

Appendix E

ESARAD Status

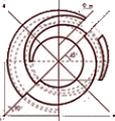
Julian Thomas
(ALSTOM, United Kingdom)

Thermal & ECLS Software Workshop
Oct 2006

ALSTOM

ESARAD Status

Julian Thomas
(ALSTOM Aerospace)

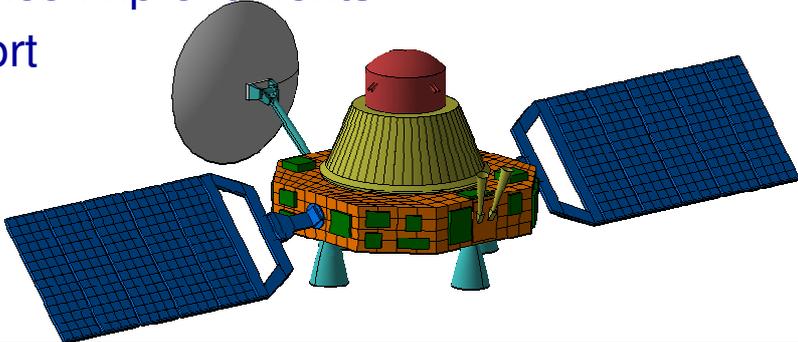


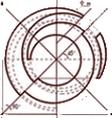
ESARAD Status : Oct. 2006

Contents



- **ESARAD 5.8; released March 2006**
- **ESARAD 6; release Q1 2007**
 - New Interface Layout
 - Interactive model construction
 - Performance Improvements
 - CAD import





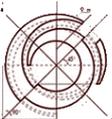
ESARAD 5.8

Key New Features



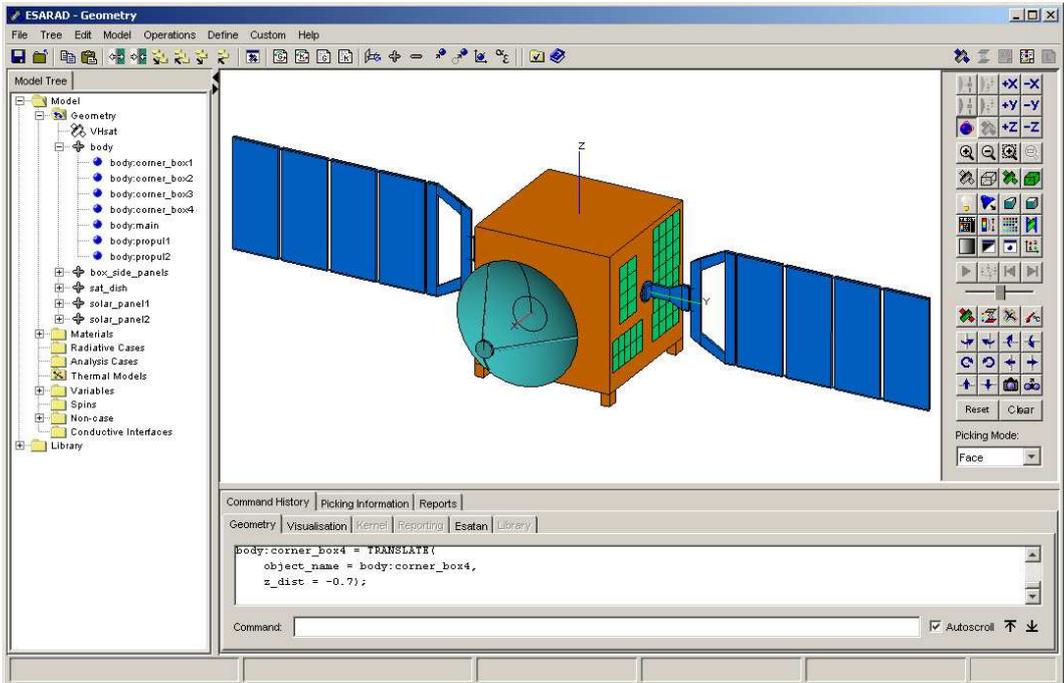
- Partial Orbital Arcs.
- Arc Chaining.
- Parallel Calculations.
- Automatic Linear Conduction algorithm.
- OpenGL Visualisation (hardware support)
- Available on Linux (Red Hat 9, 32bit)

- Released March 2006 -

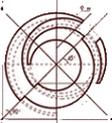


ESARAD 6





- New User Interface Layout -



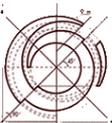
ESARAD 6

Command History



```
VHsat.DISCRETE = "activity[1]";
VHsat.SHADE = "activity_shade";
VHsat.NODES = FALSE;
DISPLAY(p_and_o = [0.0,0.0,0.0,0.0,0.0,0.0,0.0],
        scale = 1.0,
        axes = TRUE,
        asm_axes = TRUE,
        points = FALSE,
        light1 = user_light);
```

- "Tab" Style Layout -



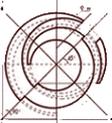
ESARAD 6

Face Picking Output



Face	Node	Crit.	Shell Name	Type	Act.	ϵ , ρ_d , ρ_s , τ , α , ρ_d , ρ_s , τ	OPT N...	Face A...
323	162	N	solar_pan...BOX	A	-1.0,-1.0,-1.0,-1.0,-1.0,-1.0,-1.0	N/A	N/A	

- "Tab" Style Layout -



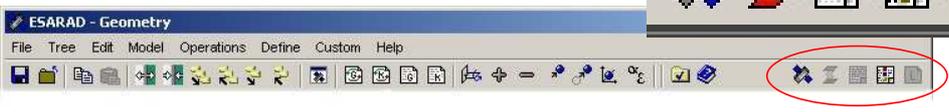
ESARAD 6

Context Sensitive Menus

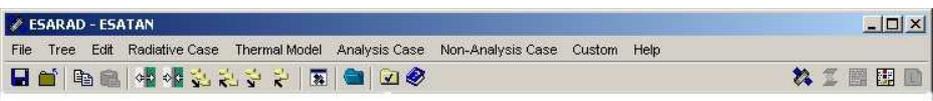


- Replace “workspaces”

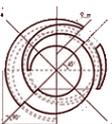




- Menu change depending on current task



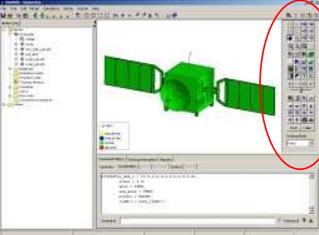
- Work Flow Management -

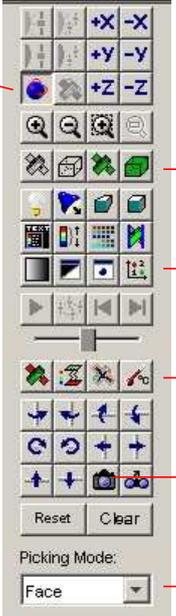


ESARAD 6

Visualisation Controls

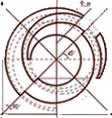






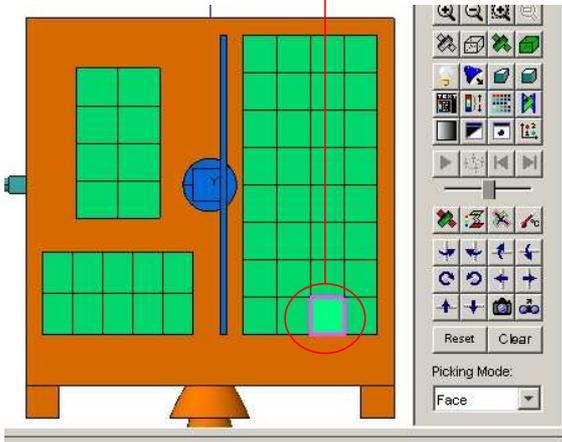
- Visualisation control panel extended...
- Visualisation mode
- Display options
- Pre/Post-Process options
- Visualisation capture
- Picking Mode

- Fast Access to all Visualisation Controls -

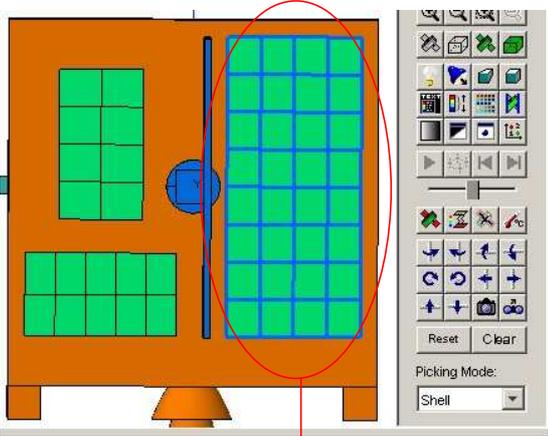
 **ESARAD 6**
"Shell" Picking Mode

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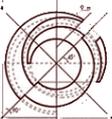
Existing "Face" Picking



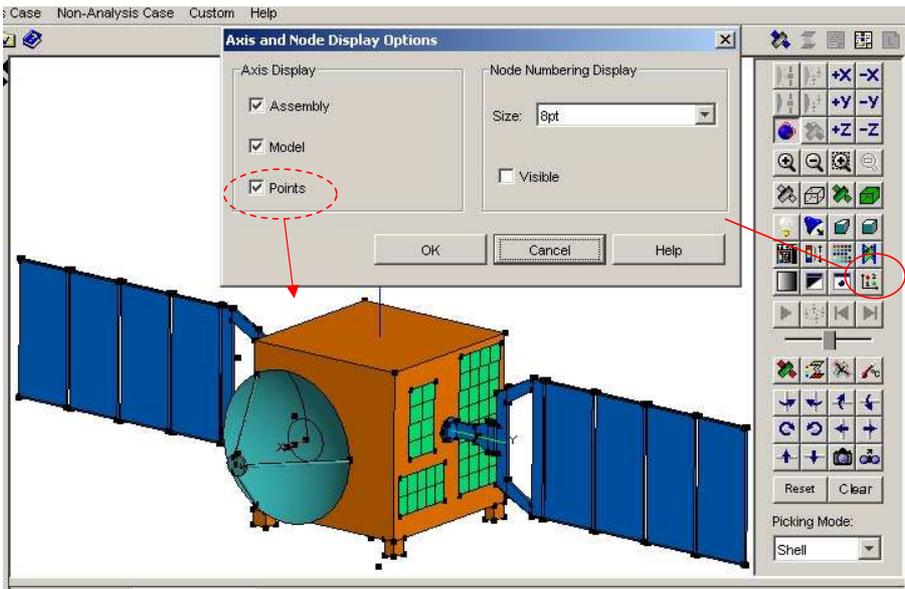
New "Shell" Picking



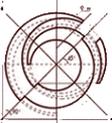
- Highlight Complete Shell -

 **ESARAD 6**
Display Construction Points

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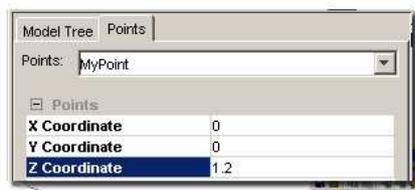
- Improved Feedback -



ESARAD 6

Point Definition





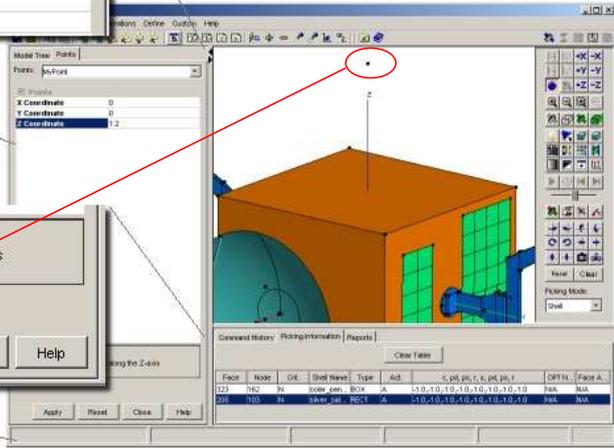
Model Tree Points
Points: MyPoint

X Coordinate: 0
Y Coordinate: 0
Z Coordinate: 1.2

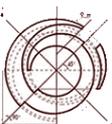
Z Coordinate
the value of the co-ordinate along the Z-axis

Apply Reset Close Help

- Any named POINT
 - shown in visualisation
 - can be picked...



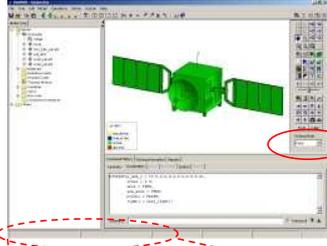
- Easier Definition -



ESARAD 6

Point Picking Modes





[0.0, 0.0, 1.2] Point Name: MyPoint

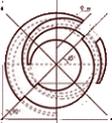
Direction: [0.70711, 0.70711, 0.0]

Distance: 1.04642

Picking Mode:
 Shell
 Face
 Shell
 Point
 Direction
 Distance

- Point co-ordinate (+ name if it is a named POINT)
- Direction vector between 2 points
- Distance between 2 points

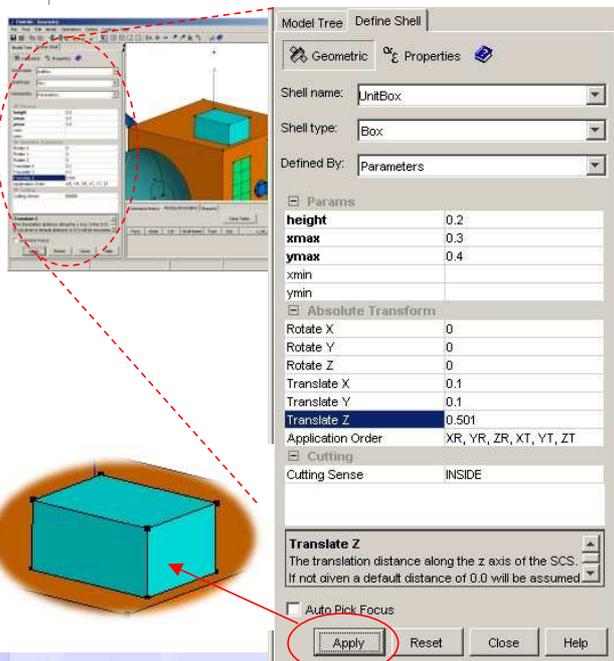
- Improved Feedback -



ESARAD 6

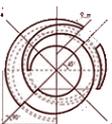
Shell Definition





- Attribute Editor style input form
- Context aware visualisation picking
 - Points
 - Direction
 - Distance
- In-line input hints

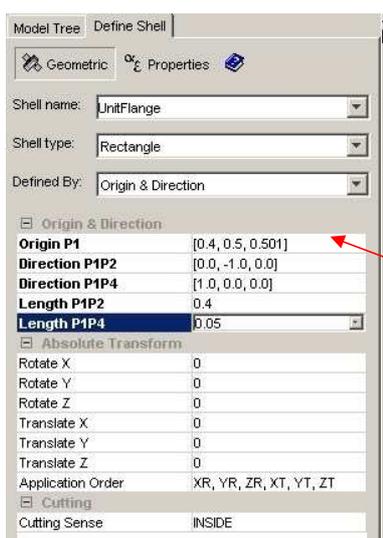
- Easier & Quicker Definition -

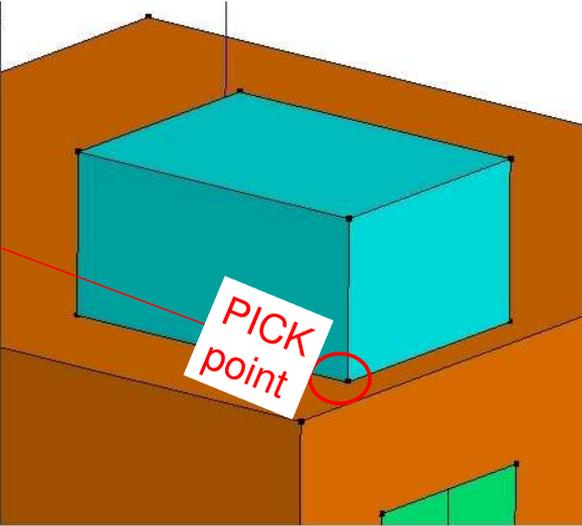


ESARAD 6

Origin and Direction







- New Shell Definition Type -

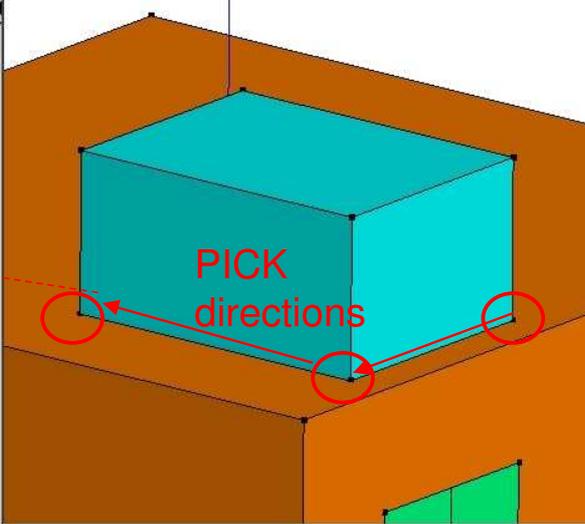


ESARAD 6

Origin and Direction



Model Tree: Define Shell	
Geometric	Properties
Shell name:	UnitFlange
Shell type:	Rectangle
Defined By:	Origin & Direction
Origin & Direction	
Origin P1	[0.4, 0.5, 0.501]
Direction P1P2	[0.0, -1.0, 0.0]
Direction P1P4	[1.0, 0.0, 0.0]
Length P1P2	0.4
Length P1P4	0.05
Absolute Transform	
Rotate X	0
Rotate Y	0
Rotate Z	0
Translate X	0
Translate Y	0
Translate Z	0
Application Order	XR, YR, ZR, XT, YT, ZT
Cutting	
Cutting Sense	INSIDE



- New Shell Definition Type -

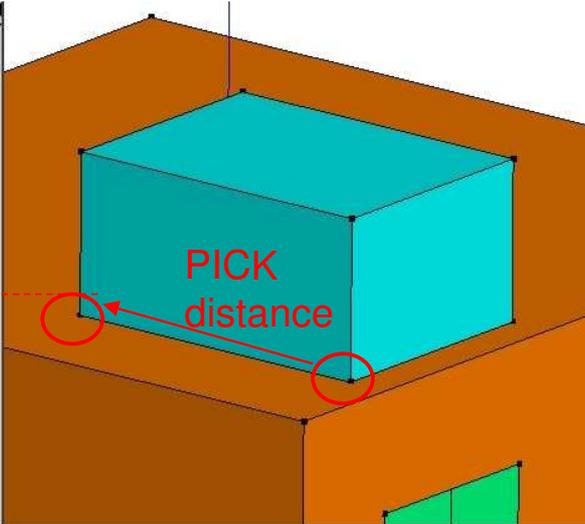


ESARAD 6

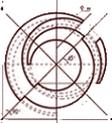
Origin and Direction



Model Tree: Define Shell	
Geometric	Properties
Shell name:	UnitFlange
Shell type:	Rectangle
Defined By:	Origin & Direction
Origin & Direction	
Origin P1	[0.4, 0.5, 0.501]
Direction P1P2	[0.0, -1.0, 0.0]
Direction P1P4	[1.0, 0.0, 0.0]
Length P1P2	0.4
Length P1P4	0.05
Absolute Transform	
Rotate X	0
Rotate Y	0
Rotate Z	0
Translate X	0
Translate Y	0
Translate Z	0
Application Order	XR, YR, ZR, XT, YT, ZT
Cutting	
Cutting Sense	INSIDE



- New Shell Definition Type -



ESARAD 6

Origin and Direction



Model Tree: Define Shell

Geometric Properties

Shell name: UnitFlange

Shell type: Rectangle

Defined By: Origin & Direction

Origin & Direction

Origin P1	[0.4, 0.5, 0.501]
Direction P1P2	[0.0, -1.0, 0.0]
Direction P1P4	[1.0, 0.0, 0.0]
Length P1P2	0.4
Length P1P4	0.05

Absolute Transform

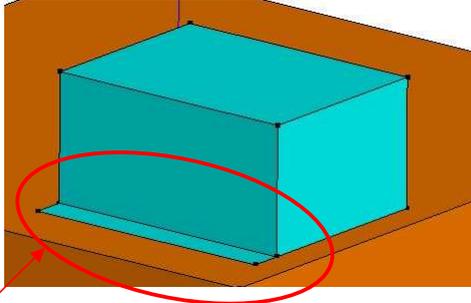
Rotate X	0
Rotate Y	0
Rotate Z	0
Translate X	0
Translate Y	0
Translate Z	0

Application Order: XR, YR, ZR, XT, YT, ZT

Cutting

Cutting Sense: INSIDE

Apply



Enter length

- New Shell Definition Type -



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Shell Defined by Picking Points



Geometric Properties

Shell name: UnitWeb1

Shell type: Triangle

Defined By: Points

Points

Point 1	[0.45, 0.5, 0.501]
Point 2	[0.4, 0.5, 0.501]
Point 3	[0.4, 0.5, 0.701]

Absolute Transform

Rotate X	0
Rotate Y	0
Rotate Z	0
Translate X	0
Translate Y	0
Translate Z	0

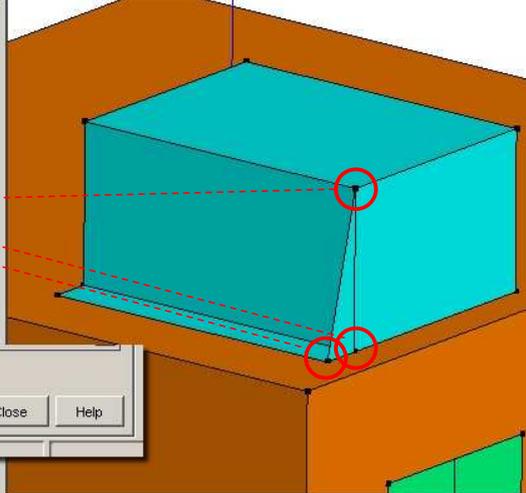
Application Order

Cutting

Cutting Sense

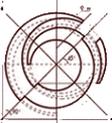
Auto Pick Focus

Apply Reset Close Help



Step through points... click, click, click!

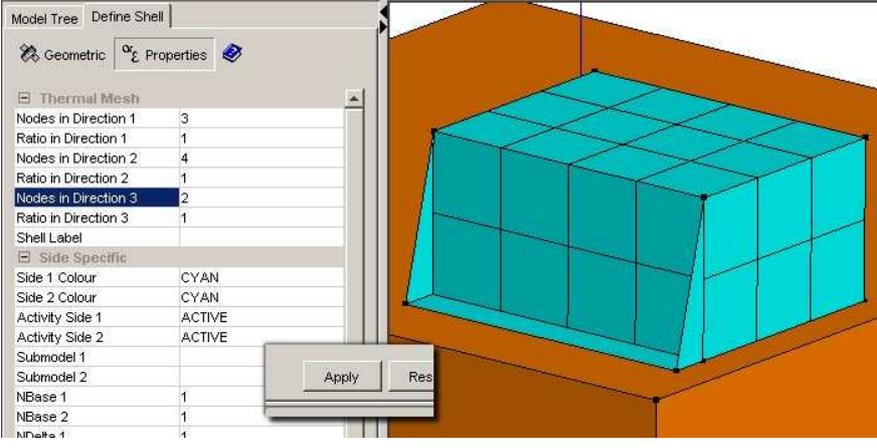
- Rapid Geometry Definition -

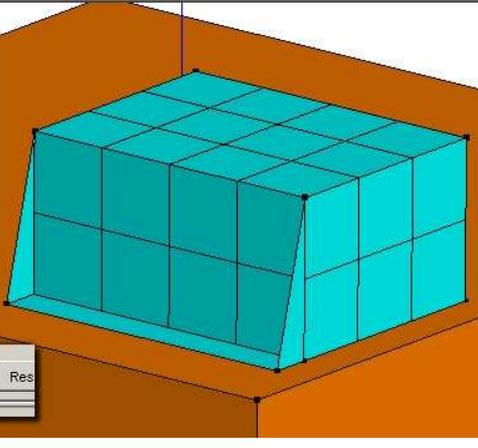


ESARAD 6

Shell Properties Example







Modify properties... click Apply... see result.

- Modify Shell Properties Easily -

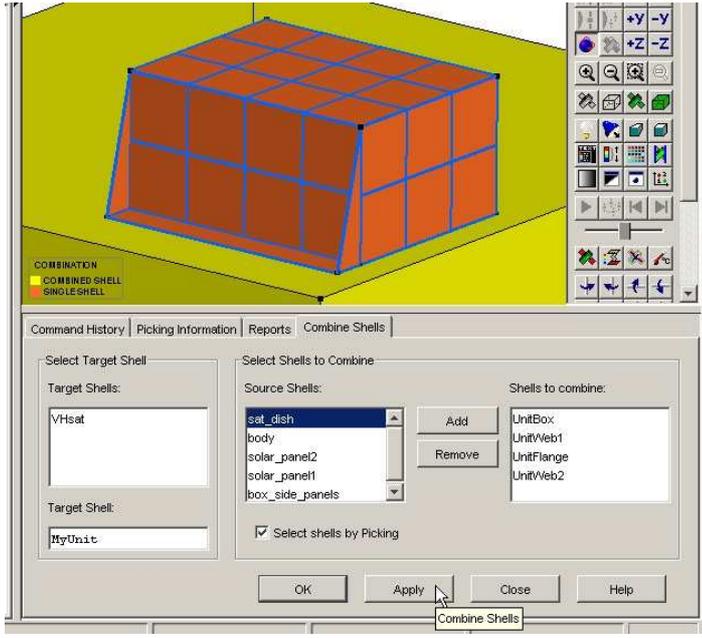


ESARAD 6

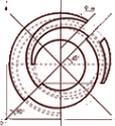
Shell Combination



- Build model hierarchy interactively (picking).



- Strengthens Existing Functionality -

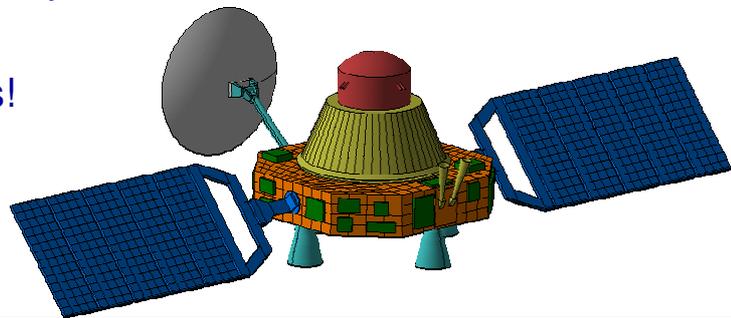


ESARAD 6

Release Q1 2007

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- Work Completed for ESARAD 6 release
 - GUI Layout
 - Interactivity improvements
 - Performance & memory
- Other work in line for ESARAD 6 release
 - Further interactivity enhancements
 - CAD interface
 - Some surprises!

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