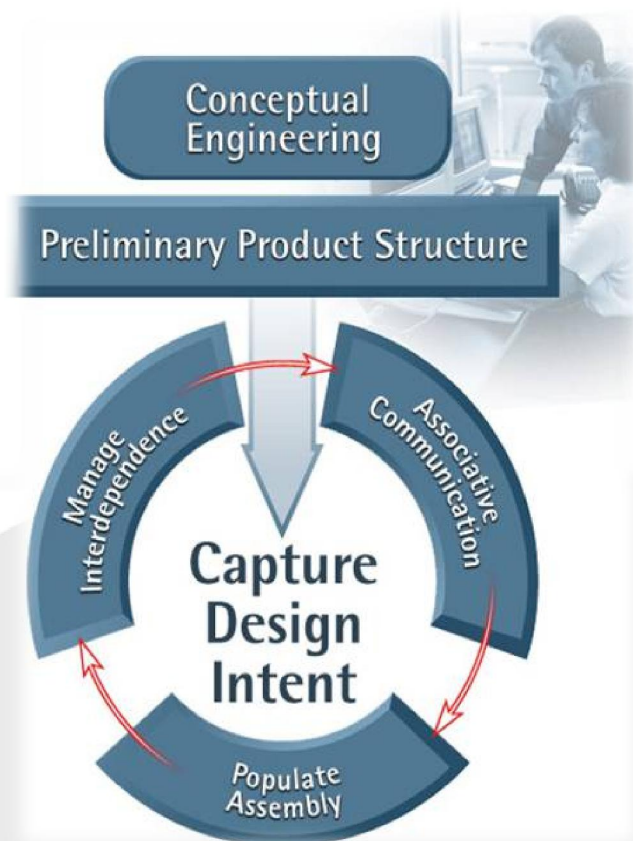
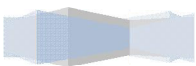


# TOP DOWN DESIGN

«

»

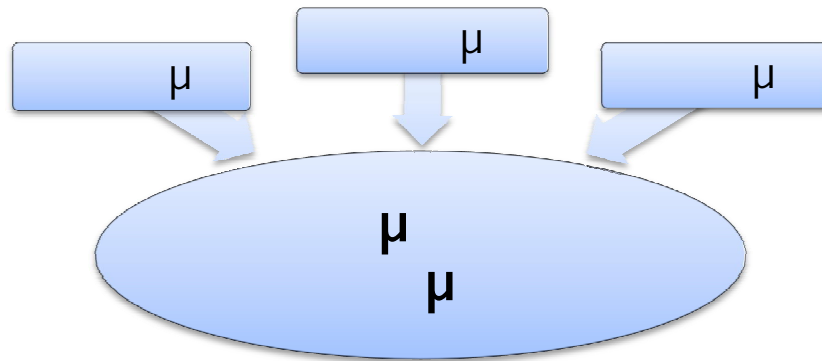




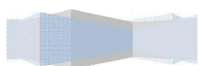
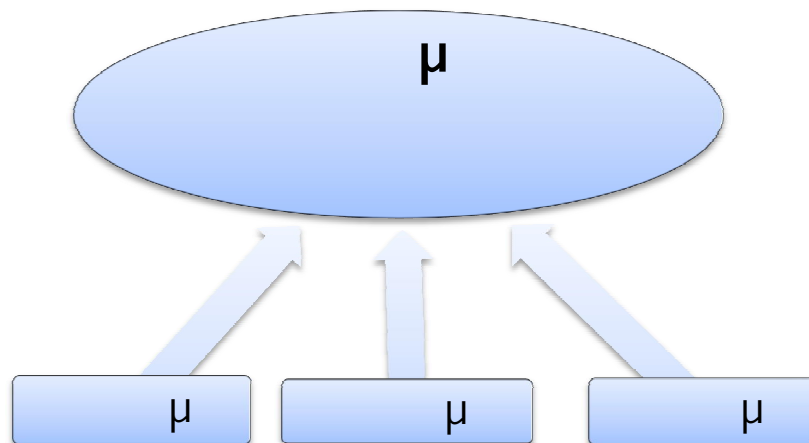


$\mu$  ( )  $\mu$   $\mu$  :  
 (Bottom-Up), (Top-Down),  
 $\mu$  (Middle-Out).

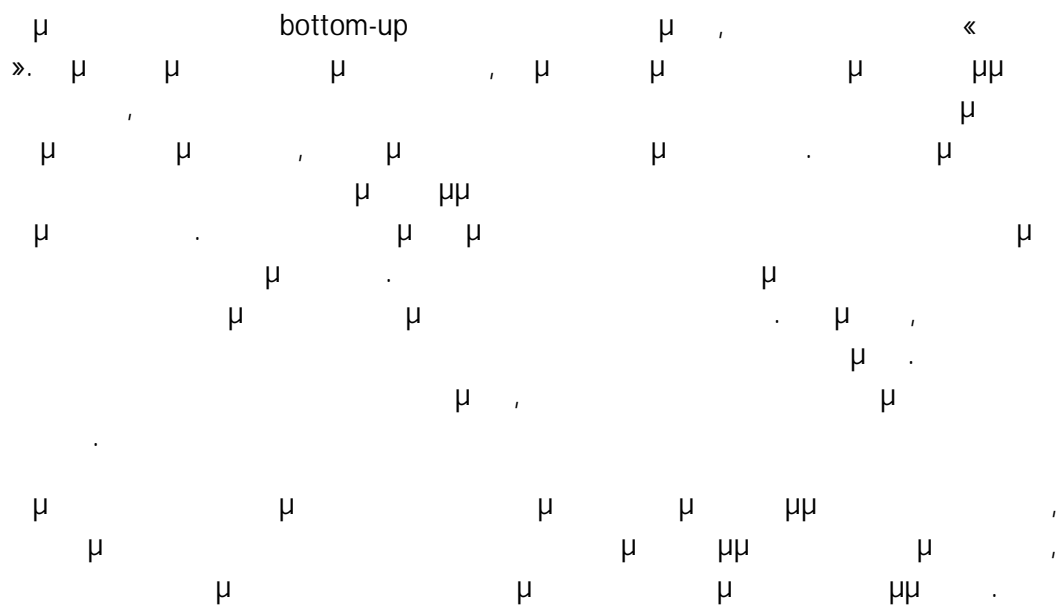
*(Bottom-Up)*



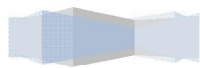
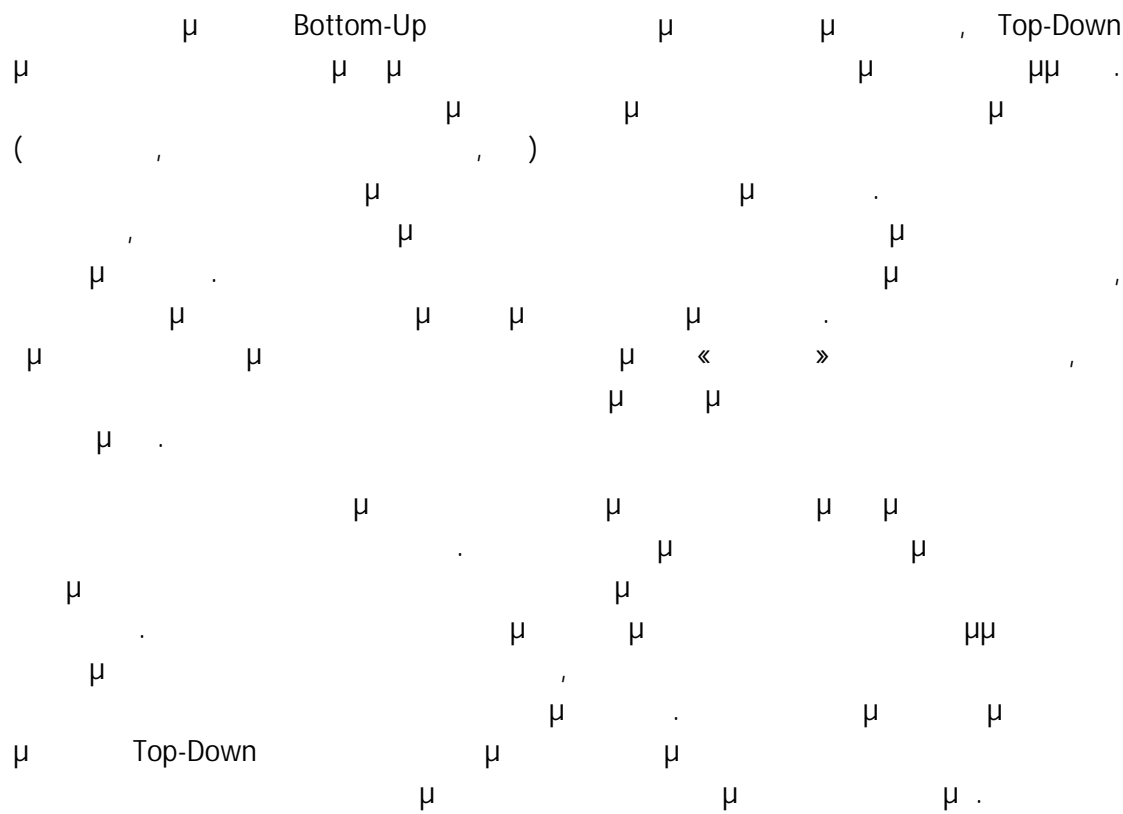
*Top-Down*

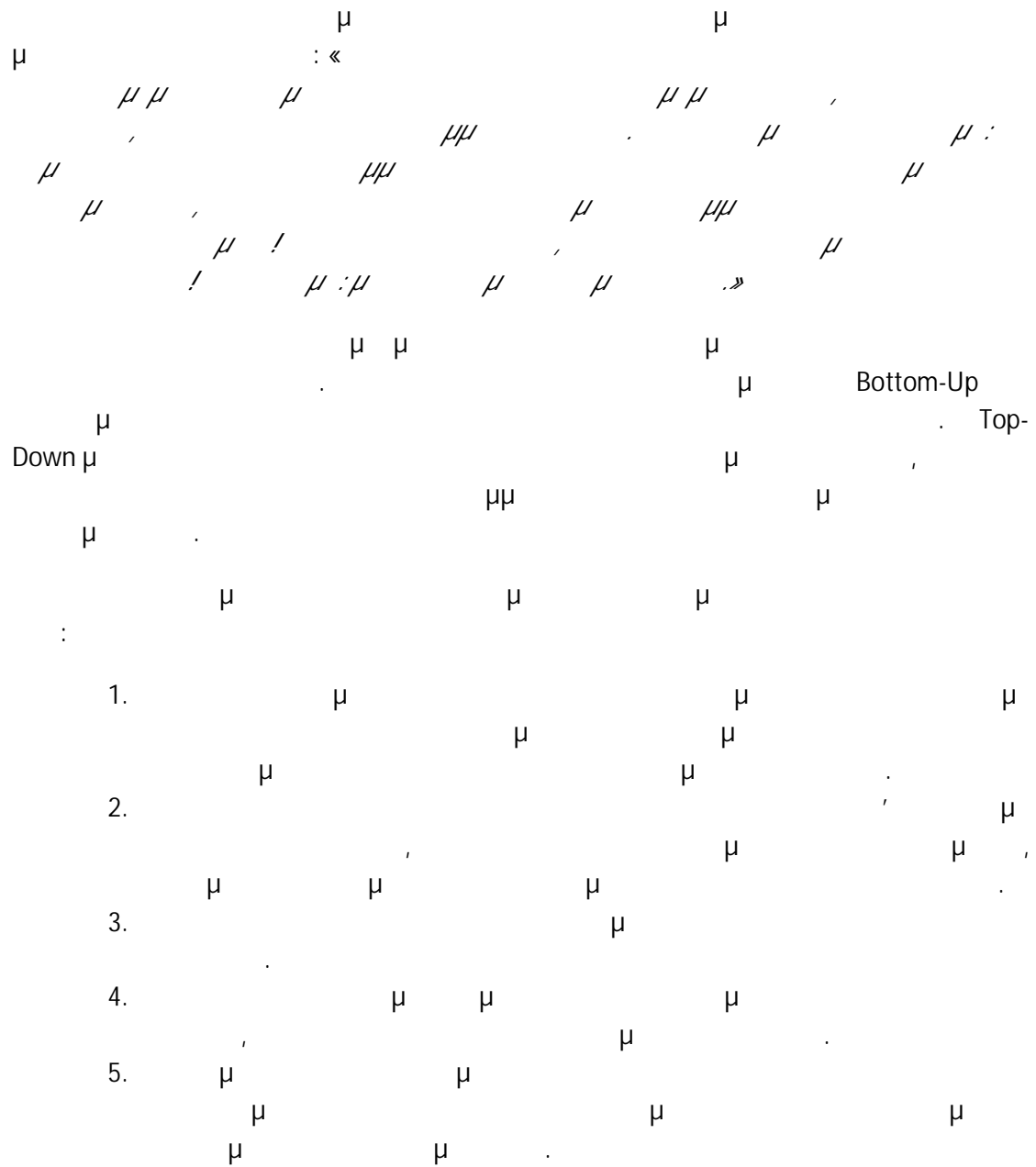


1.1 BOTTOM-UP



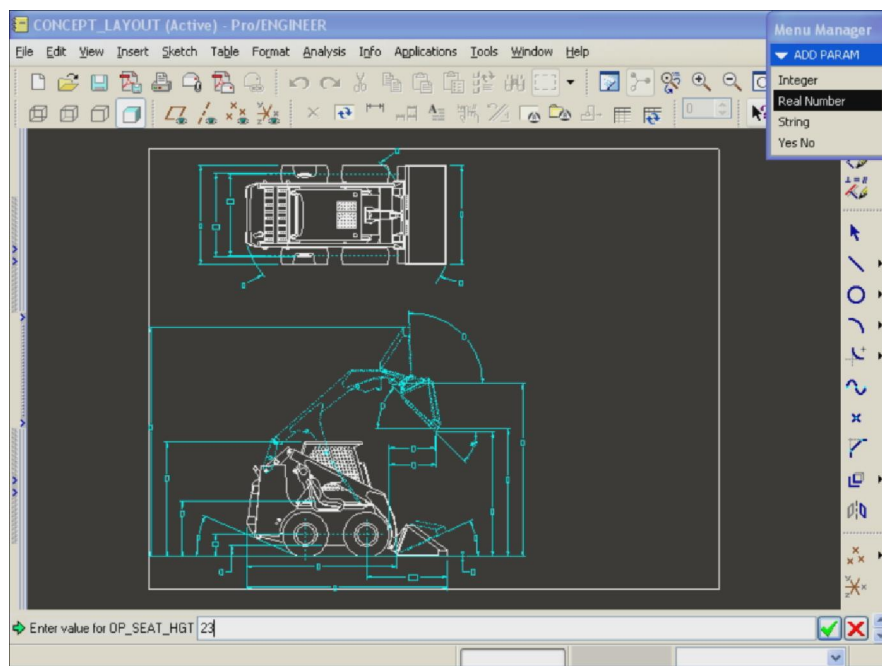
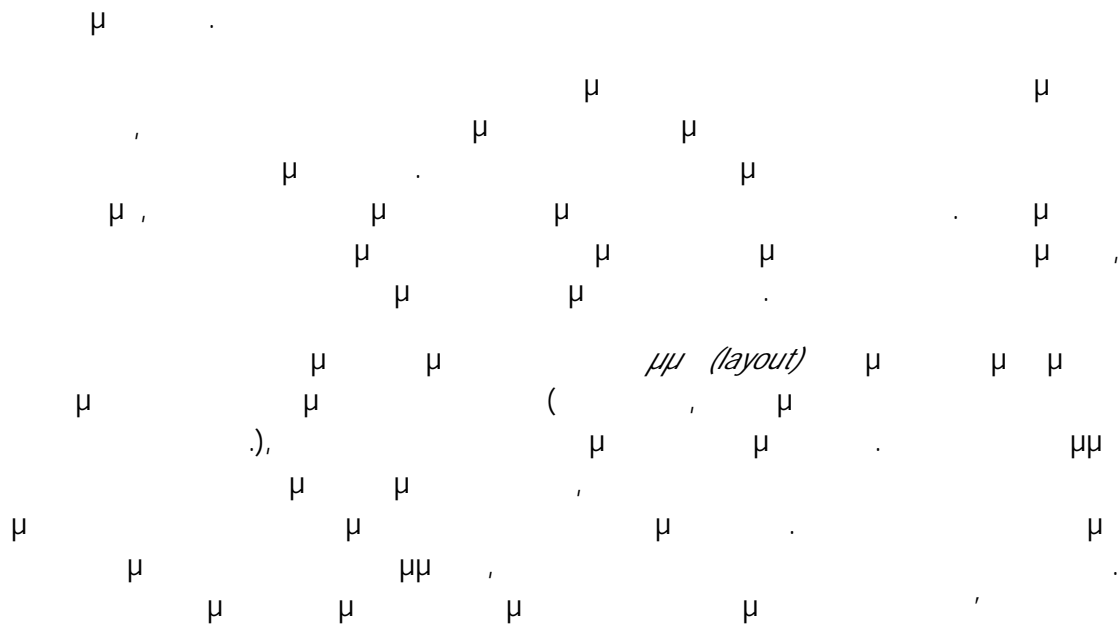
1.2 TOP-DOWN



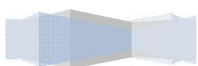


# TOP-DOWN

## Top-Down Design



1:             $\mu$              $\mu\mu$             *ProEngineer (Layout)*

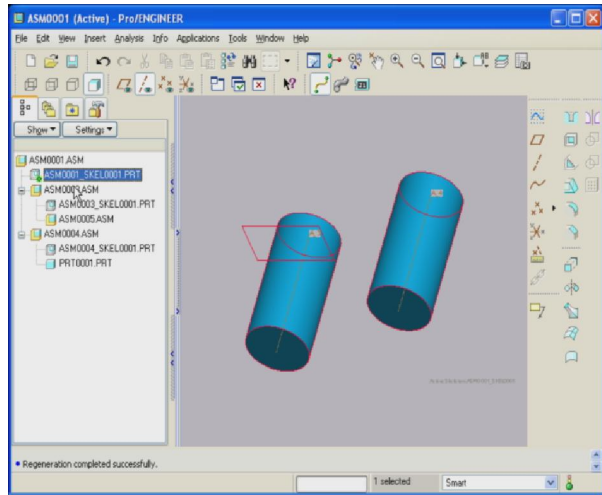


(Skeleton Models)

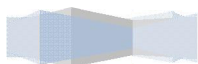


3:

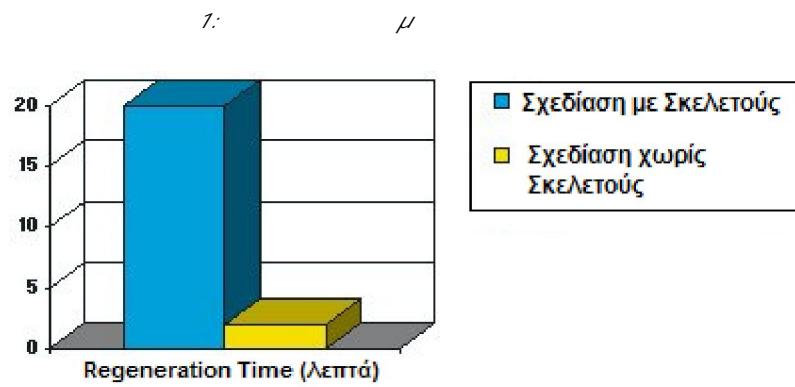
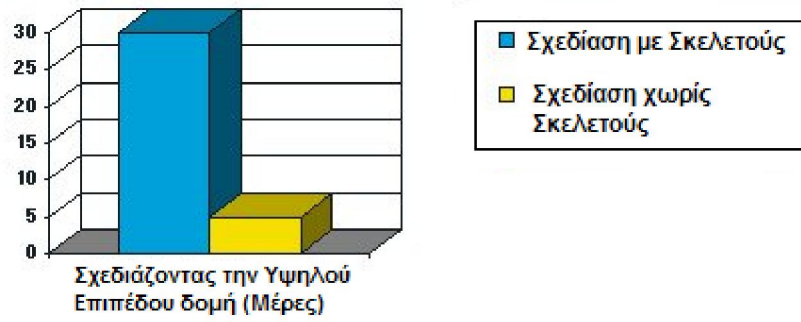
!!!



4:







**Top-Down Design :**

1. **Define the problem** (layout).
2. **Analyze the problem**.
3. **Develop a solution**.
4. **Implement the solution**.
5. **Test the solution**.
6. **Evaluate the solution**.

TOP-



# PRO ENGINEER WILDFIRE 2.0

[illegible]

(FEATURES)

- Csys Coordinate systems (  $\mu$   $\mu$  ).

CSYS

- Datums.

(Datum Planes)

SKETCHER

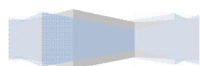
*Protrusion.*

---

(CHAMFER).

&  
(HOLES),

(ROUND)



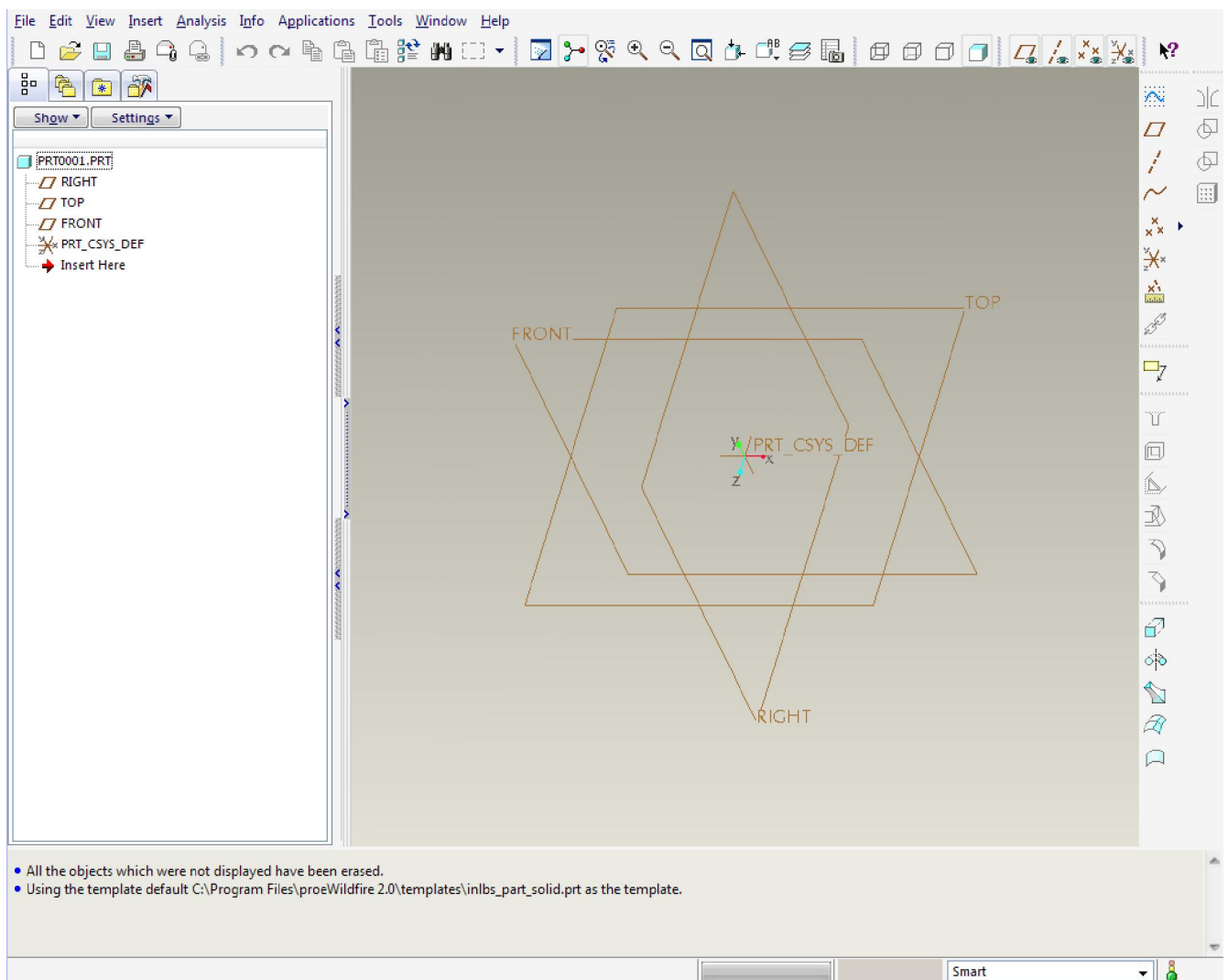
### 3.3

$\mu$

$\mu$  /  $\mu$  ProE  $\mu$

$\mu$   $\mu$   $\mu$   $\mu$   $\mu$   $\mu$  Chamfer  $\mu$  ProE

(CHILD)  $\mu$   $\mu$   $\mu$   $\mu$   $\mu$   $\mu$  - (PARENT-

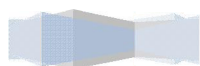


3.

Pro/E Wildfire 2.0

Smart

11



### 3.4.1

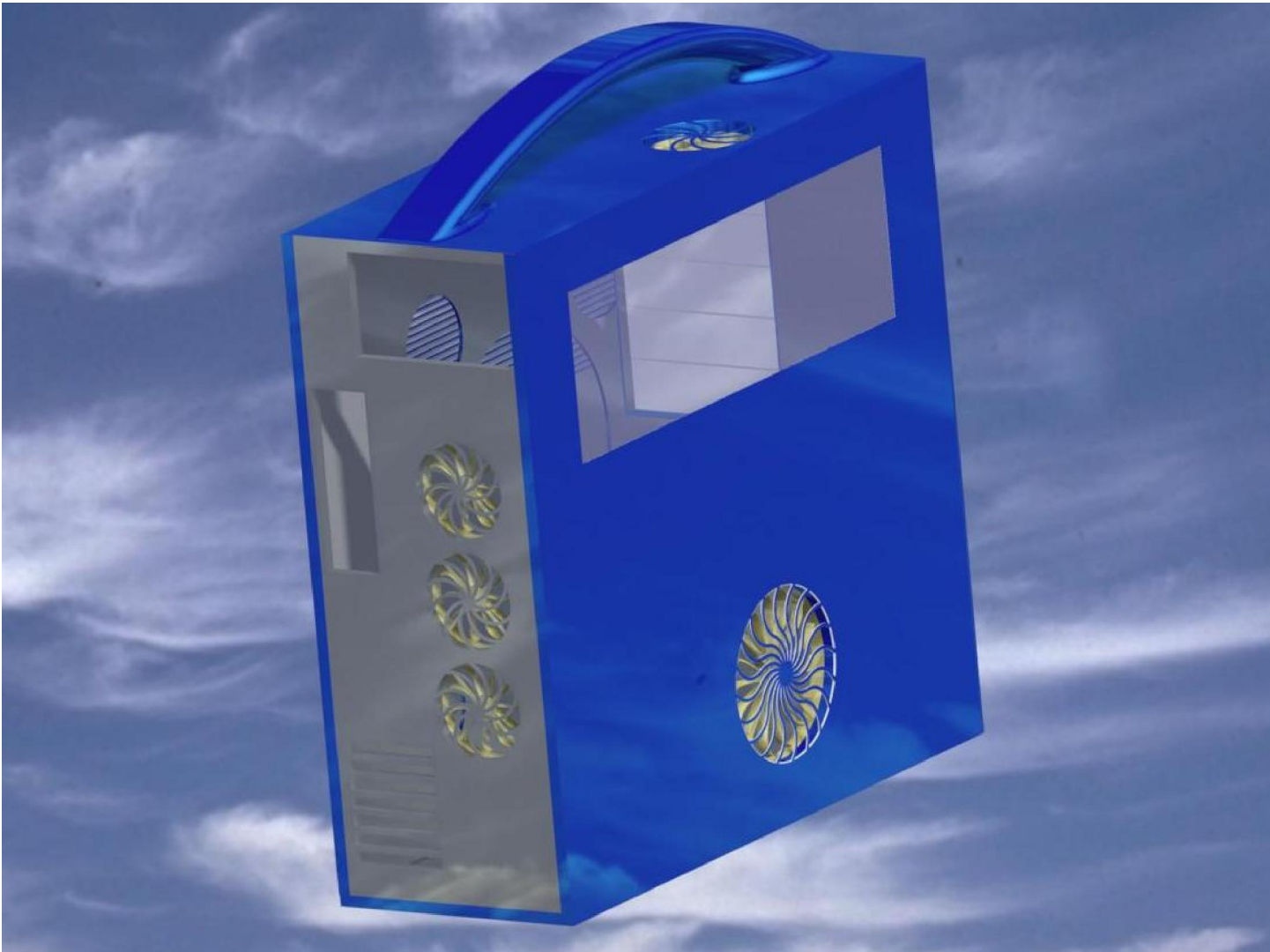
( μ μ μ μ )

Top-Down Design.



4: μ ( )





5:  $\mu$  ( - )

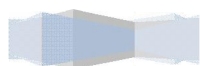




6: μ ( - )

### 3.4.2

(hardware) μ  
 μ PCI, AGP , USB μ , DVD drives,  
 μ hardware μ  
 drives, μ μ ( DVD  
 μ , μ .) μ  
 μ : Full  
 Tower, Midi Tower Mini Tower,







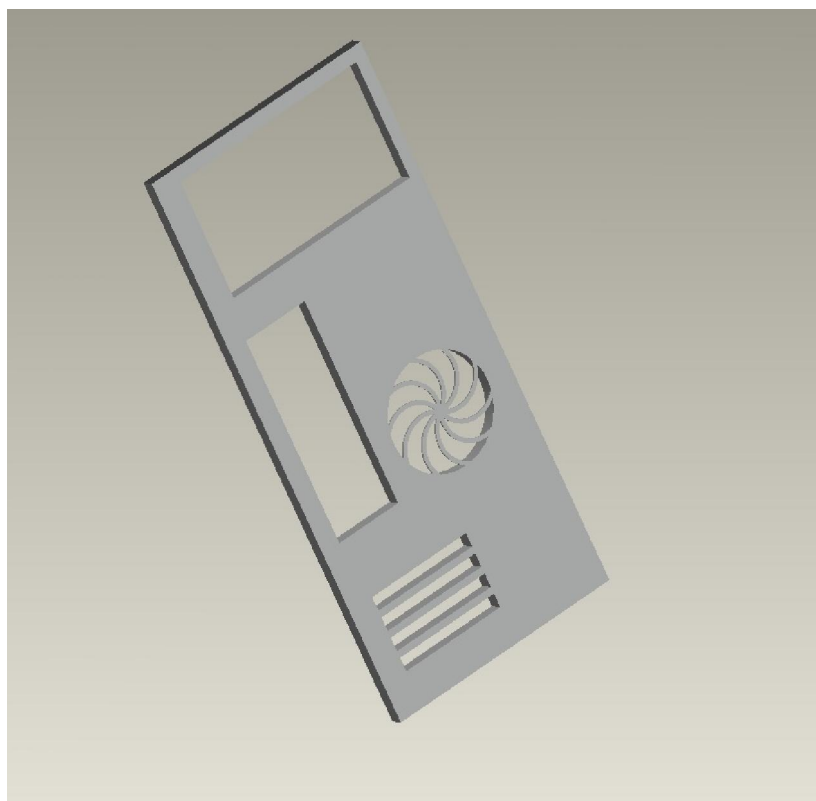
### 3.4.3

### TOP-DOWN DESIGN

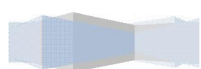
(Bottom-Up):

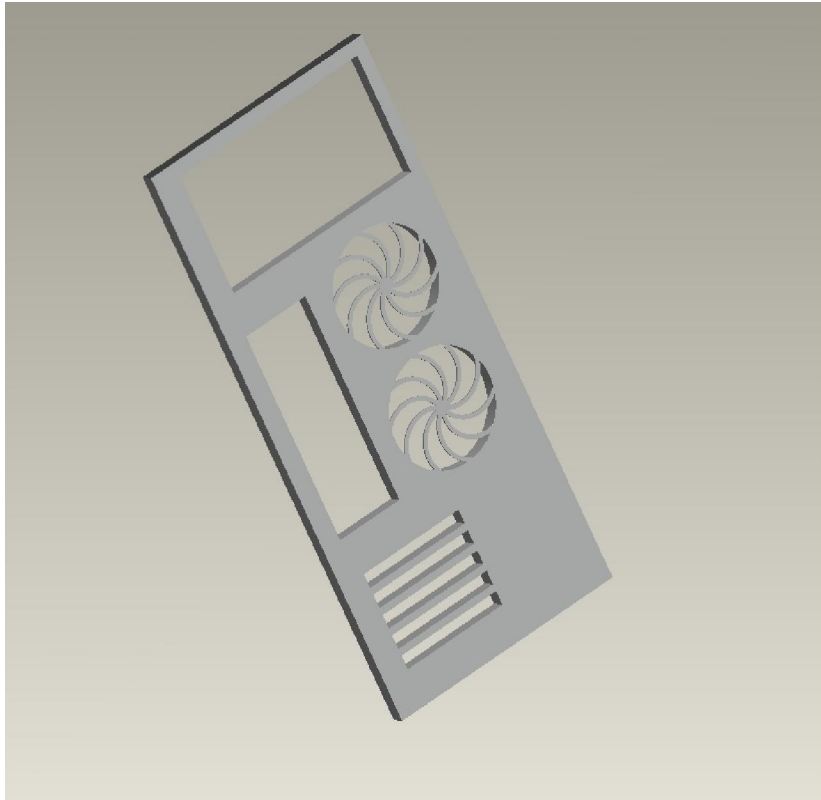
hardware,

Top-Down Design

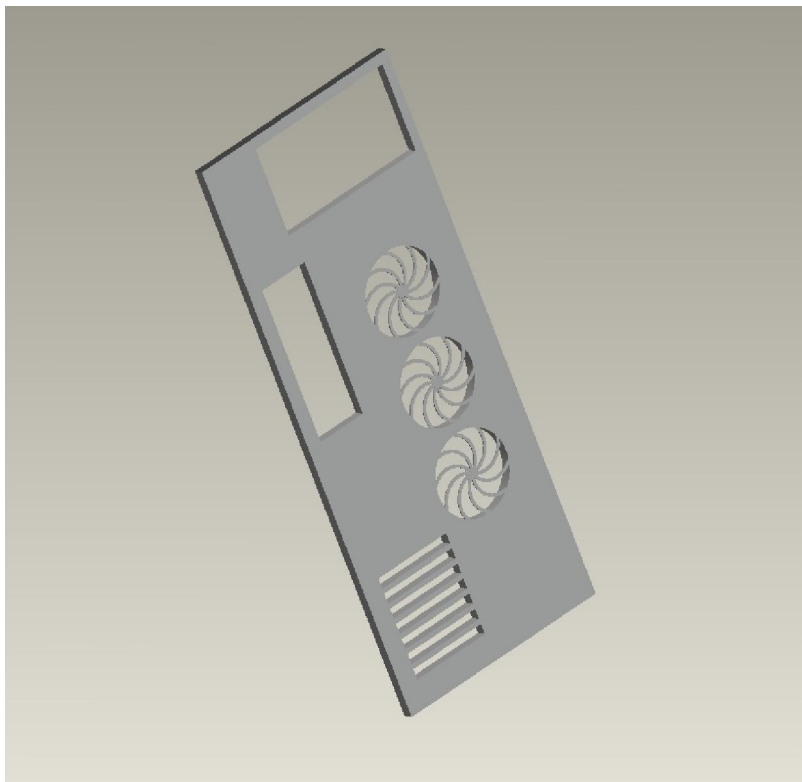


7: (Mini Tower)

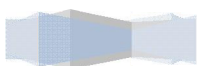




8: *(Midi Tower)*

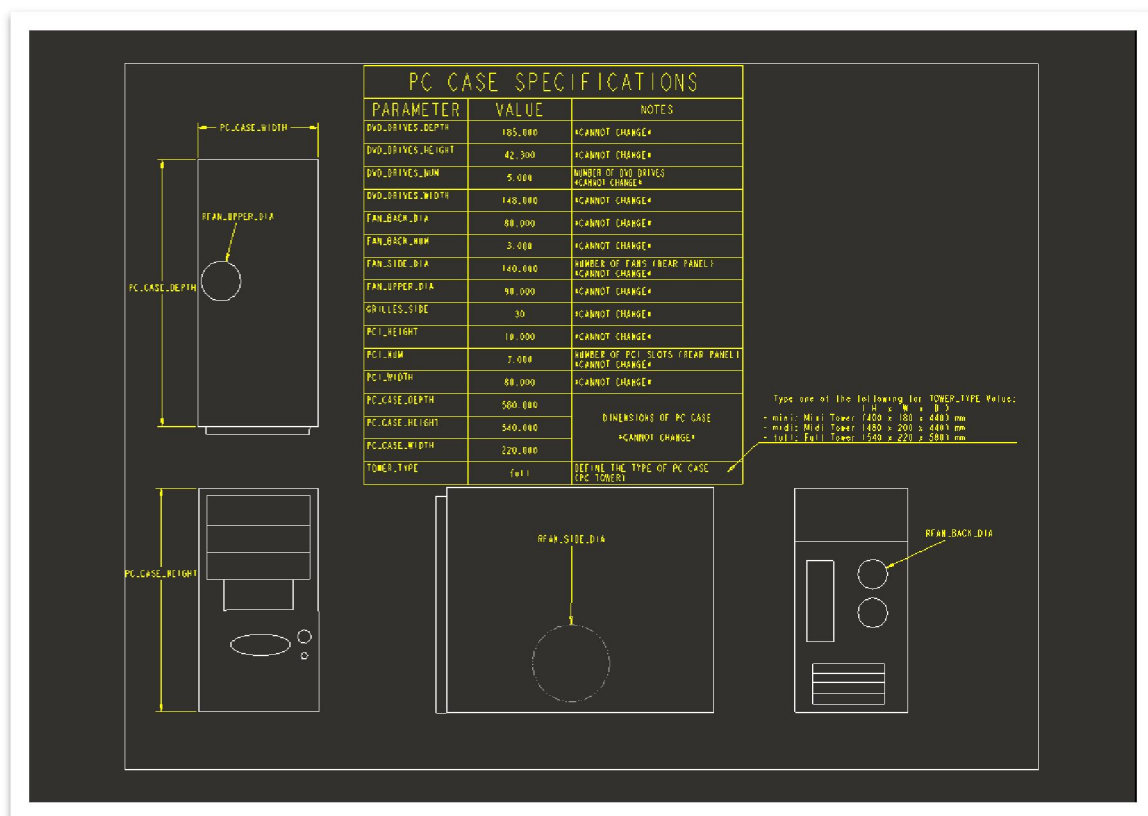


9: *(Full Tower)*



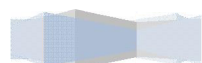
### 3.4.4

Down Design      Top-  
Pro/E layout,

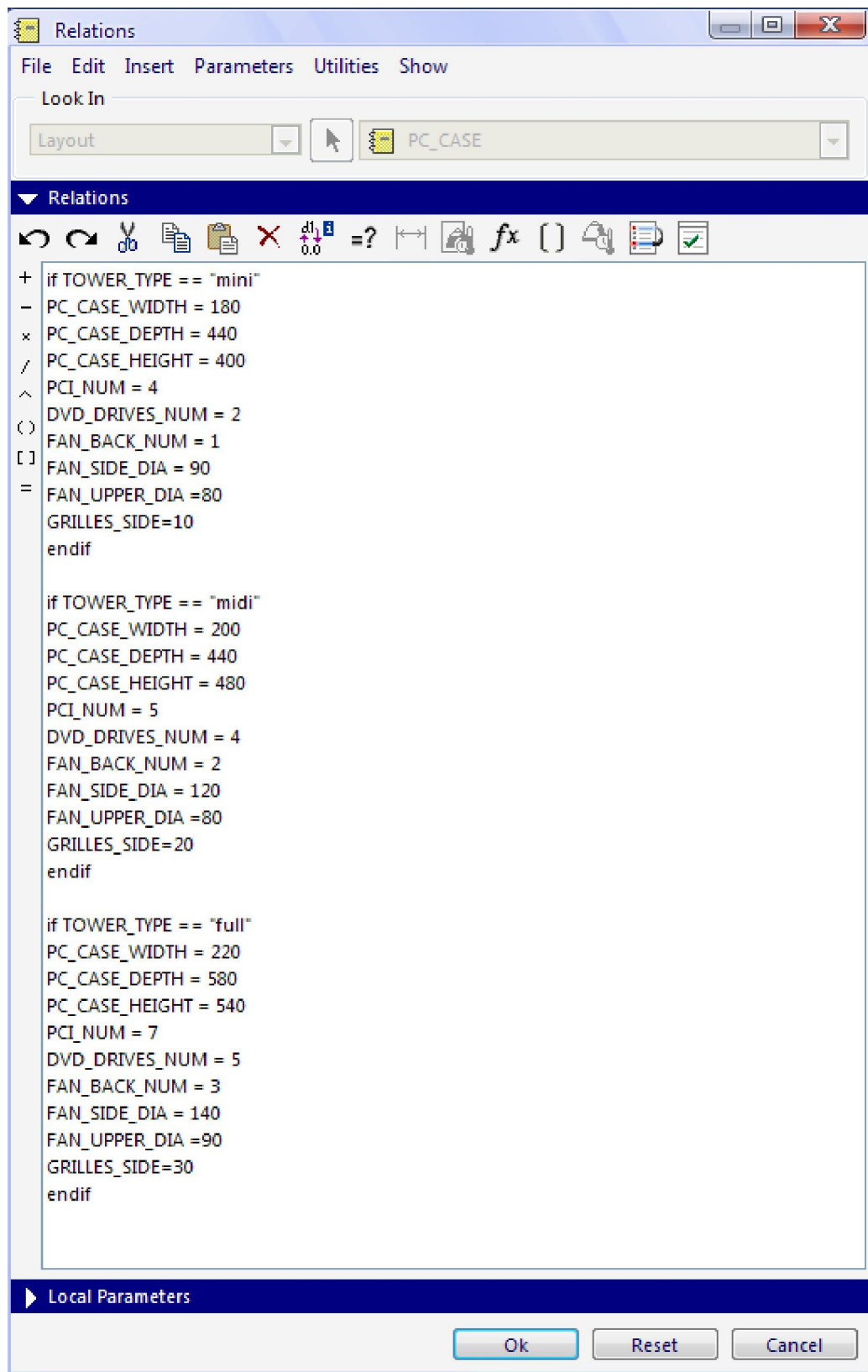


10:  $\mu\mu$  (Layout)

: Tools -> Parameters.  
layout







12:

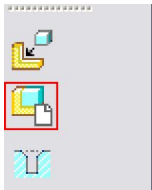
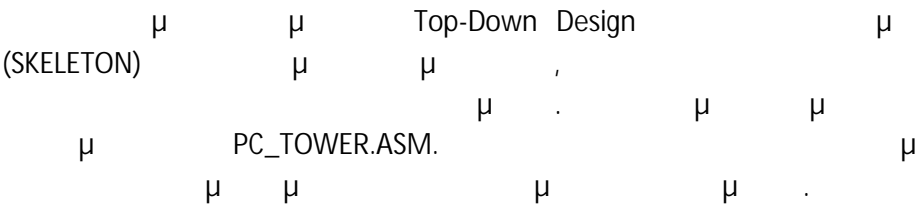
μ

μ

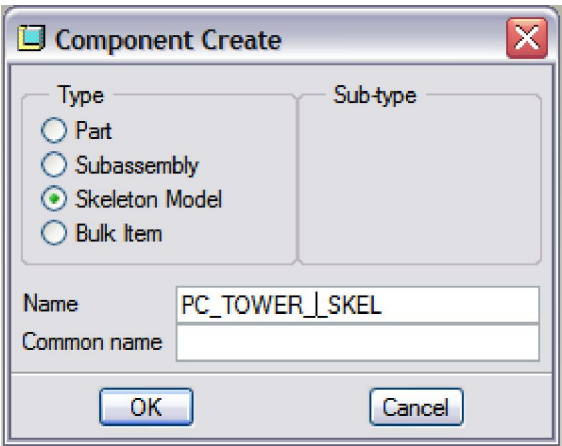
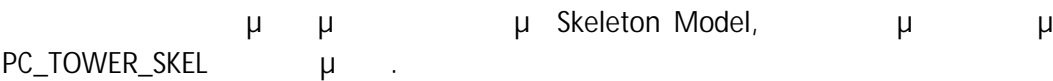
20



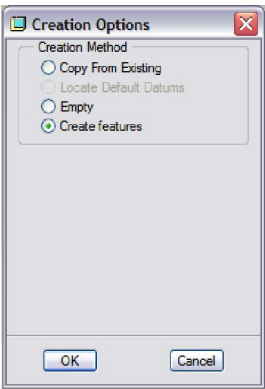
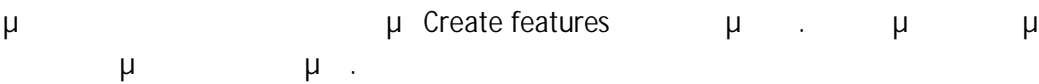
3.4.5



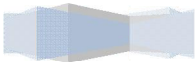
13: Subassembly



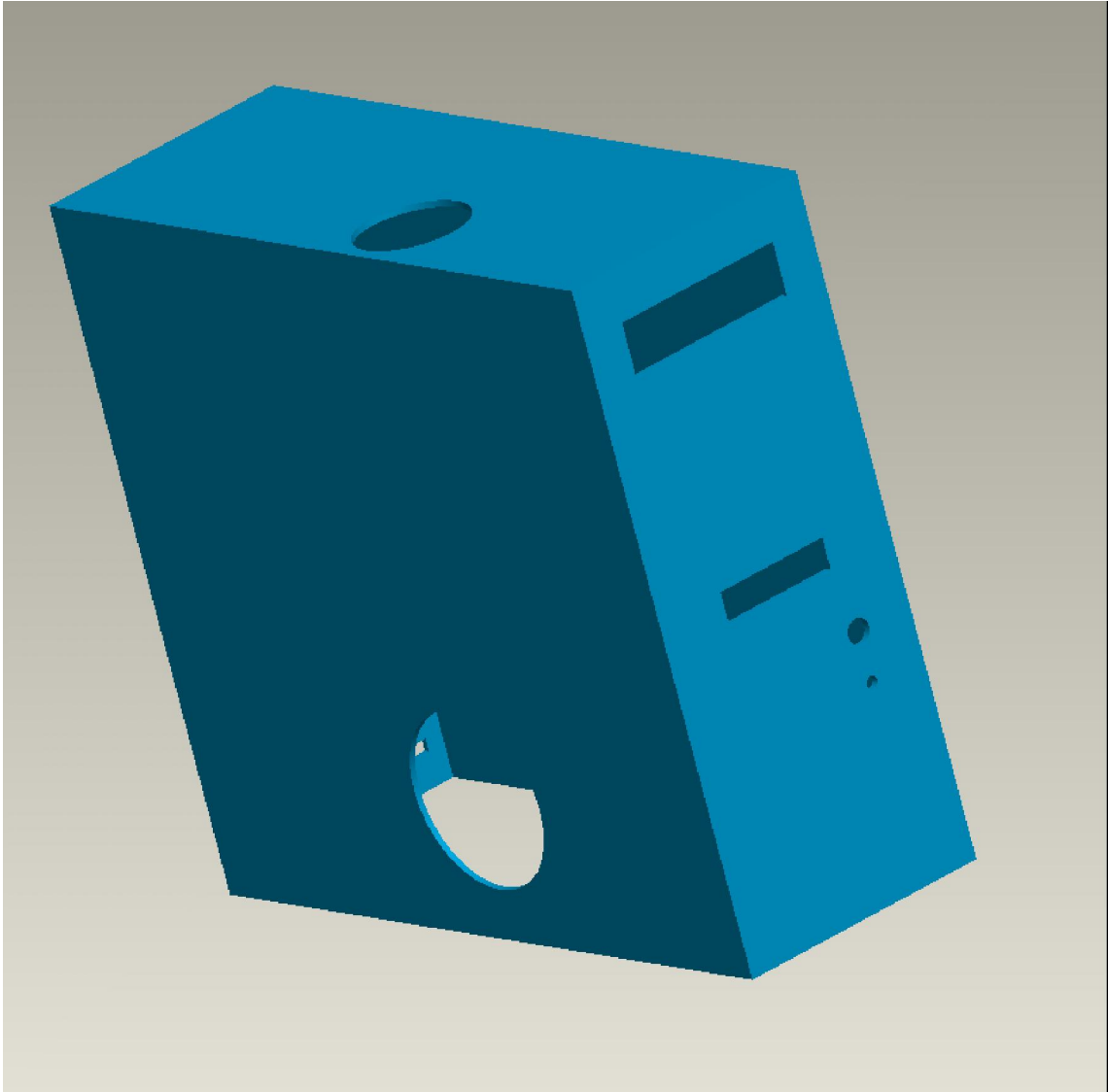
14: Component Create



15: Create Options

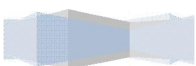


μ Extrude Shell  
μ .



16:

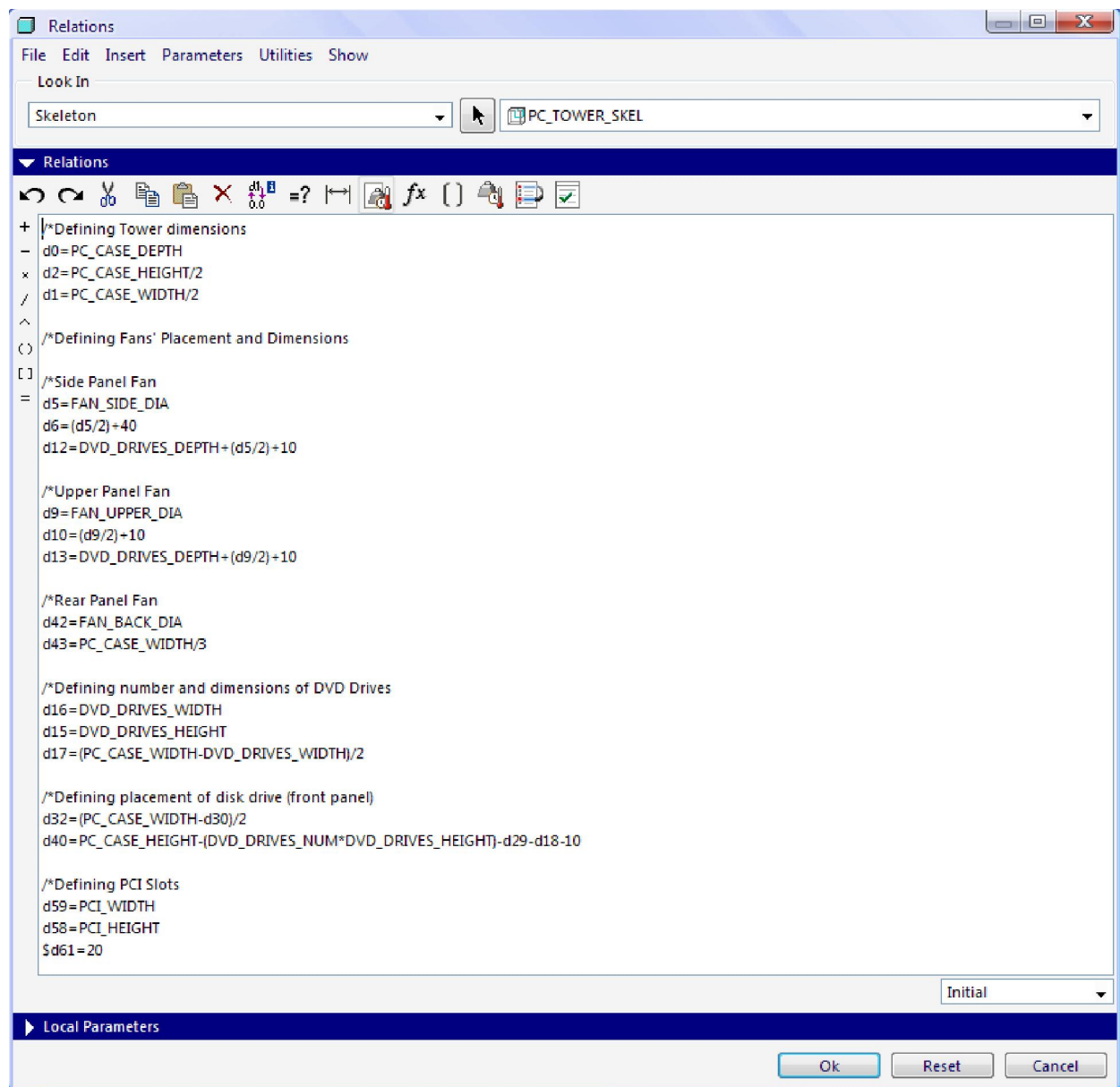
μ (μ )



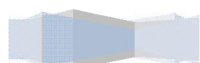




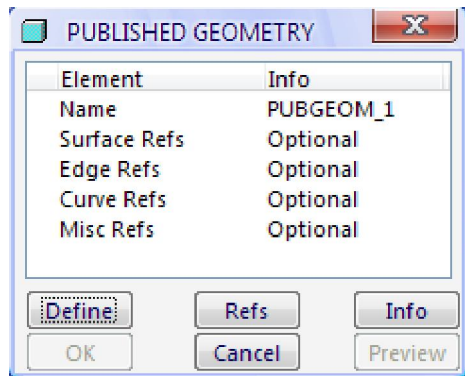
$\mu$  :



18:  $\mu$   $\mu$



INSERT -> SHARED DATA -> PUBLISH GEOMETRY.



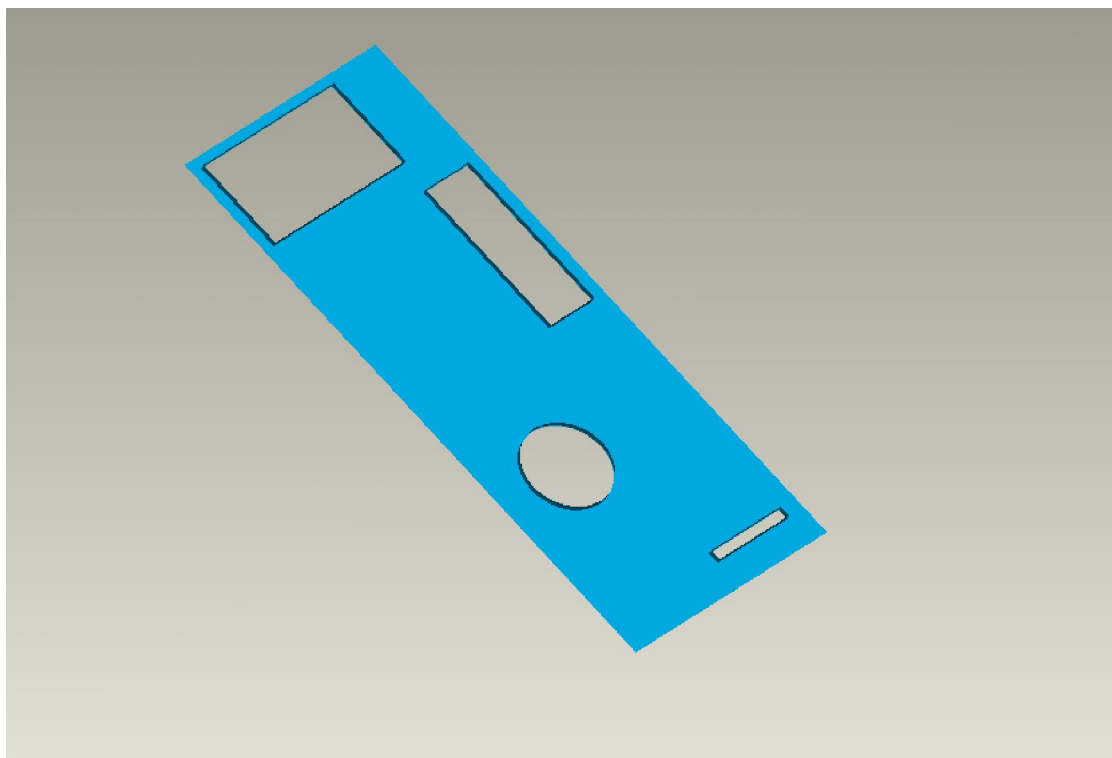
19:  $\mu$

*Publish Geometry*

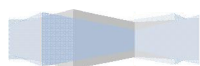
$\mu$  6

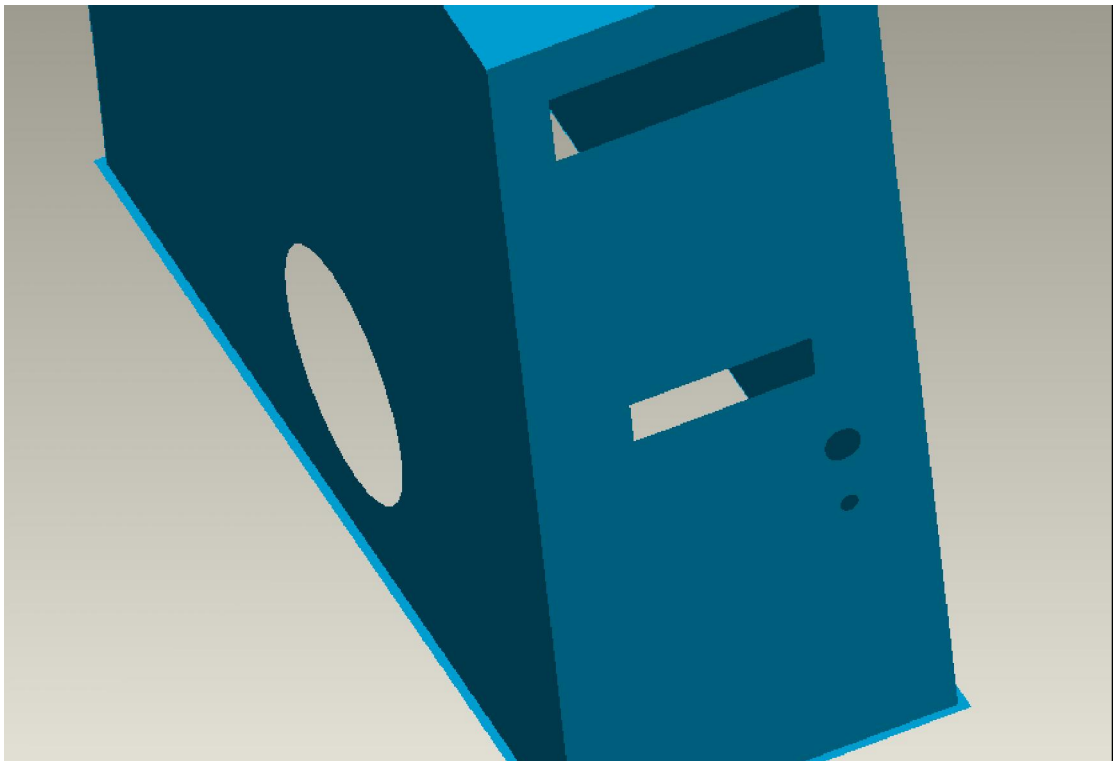
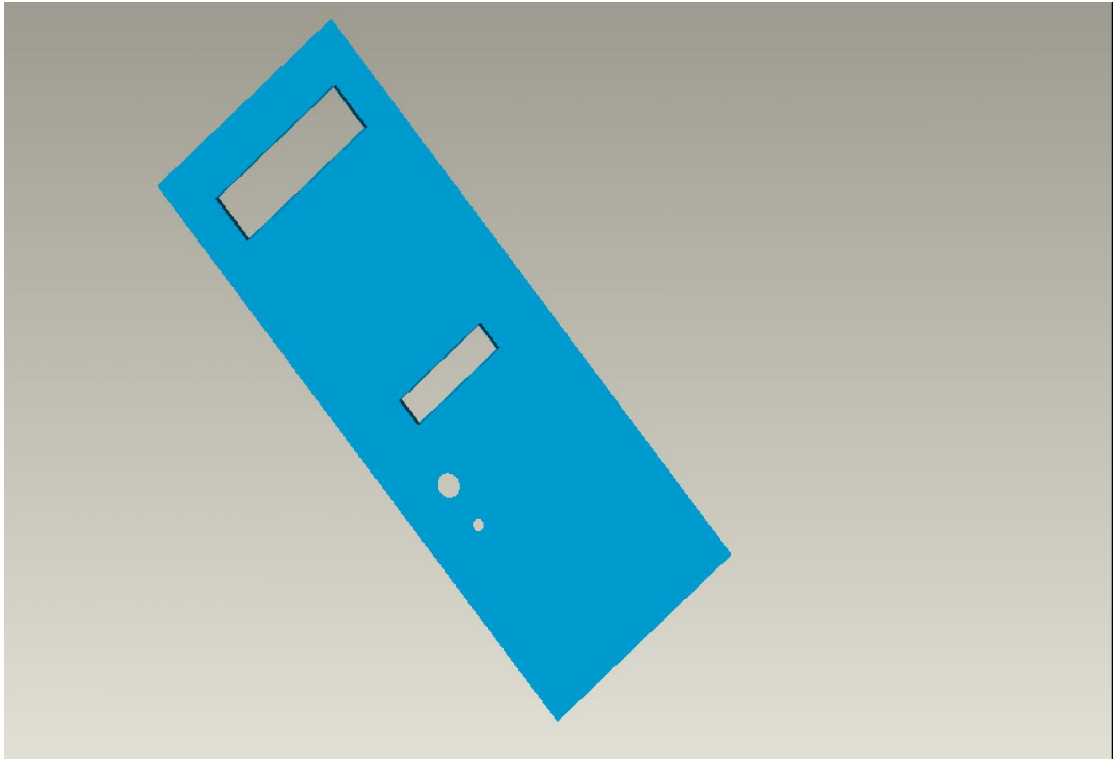
:

- REAR\_PANEL
- FRONT\_PANEL
- SIDE\_PANEL\_WITH\_FAN
- TOP\_PANEL
- BASE\_STRUCTURE
- SIDE\_PANEL



25





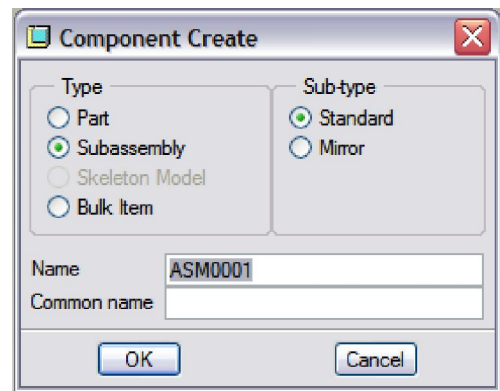
20:

$\mu$  Publish Geometry

26



- $\mu$  Subassembly  
Create Features

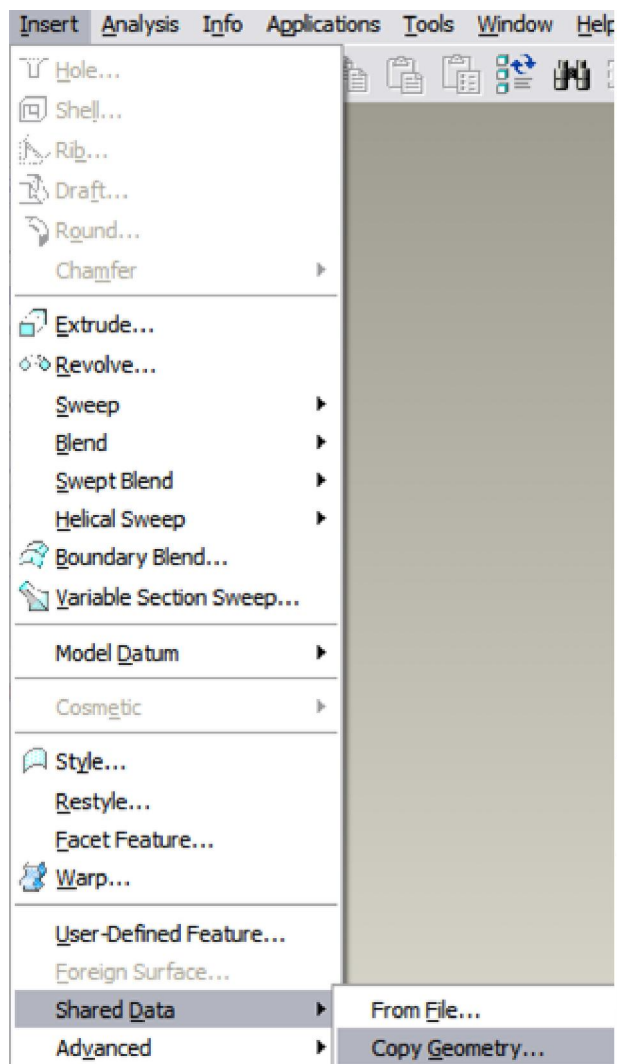
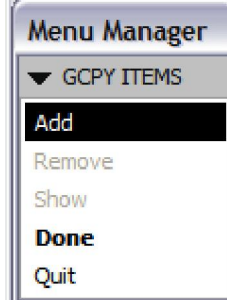
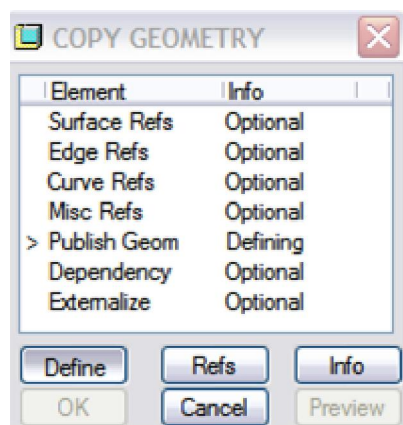


- $\mu$  Skeleton Model:  
 $\mu$   $\mu$  (Component Create)  
 $\mu$  Skeleton Model  
Create Features.

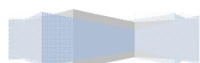
$\mu$  Insert  $\mu$   
Shared Data  $\mu$  Copy  
Geometry.

$\mu$   $\mu$  Publish  
Geom Add.

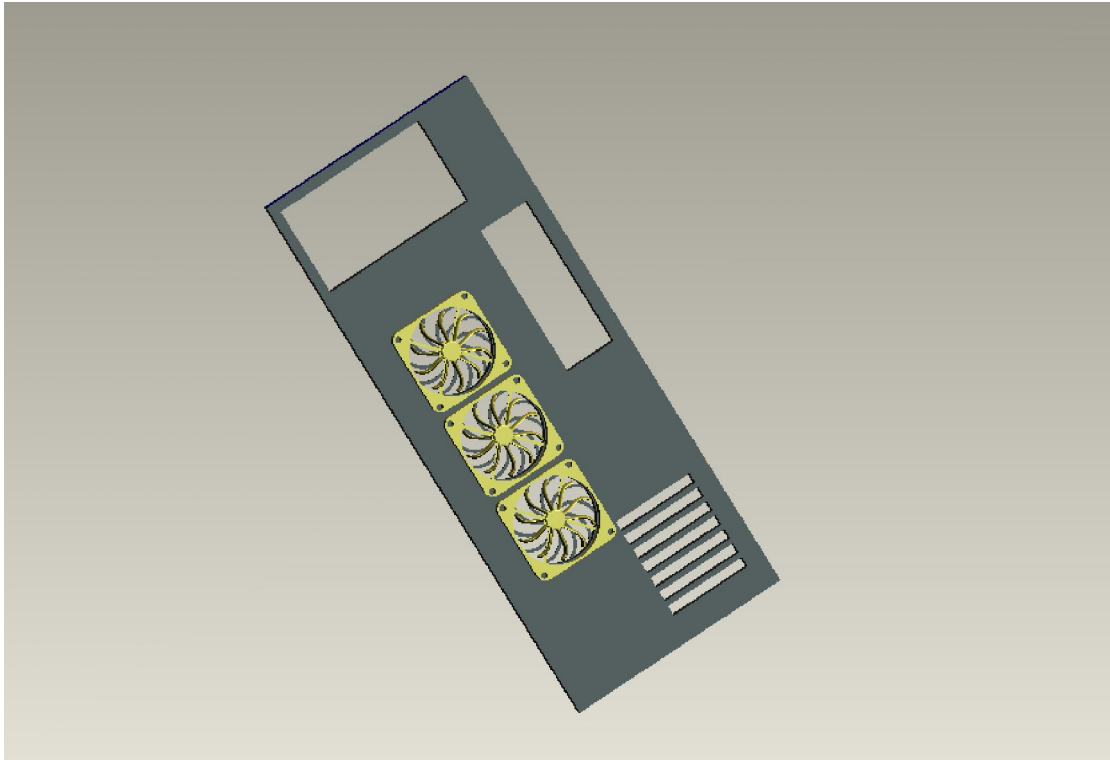
$\mu$   $\mu$   
 $\mu$   $\mu$



21: Publish Geometry  
Skeleton Models







22:

REAR\_PANEL.ASM

μ

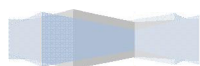
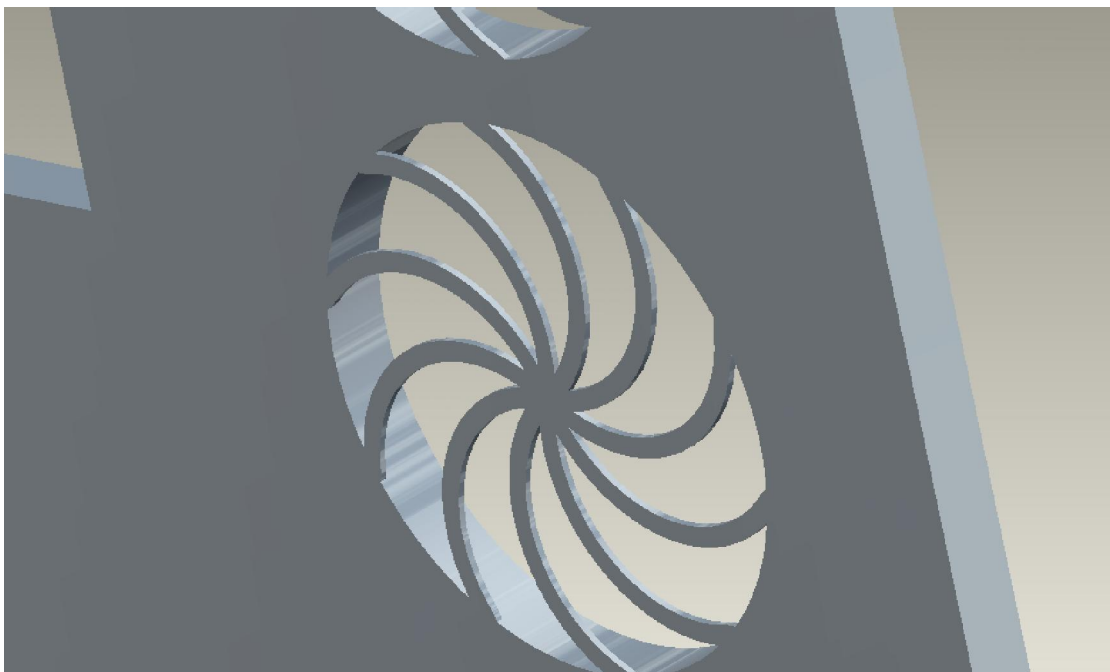
REAR\_PANEL.ASM

μ

:

- REAR\_PANEL.PRT
- FAN\_BACK.ASM

#### i. REAR\_PANEL.PRT

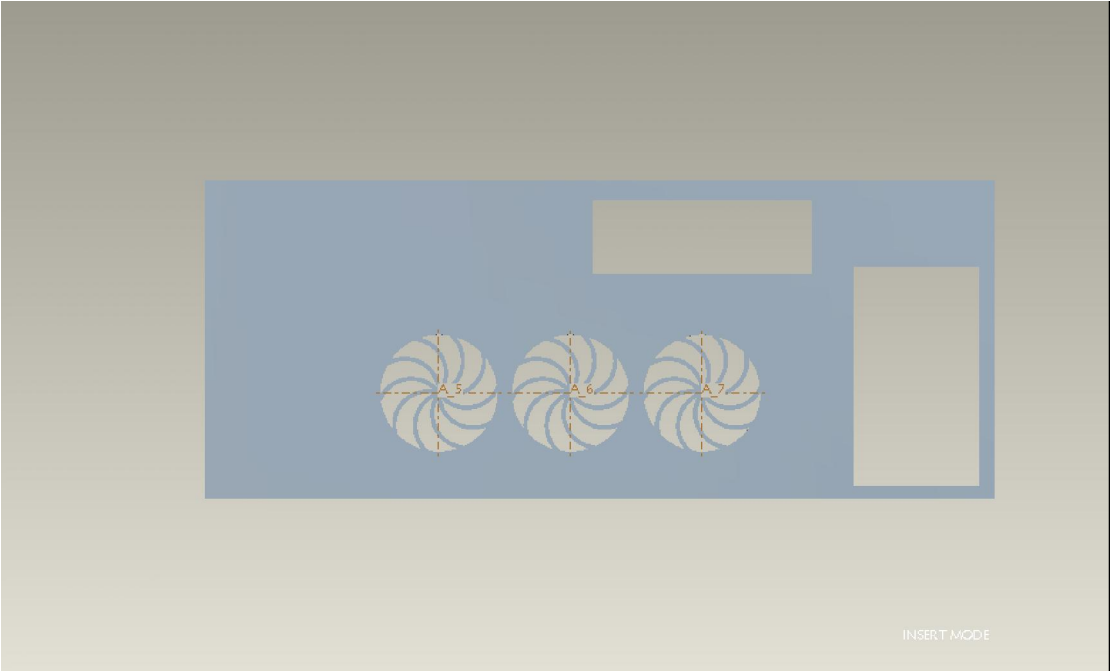




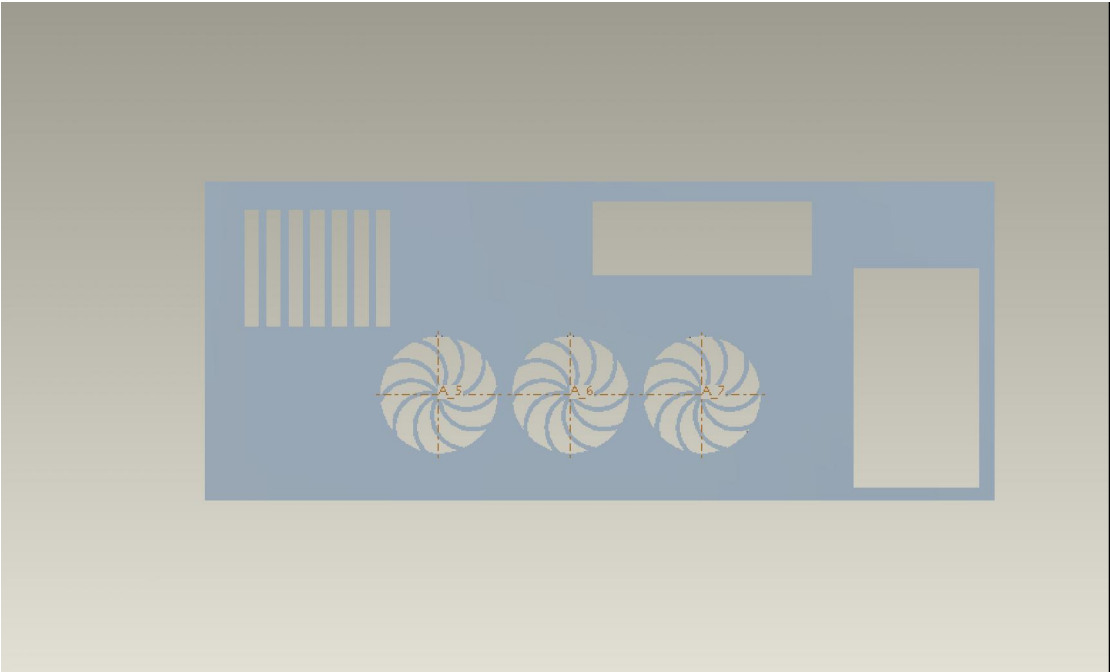


INSERT MODE

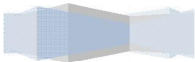




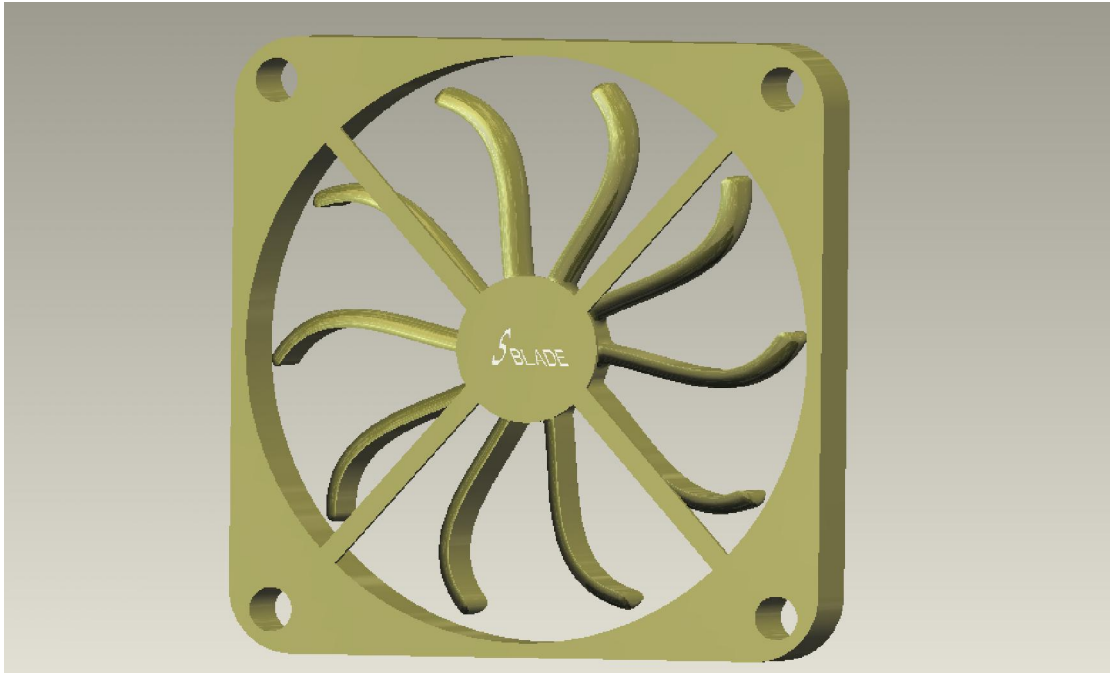
26:  $\mu$   $\mu$  REAR\_PANEL.



27:  $\mu$  REAR\_PANEL.

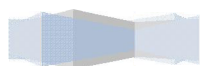



## ii. FAN\_BACK.ASM

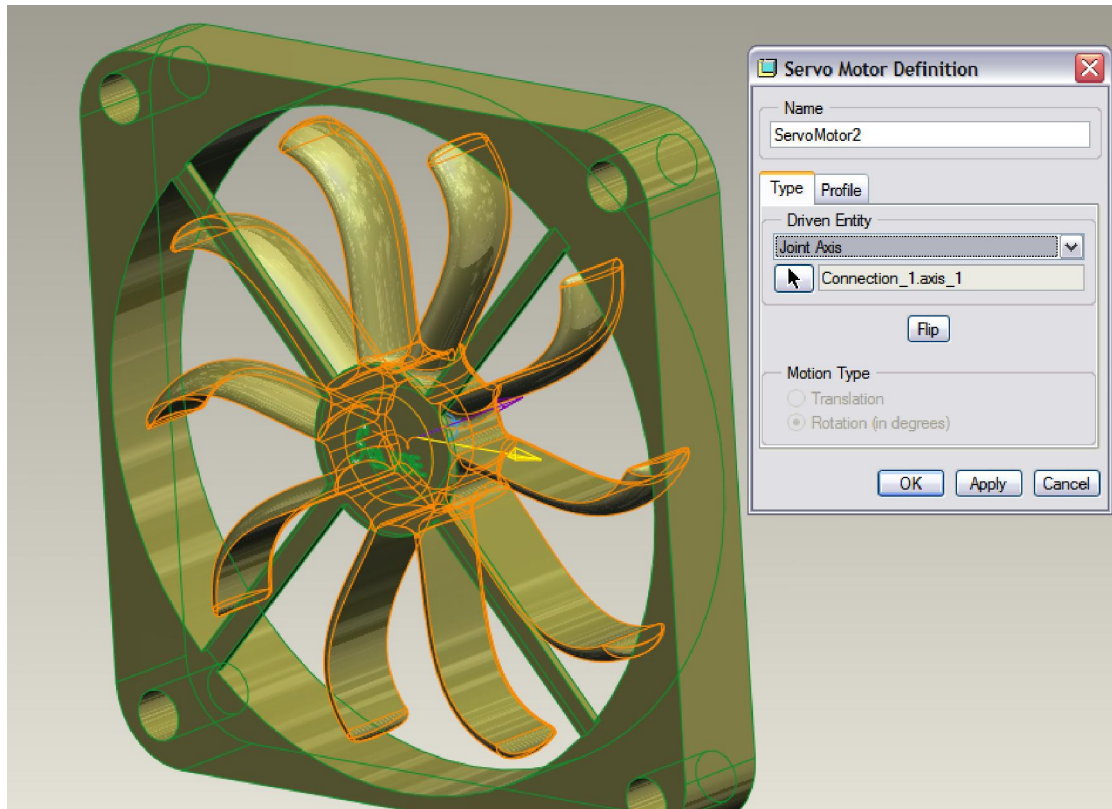


28:

FAN\_BACK.ASM.



- $\mu$   $\mu$  Connect -> Pin  $\mu$  .
- $\mu$   $\mu$  Applications -> Mechanism  $\mu$
- $\mu$  :   $\mu$  New  $\mu$  .

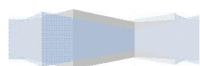


29.

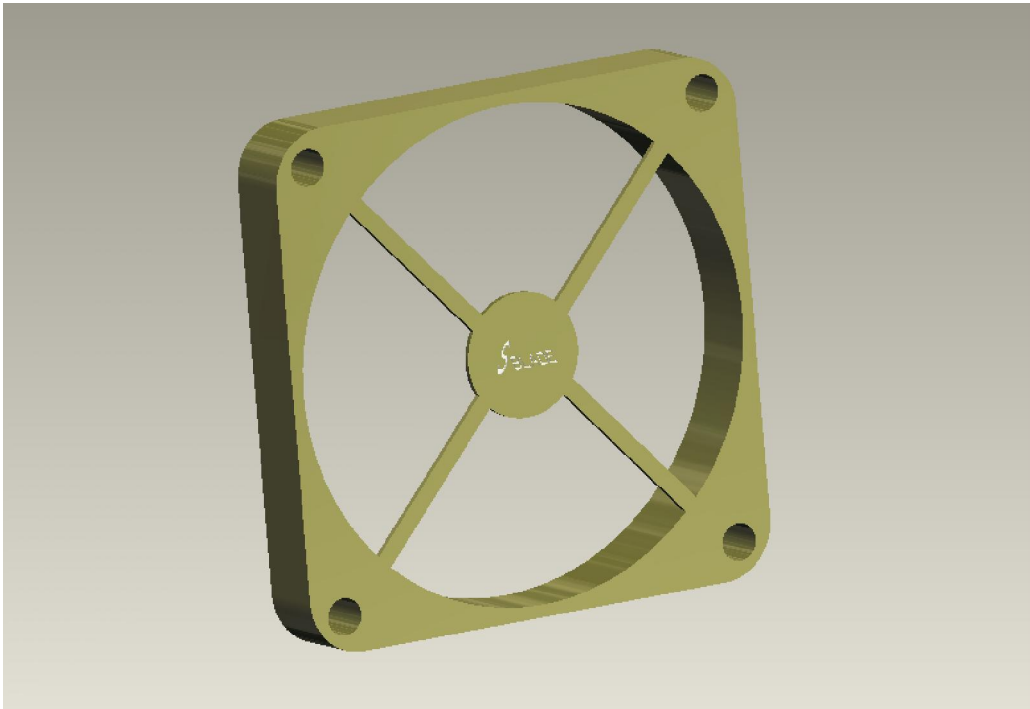
subassembly FAN\_BACK\_ASM

$\mu\mu$  :

- FAN\_BASE\_BACK.PRT
- FAN\_BLADE\_BACK.PRT

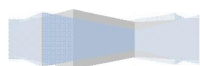
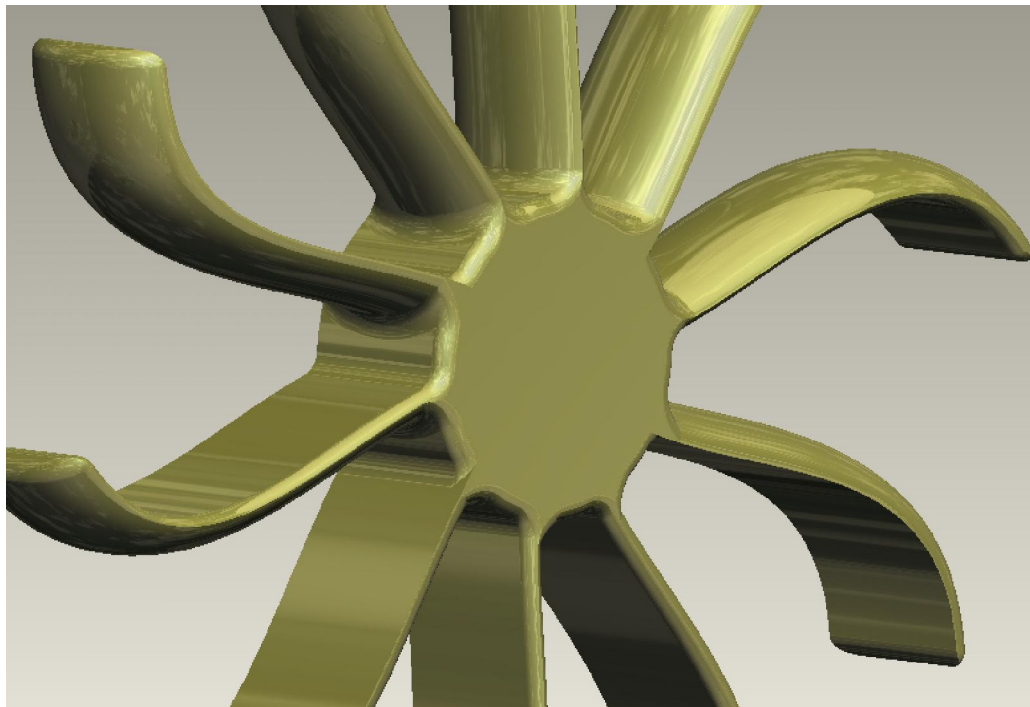


**a. FAN\_BASE\_BACK.PRT**



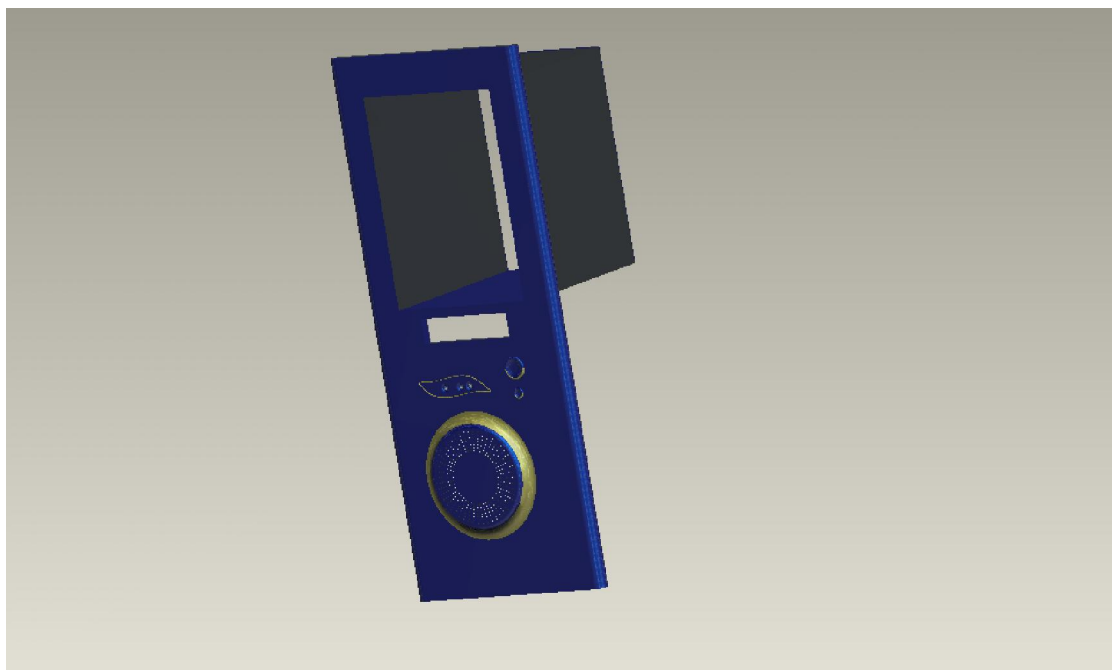
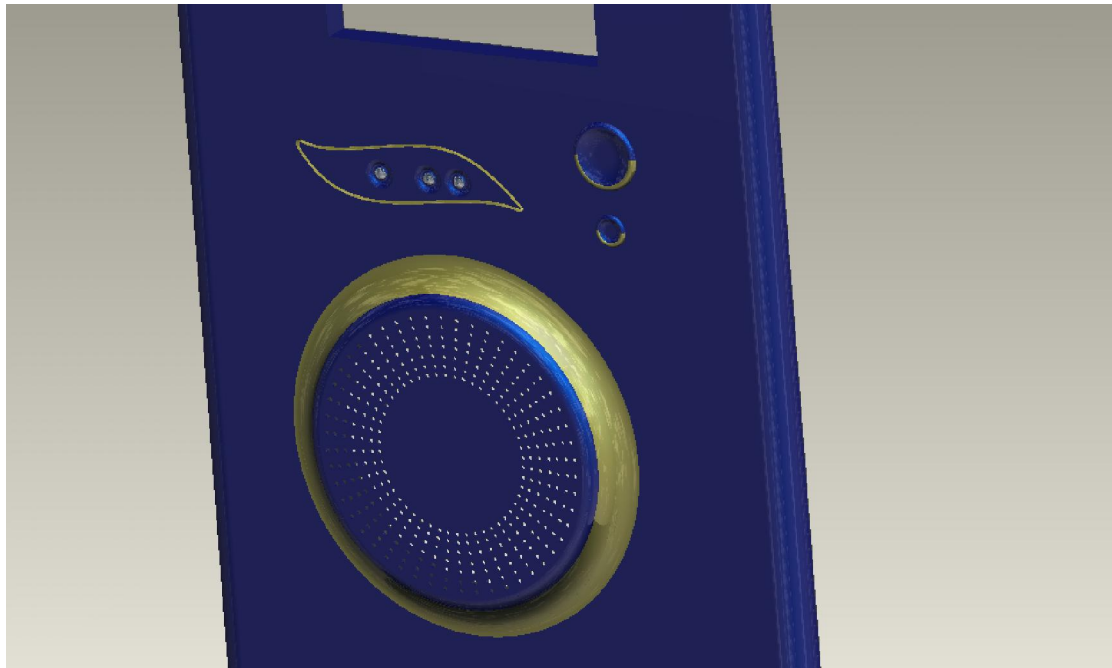
μ μ μ μ μ μ μ μ

**b. FAN\_BLADE\_BACK.PRT**



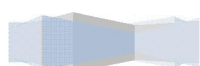
Variable Section Sweep      Extrude

## II. FRONT\_PANEL.ASM ( )

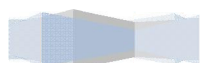
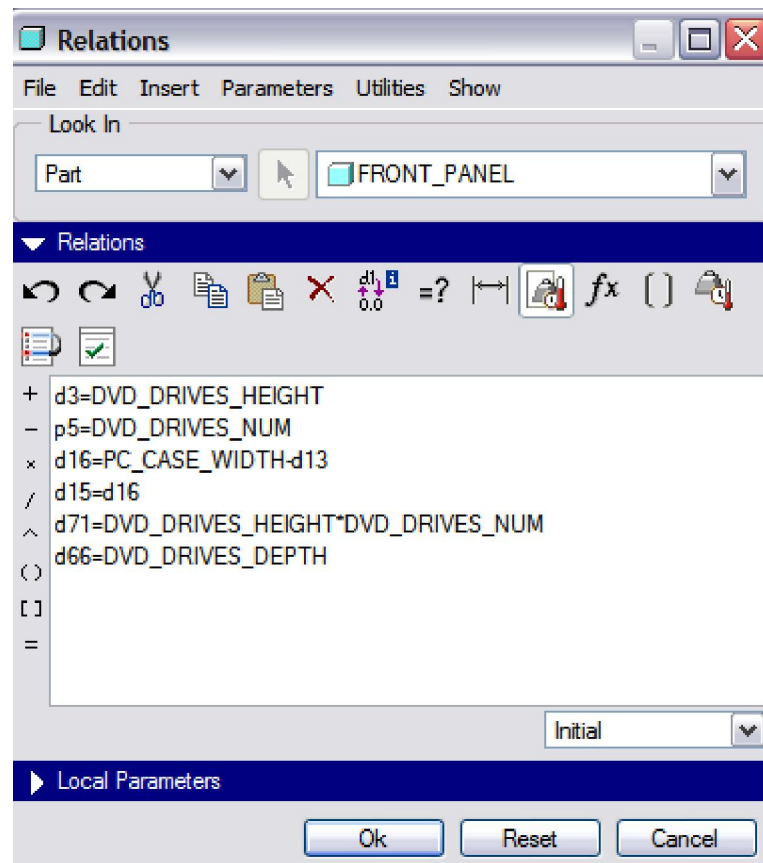


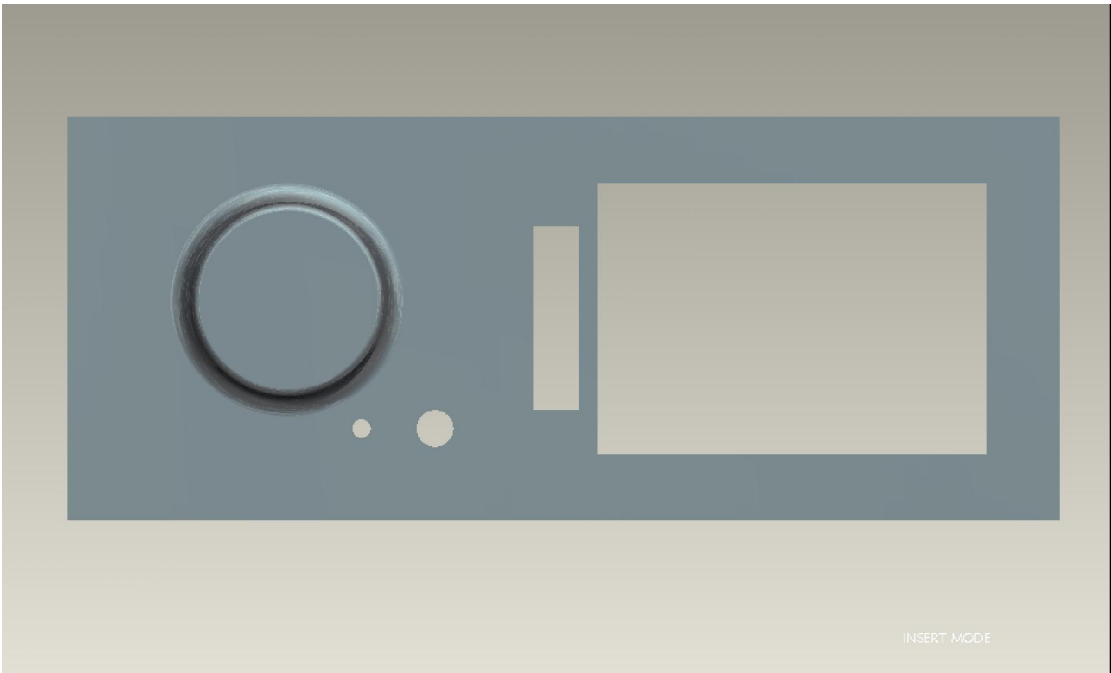
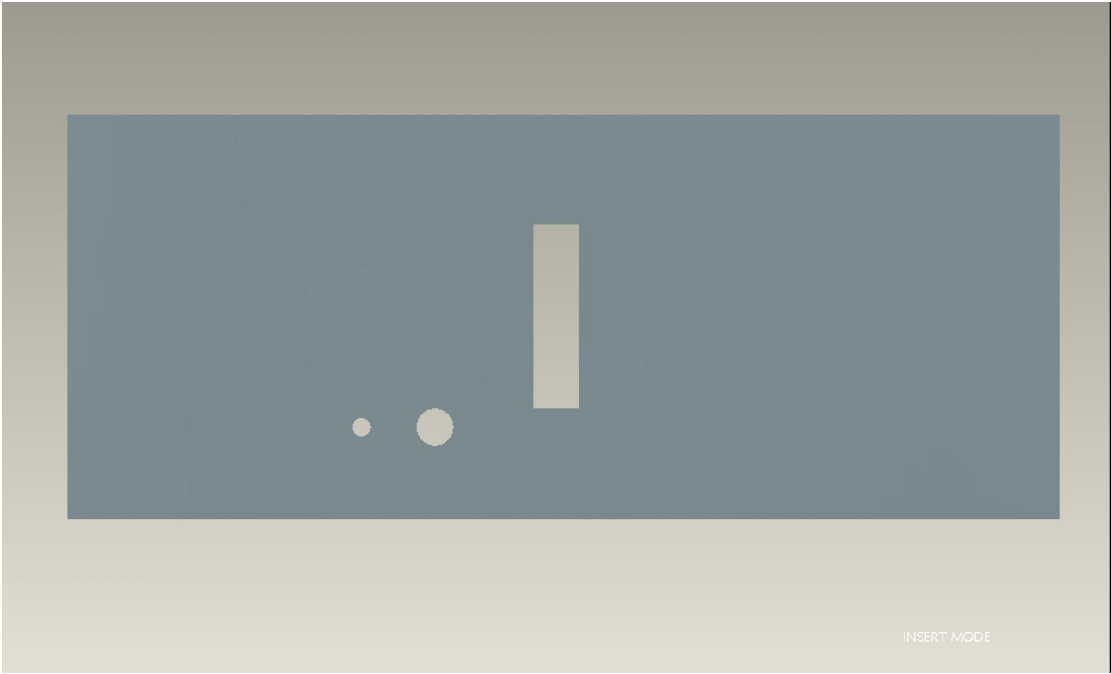
30:

FRONT\_PANEL.ASM



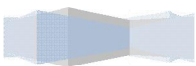
μ Front Panel  
 μ  
 μ Extrude μ Round μ  
 μ  
 μ drives. μ Pattern μ Extrude μ μ  
 μ  
 μ μ μ μ :

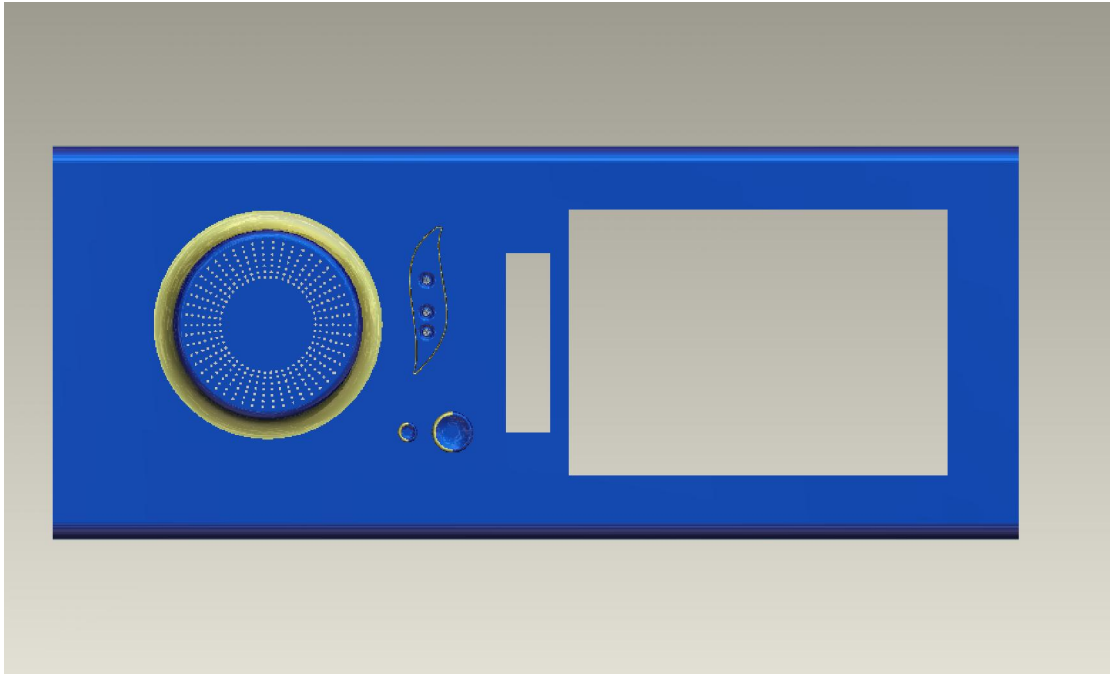




31:  $\mu$

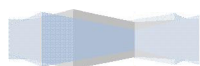
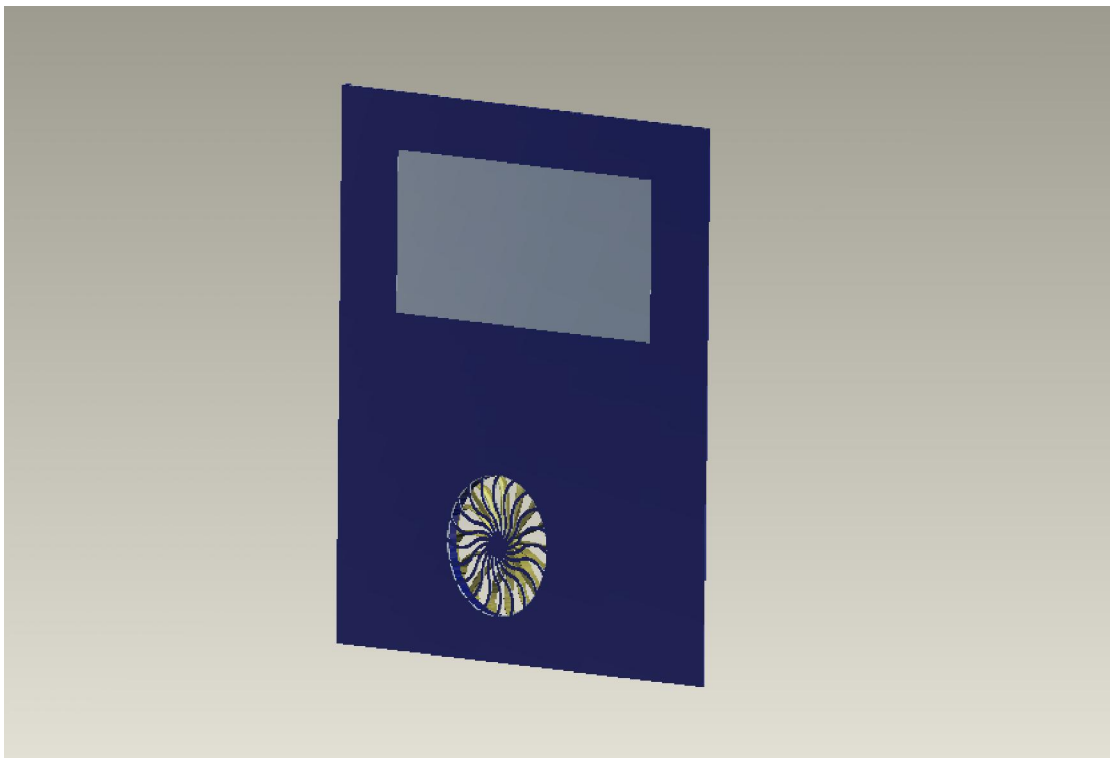
FRONT\_PANEL.ASM





32:  $\mu$  *FRONT\_PANEL.ASM*

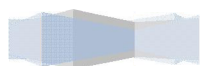
### III. *SIDE\_PANEL\_WITH\_FAN.ASM* ( / )

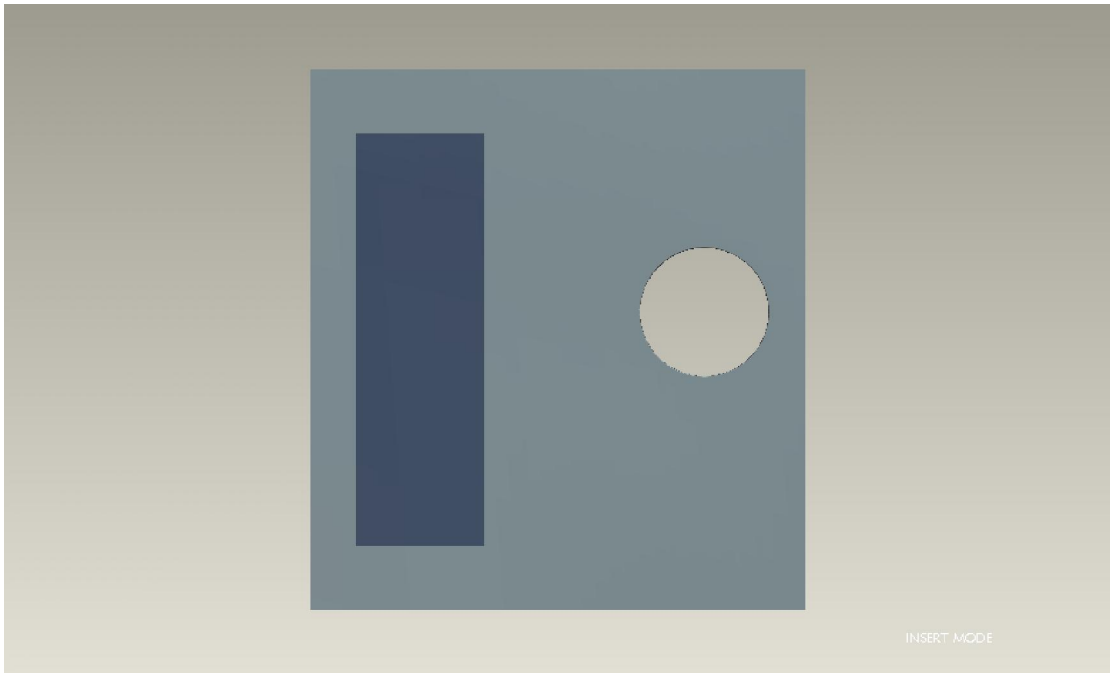
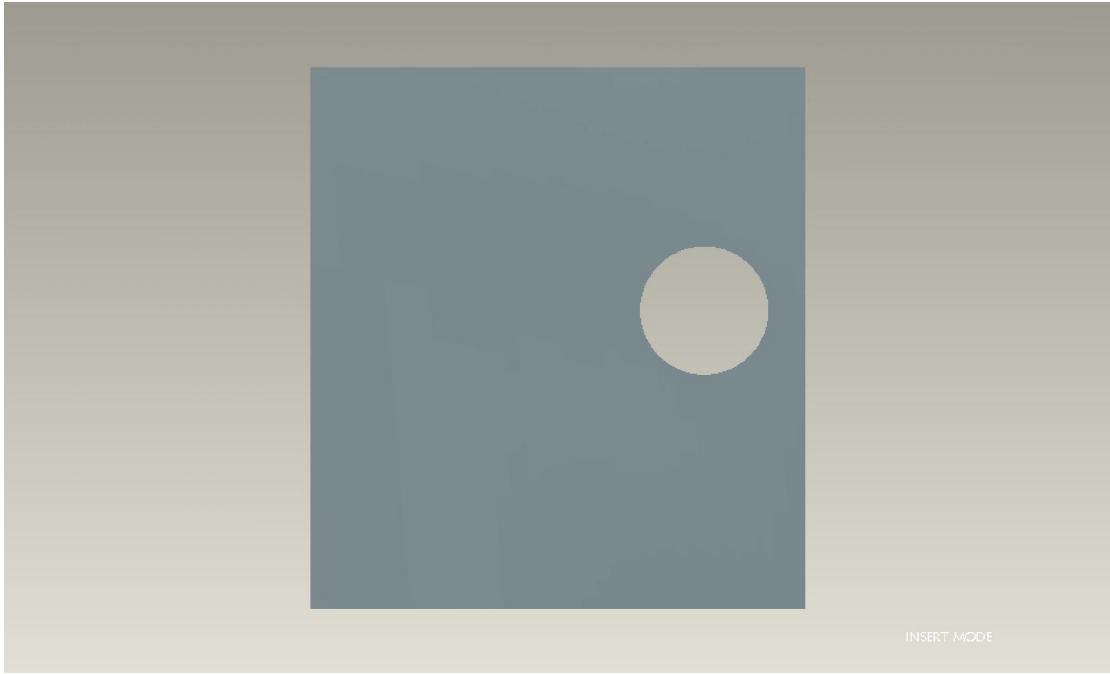






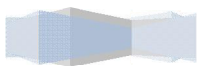
34:  $\mu$  *Color and Appearance*

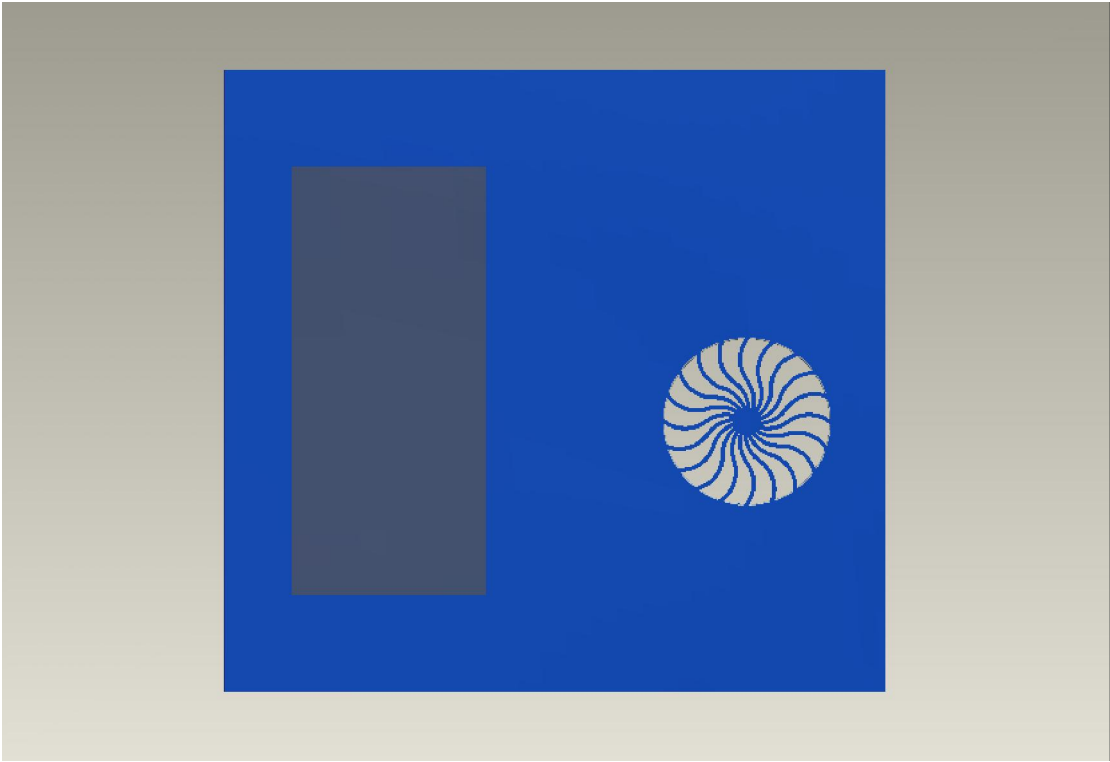




35:  $\mu$

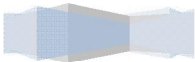
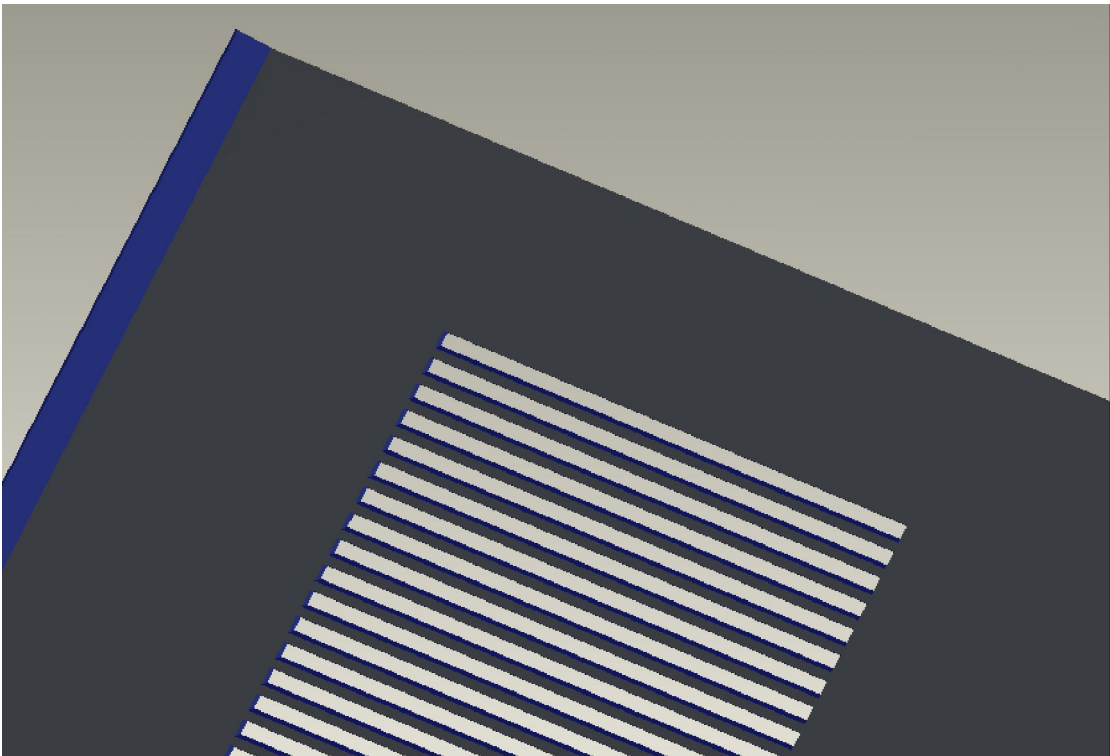
*SIDE\_PANEL\_WITH\_FAN.PRT*

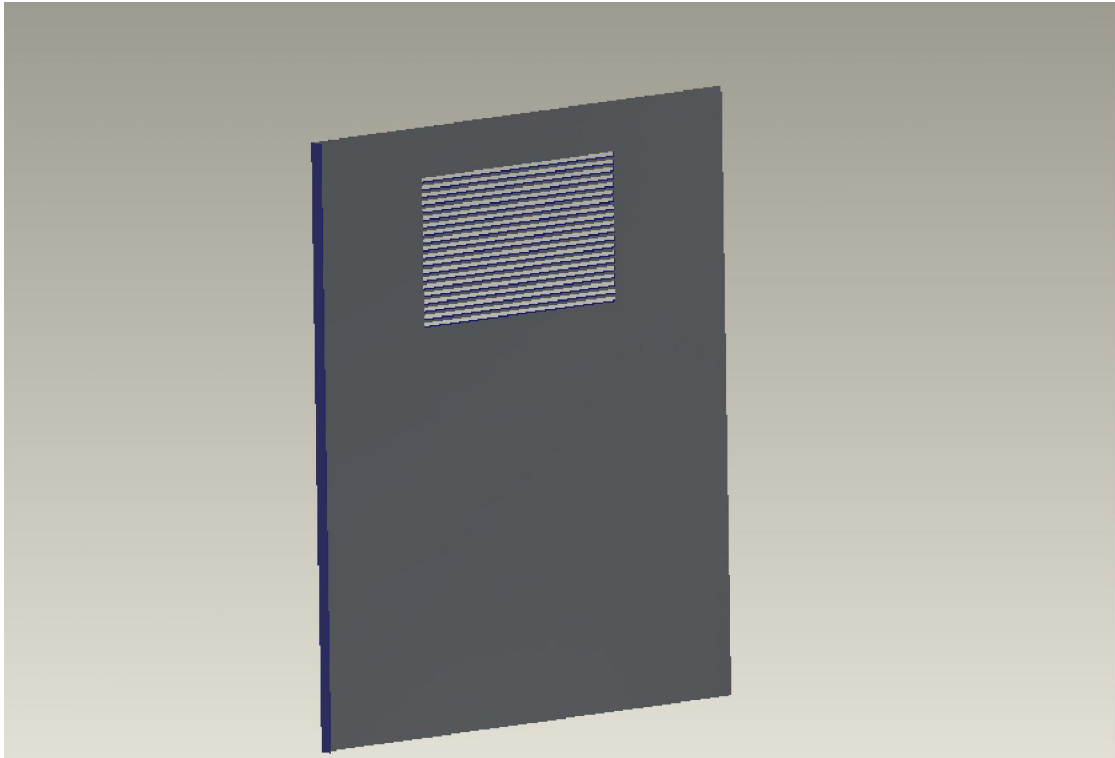




36:  $\mu$  *SIDE\_PANEL\_WITH\_FAN.PRT*

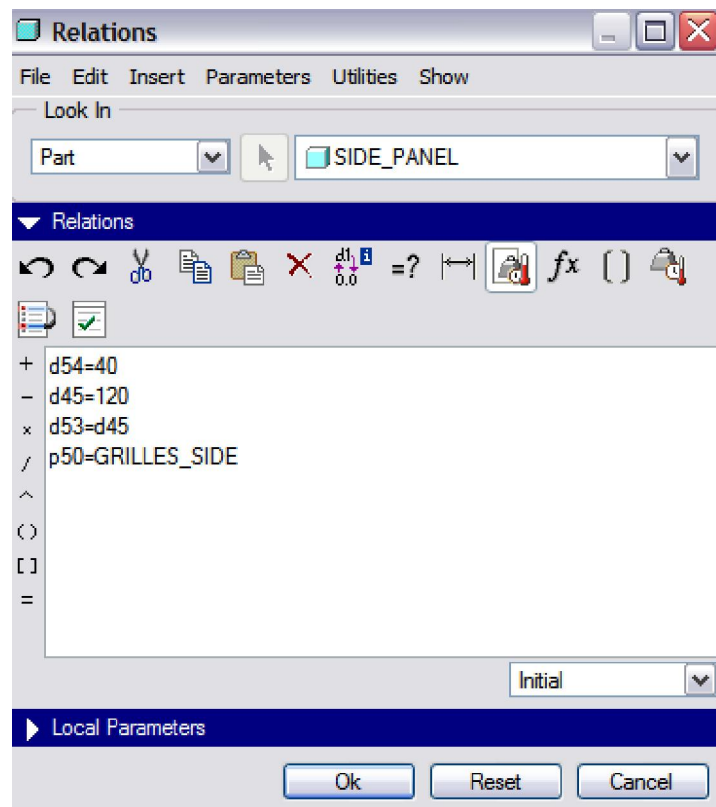
IV. *SIDE\_PANEL.PRT* ( / )



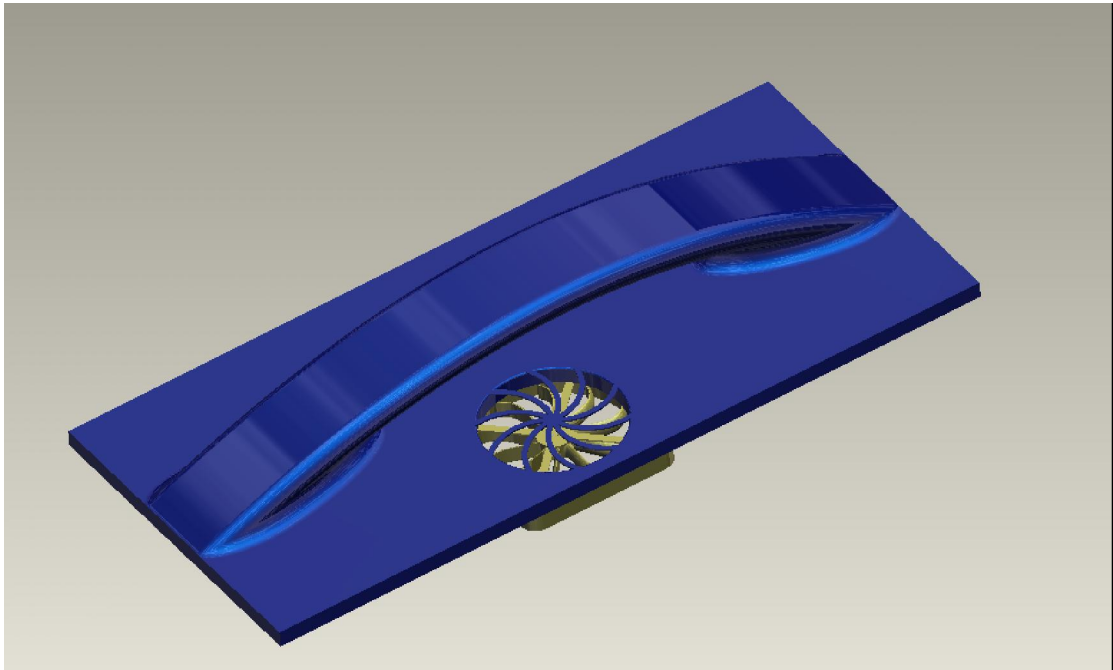


37: SIDE\_PANEL

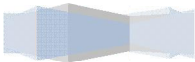
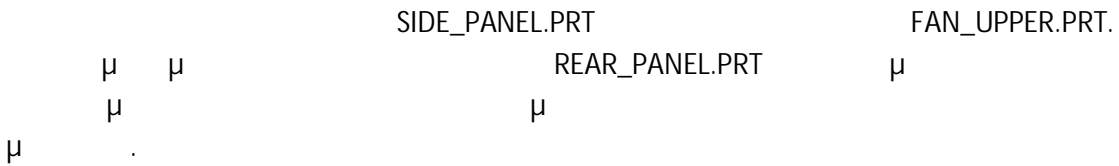
μ μ SIDE\_PANEL\_WITH\_FAN  
μ ( μ ). μ  
μ μ :



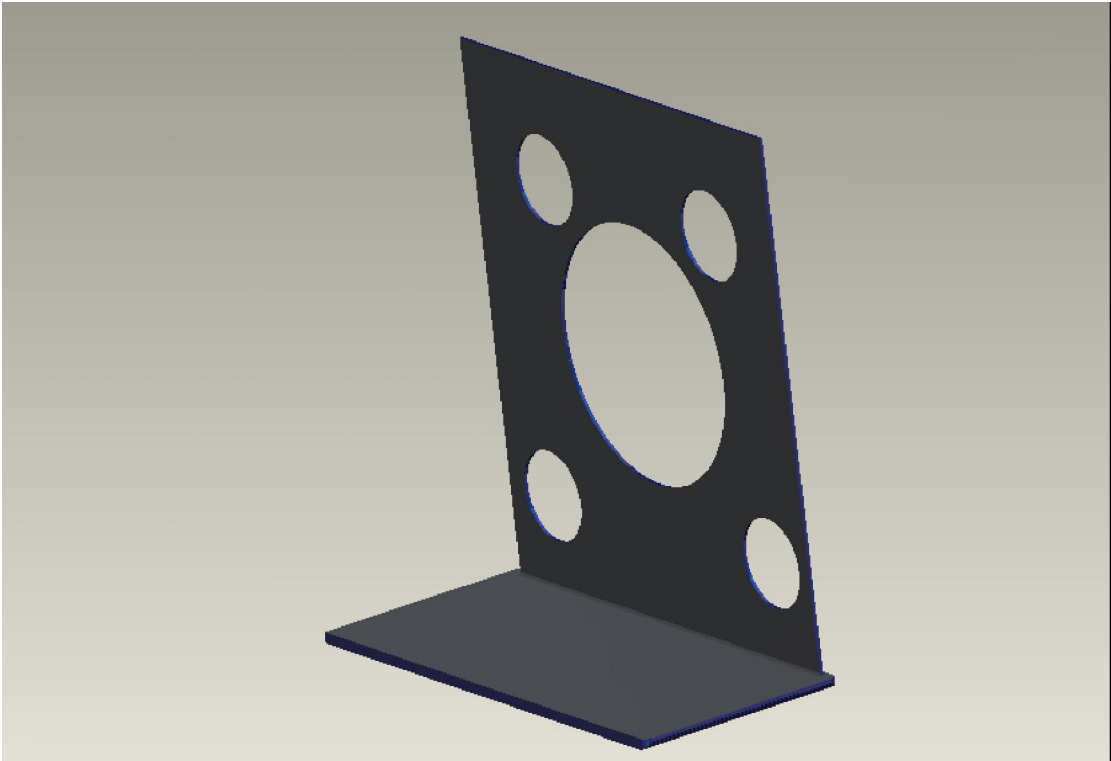
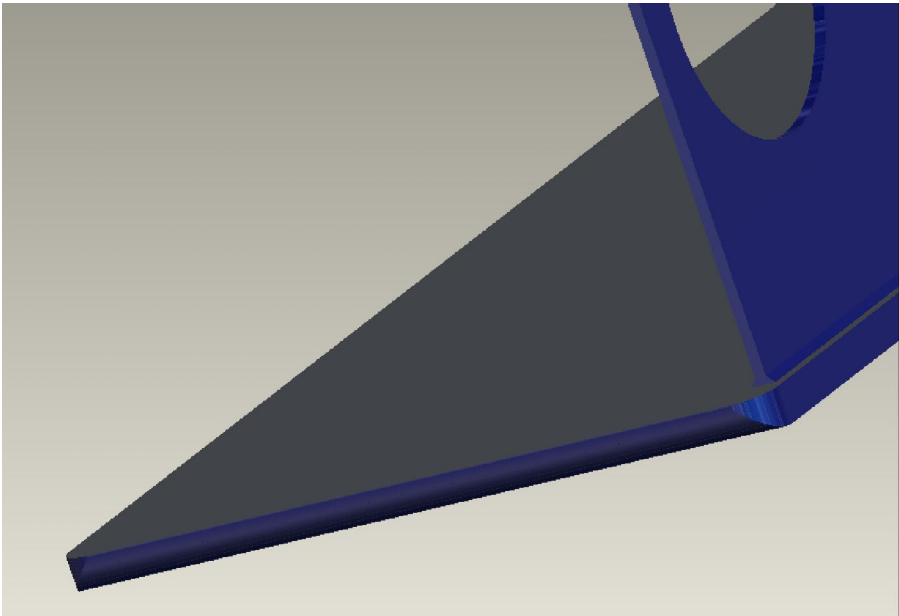
V. TOP\_PANEL.ASM ( / )



38: TOP\_PANEL.ASM

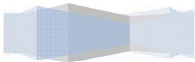


VI. *BASE\_STRUCTUREPRT* ( / )



39. *BASE\_STRUCTURE*

μ BASE\_STRUCTURE  
μ (motherboard)  
μ hardware



The screenshot shows the 'Relations' dialog box in SolidWorks. The 'Look In' dropdown is set to 'Part' and the file 'BASE\_STRUCTURE' is selected. The 'Relations' list contains two equations: 'd12=PC\_CASE\_DEPTH/2' and 'd5=PC\_CASE\_HEIGHT/2'. The 'Initial' dropdown is set to 'Initial'. The 'Local Parameters' section is visible at the bottom.

Round.

Top-Down Design

(full, midi, mini).

TOWER\_TYPE

# 4.

—

( μ , μ floppy  
DVD drives. μ μ Photo Render μ ):



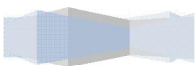
40: Full PC Tower ( )





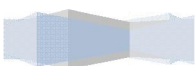


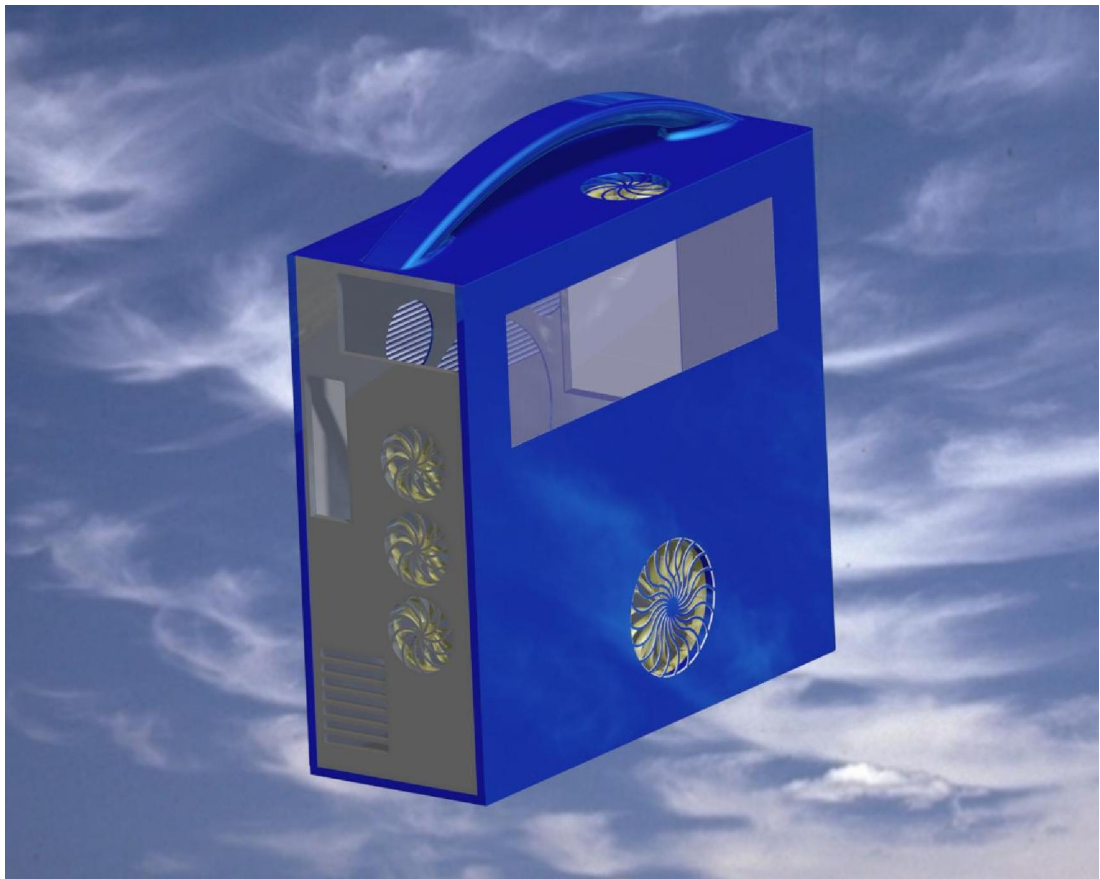
41: Midi PC Tower ( )



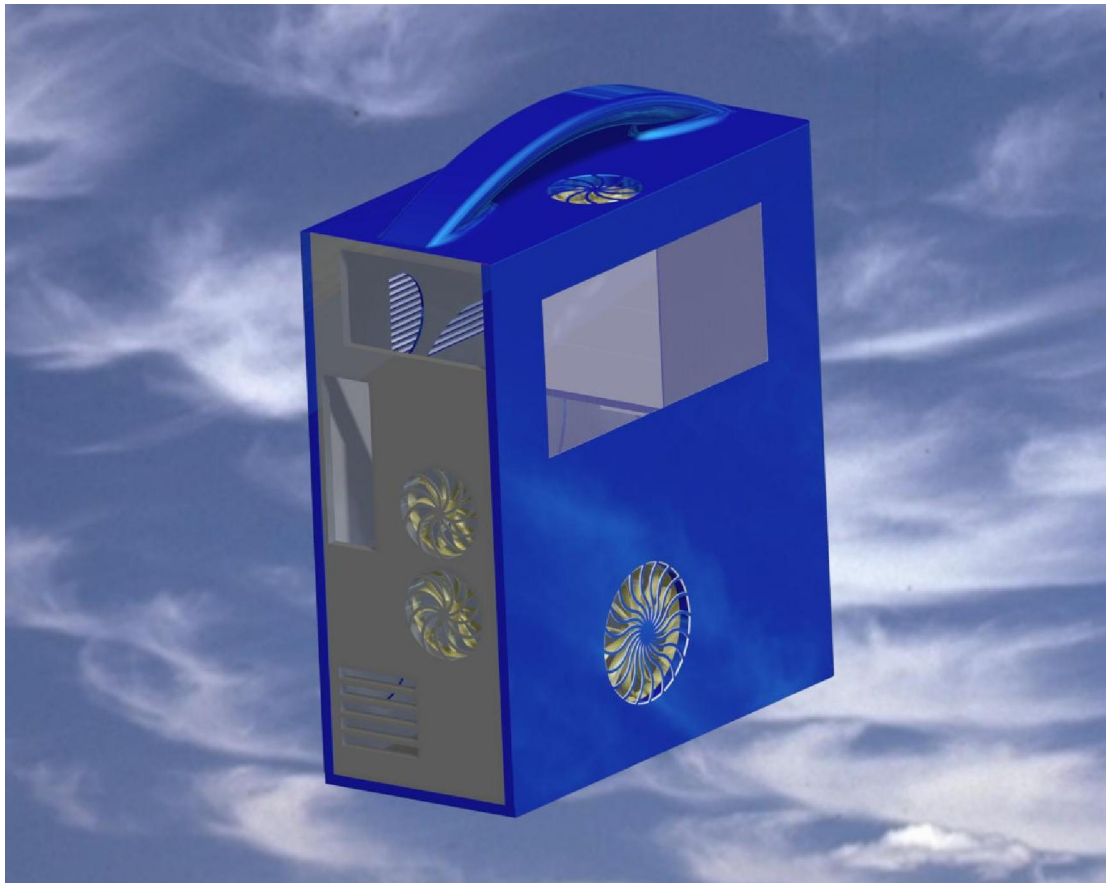


42: Mini PC Tower ( )





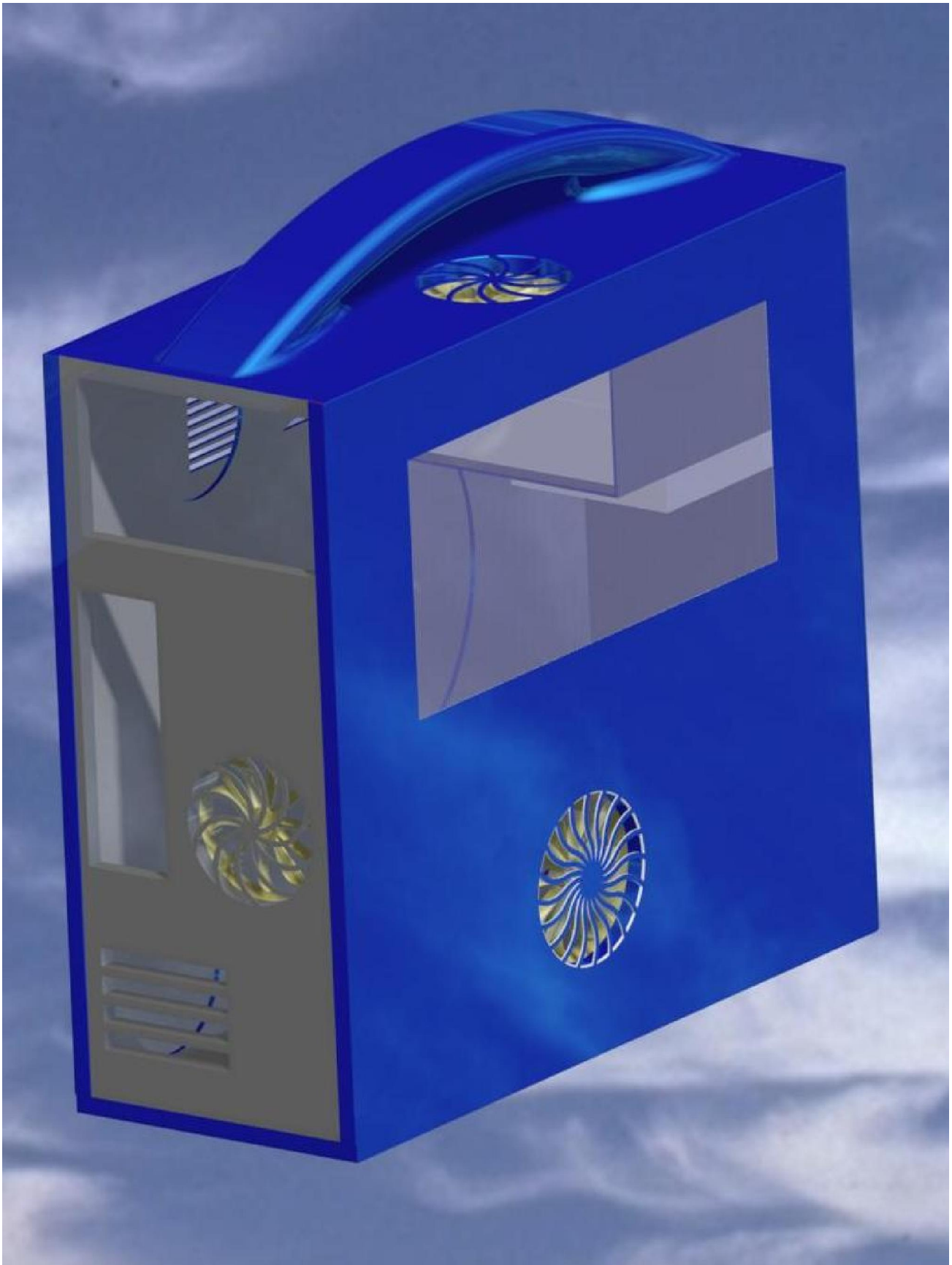
43: Full PC Tower ( )



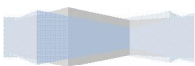
44: Midi PC Tower ( )







45: Mini PC Tower ( )

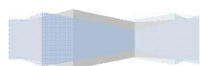




# 5.

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## 6.

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- *μ CAD/CAM*  
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- *Mastering CAD/CAM*, 1st Edition  
Ibrahim Zeid, NORTHEASTERN UNIVERSITY  
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- [http://en.wikipedia.org/wiki/Computer-aided\\_design](http://en.wikipedia.org/wiki/Computer-aided_design)
- *Top-Down Design Tools*  
*Managing Complex Assemblies*  
Victor Remmers  
Holland Engineering Consultants BV

