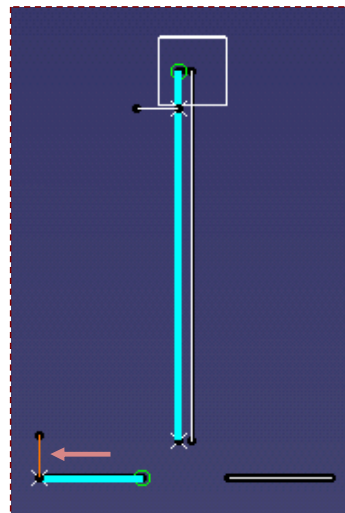
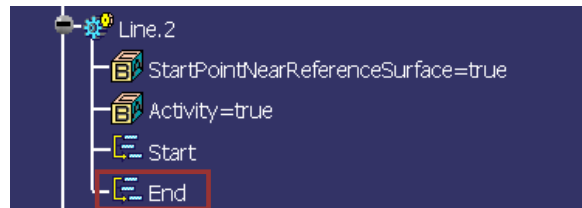
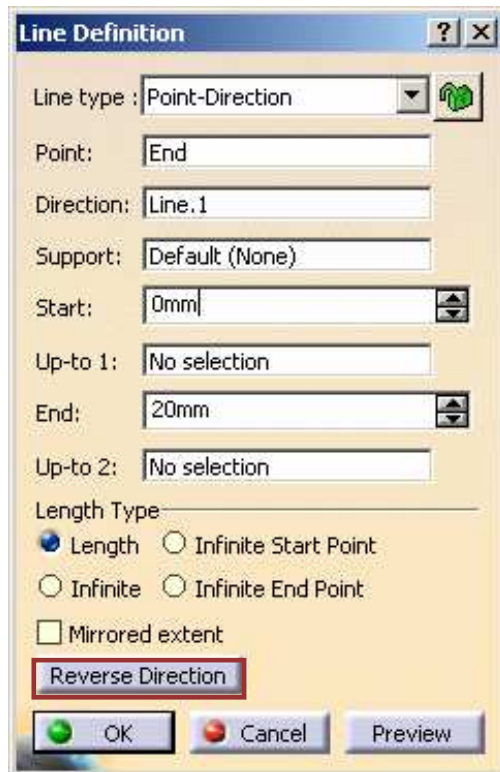


- Create a Line.3 using the previously created Point.19 and Line.2



## Do It Yourself (11/20)

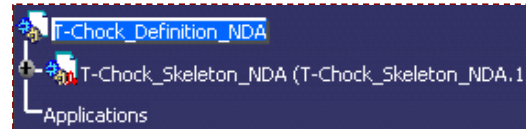
- Create a Line.4 using the previously created 'End' of Line.2 and Line.1
- Use the Reverse Direction button if necessary



Student Notes:

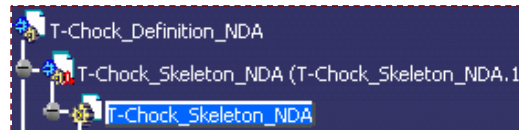
## Do It Yourself (12/20)

- Activate T-Chock\_Definition\_NDA.CATProduct

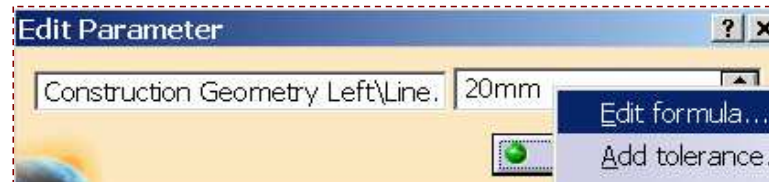
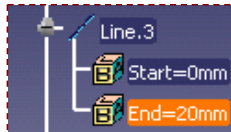


- Use  to create a new Parameter named as 'Nose' of type Length and default value 25mm

- Activate the T-Chock\_Skeleton.CATPart

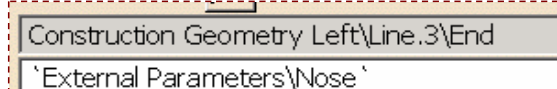
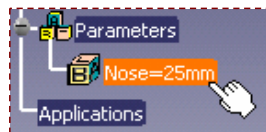
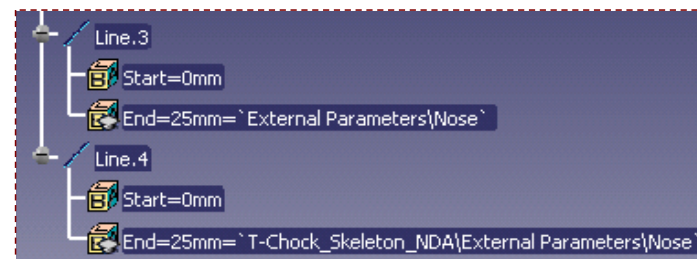


- Double click on the end of Line.3



- Right Click and Edit Formula

- Associate the external parameter 'Nose'

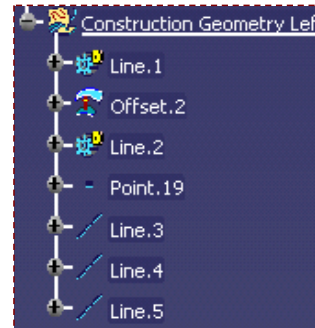
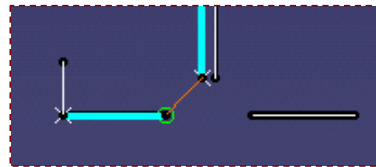


- Similarly associate the 'End' of Line.4 with 'Nose'

Student Notes:

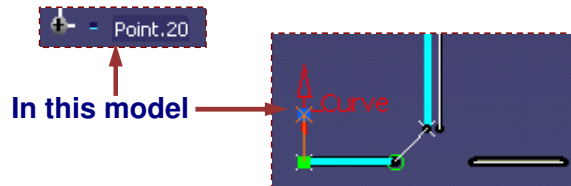
## Do It Yourself (13/20)

- Create a Line.5 to join Line.1 and Line.2

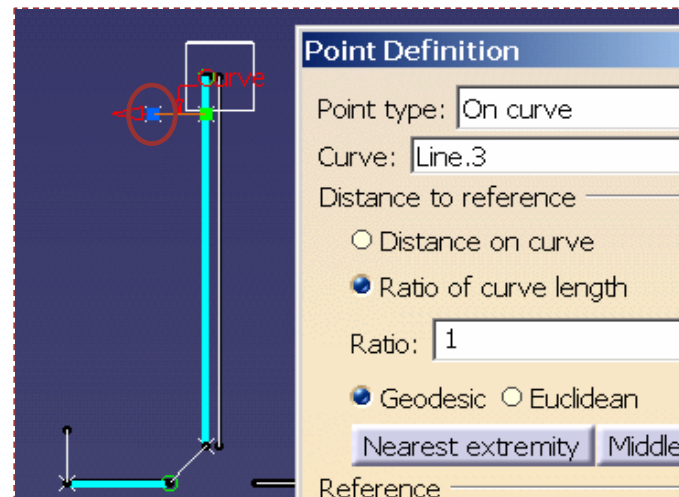
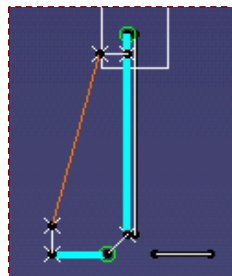


- Create a Point at the end of Line.3  In this model

- Create another Point at the end of Line.4



- Create a Line.6 to join the new two points

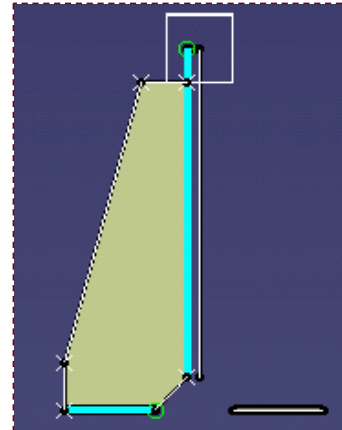


Student Notes:

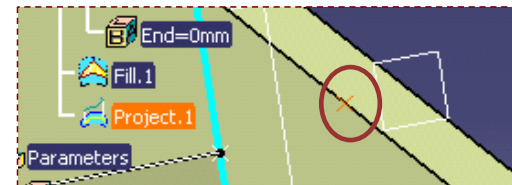
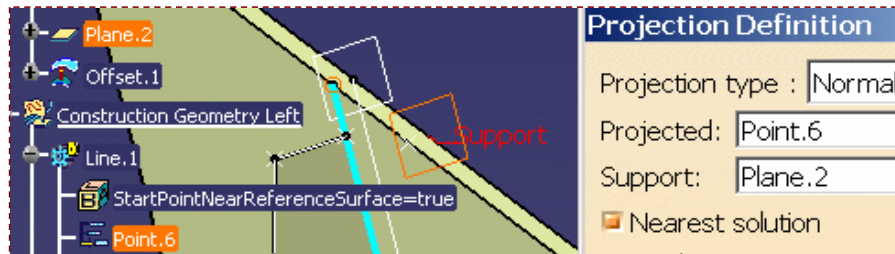
## Do It Yourself (14/20)

- Use the Fill command  to create a surface for the chock

Fill Surface Definition	
Boundary:	
N°	Curves
1	Line.1
2	Line.3
3	Line.6
4	Line.4
5	Line.2
6	Line.5

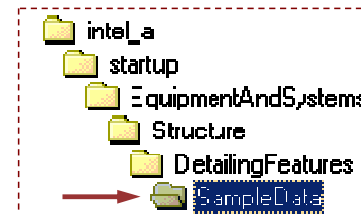


- Project Start of Line.1 onto Plane.2



- Instantiate OrientedSurface.CATPart from ...\intel\_a\startup\EquipmentAndSystems\Structure\DetailingFeatures\UtilityUDFs. Rename as Surface.1

Inputs	Selected
SurfaceToOrientate	Fill.1
ReferencePoint	Project.1

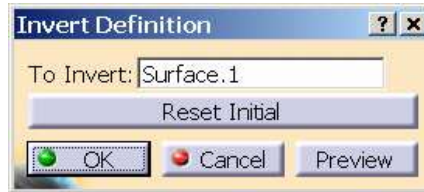
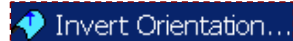


- Hide the Fill.1

Student Notes:

# Do It Yourself (15/20)

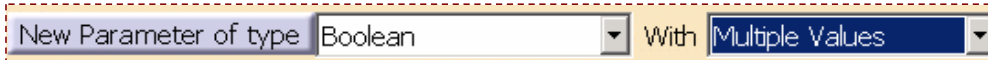
Insert \ Operations



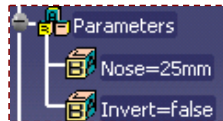
Activate the Root



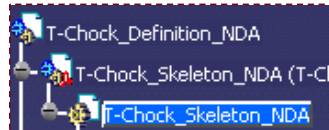
Create a



Name it Invert



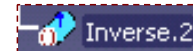
Reactivate the Part



Associate the



to



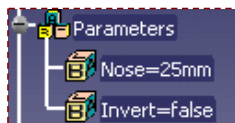
Insert geometrical set



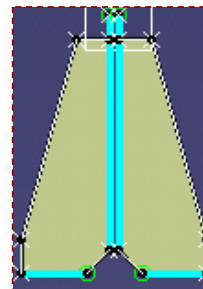
Repeat steps of creation of Construction Geometry Left to create the



Note: The



need not be created again



Save the product



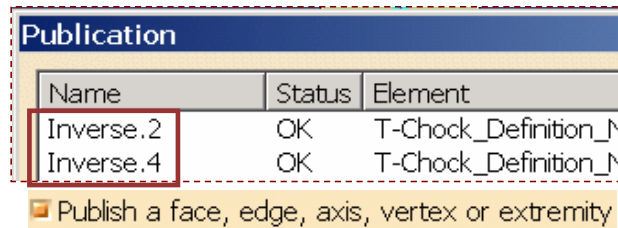
## Do It Yourself (16/20)

- Introduce a Parameter named as **Plate\_Thickness** of Type Length to define Chock Thickness



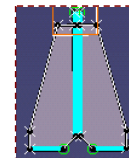
- Go to Tools \ Publication...

- Select the Inverse.2 Inverse.4

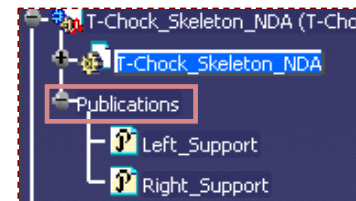
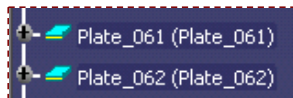


- Rename them

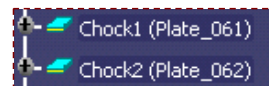
Name	Status	Element
Left_Support	OK	T-Chock
Right_Support	OK	T-Chock



- Activate T-Chock\_Definition\_NDA
- Switch to SR1 workbench
- Create Chocks (Plates ) using Type:  option and



- Rename the plates



Student Notes:

## Do It Yourself (17/20)

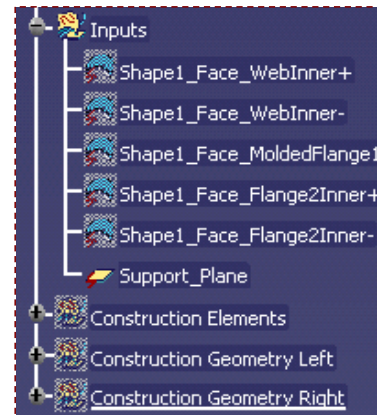
- Associate both the Chock Thickness to the Plate\_Thickness Parameter



PartBody\ThickSurface.1\str TopOffset  
 \External Parameters\Plate\_Thickness \



- Hide construction geometry



- Save the model



If needed, open T-Chock\_Definition\_Construction\_Elements\_Creation.CATProduct

## Do It Yourself (18/20)

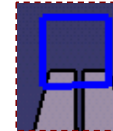
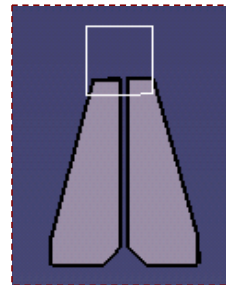
If needed refer Step4-Chocks\_Creation.avi from downloaded files.

- Make graphic changes as necessary

- Ensure T-Chock\_Definition\_NDA is activated

- Insert  Document Template Creation...

- Add Inputs



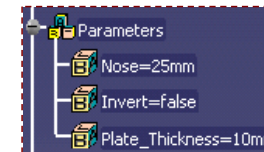
Name	Path
Shape1_Face_WebInner+	T-Chock_Skeleton_NDA\Inputs\Shape1_Face_WebInner+
Shape1_Face_WebInner-	T-Chock_Skeleton_NDA\Inputs\Shape1_Face_WebInner-
Shape1_Face_MoldedFlange1	T-Chock_Skeleton_NDA\Inputs\Shape1_Face_MoldedFlange1
Shape1_Face_Flange2Inner+	T-Chock_Skeleton_NDA\Inputs\Shape1_Face_Flange2Inner+
Shape1_Face_Flange2Inner-	T-Chock_Skeleton_NDA\Inputs\Shape1_Face_Flange2Inner-
Support_Plane	T-Chock_Skeleton_NDA\Inputs\Support_Plane

## Do It Yourself (19/20)

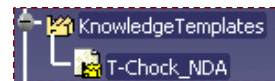
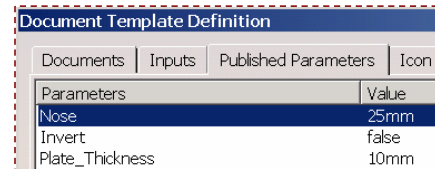
If needed refer Step5-Template\_Creation.avi and Step6-Template\_Instantiation.avi from downloaded files.


In the **Published Parameters** Tab, do an **Edit List...** then select Parameters

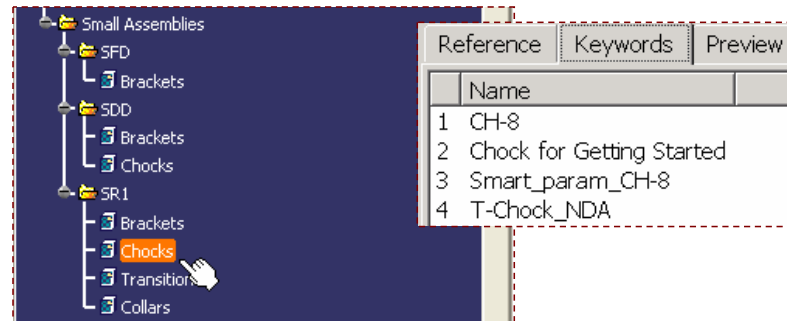
Add the created Parameters



- Click OK to create the  **Document Template.1**
- Rename the Document Template as necessary
- Save T-Chock\_Definition\_NDA.CATProduct
- Open StructureDetailingFeatures.catalog available in  
...\\intel\_a\\startup\\EquipmentAndSystems\\Structure\\DetailingFeatures



- Select the appropriate family
- Associate using  **Select external feature**
- Save the Catalog



If needed, open T-Chock\_Context\_Chocks\_Creation.CATProduct

## Do It Yourself (20/20)

- After instantiating the chocks, if parameters need to be changed repeatedly and no change in graphics are noted, activate the different levels of the chock definition and update.

