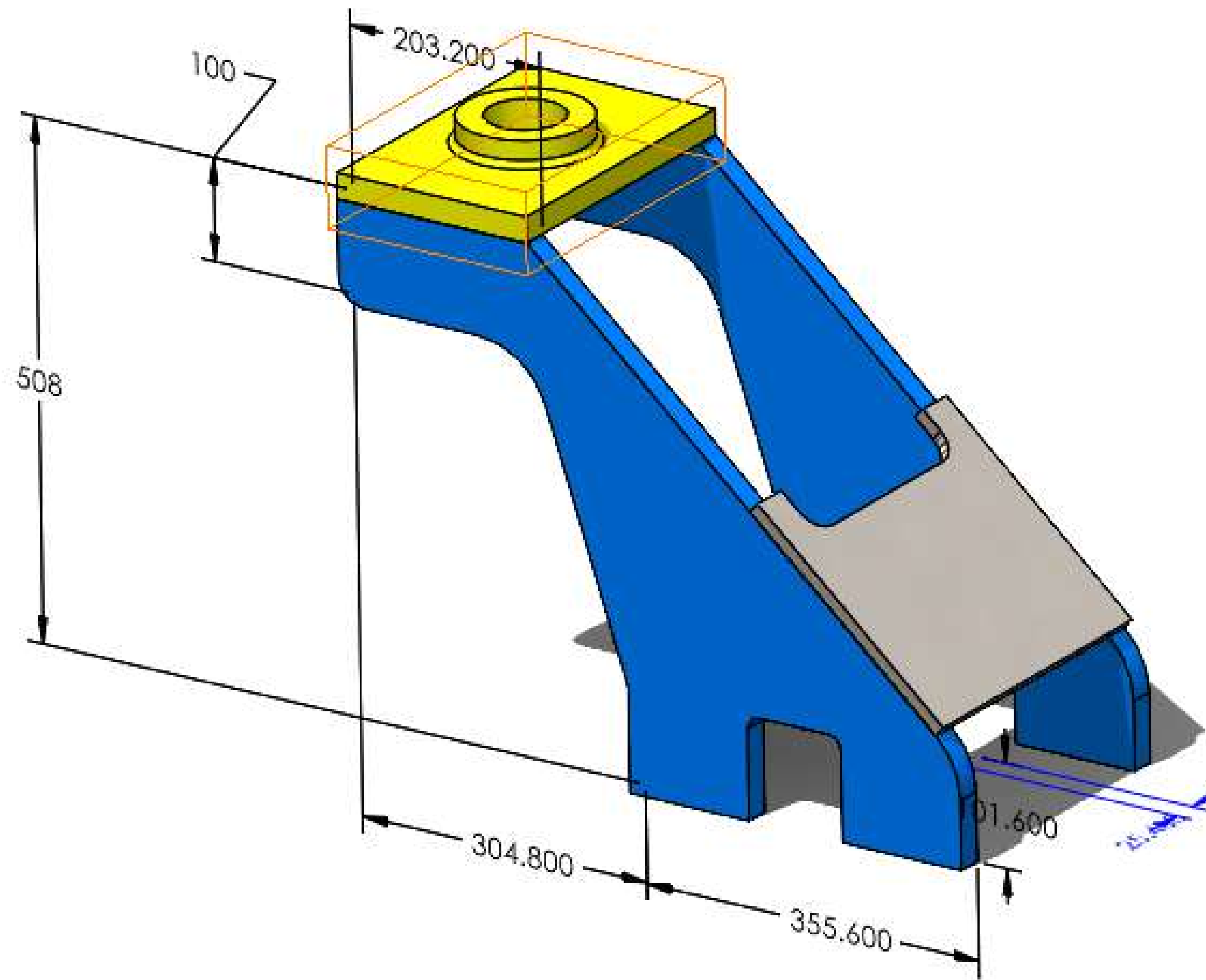


3DEXPERIENCE

WHICH TOOL
IS THE BEST
FIT FOR YOU?



Parameters



Name	Category	Value	Units	Comment	Linked
back height	Model Dimension	100	mm		*
feet width	Model Dimension	100	mm		*
plate length	Model Dimension	262.5	mm		*
	Model Dimension	0			

References

Model Dimension:

D1@Extrude1@back plate.Part

Select the model dimension that you would like to link to this parameter.

OK

Cancel

Apply

Help

Variable View

Table View

Results View



Run

Optimization

[-] Variables

back height	Range	▼	Min: 50mm	▲▼	Max: 100mm	▲▼	
feet width	Range	▼	Min: 100mm	▲▼	Max: 250mm	▲▼	
plate length	Range	▼	Min: 150mm	▲▼	Max: 375mm	▲▼	
<i>Click here to add Variables</i>		▼					

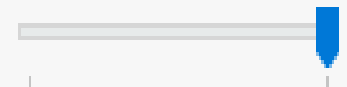
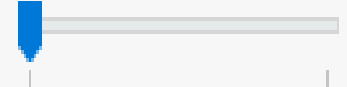
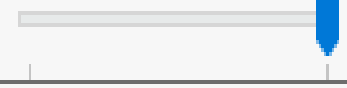
[-] Constraints

Stress1	is less than	▼	Max: 100 N/mm ²	▲▼	press static	▼	
Displacement1	is less than	▼	Max: 1mm	▲▼	press static	▼	
Frequency1	is between	▼	Min: 80 Hz	▲▼	Max: 150 Hz	▲▼	press frequency
Displacement2	is less than	▼	Max: 0.5mm	▲▼	press static	▼	
<i>Click here to add Constraints</i>		▼					

[-] Goals

Mass1	Minimize	▼					
<i>Click here to add Goals</i>		▼					

15 of 15 scenarios ran successfully. Design Study Quality: High

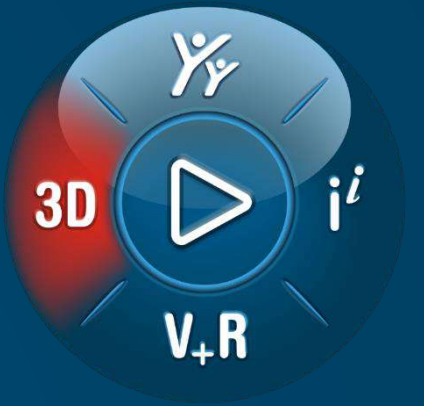
		Current	Initial	Optimal	Iteration 1	Iteration 2	Iteration 3	Iteration 4	Iteration 5	Iteration 6	Iteration 7
back height		100mm	100mm	72.94817mm	100mm	100mm	50mm	50mm	100mm	100mm	50mm
feet width		100mm	100mm	248.531mm	250mm	100mm	250mm	100mm	175mm	175mm	175mm
plate length		375mm	375mm	213.537mm	262.5mm	262.5mm	262.5mm	262.5mm	375mm	150mm	375mm
Stress1	< 100 N/mm ²	6.773e+01 N/mm ² (MPa)	6.773e+01 N/mm ² (MPa)	9.461e+01 N/mm ² (MPa)	7.044e+01 N/mm ² (MPa)	7.005e+01 N/mm ² (MPa)	1.350e+02 N/mm ² (MPa)	1.352e+02 N/mm ² (MPa)	6.818e+01 N/mm ² (MPa)	7.114e+01 N/mm ² (MPa)	1.351e+02 N/mm ² (MPa)
Displacement1	< 1mm	3.323e-01 mm	3.323e-01 mm	4.970e-01 mm	3.652e-01 mm	3.500e-01 mm	7.095e-01 mm	6.944e-01 mm	3.357e-01 mm	3.623e-01 mm	6.785e-01 mm
Frequency1	(80 Hz ~ 150 Hz)	1.279e+02 Hz	1.279e+02 Hz	8.132e+01 Hz	8.905e+01 Hz	9.643e+01 Hz	9.081e+01 Hz	9.792e+01 Hz	1.234e+02 Hz	7.565e+01 Hz	1.274e+02 Hz
Displacement2	< 0.5mm	3.323e-01 mm	3.323e-01 mm	4.970e-01 mm	3.652e-01 mm	3.500e-01 mm	7.095e-01 mm	6.944e-01 mm	3.357e-01 mm	3.623e-01 mm	6.785e-01 mm
Mass1	Minimize	73953.003 g	73953.003 g	60390.701 g	64517.532 g	70556.229 g	59511.925 g	65550.621 g	70933.647 g	64140.114 g	65928.04 g



3D CREATOR



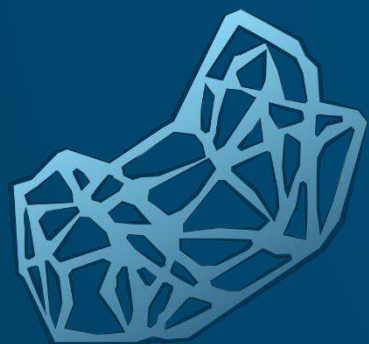
3D SCULPTOR



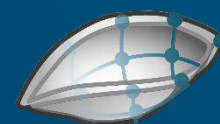
SOLIDWORKS



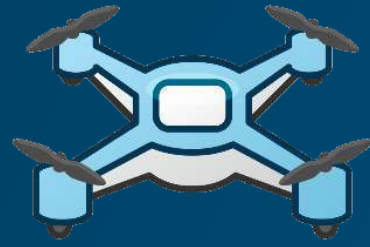
3D SCULPTOR



**FUNCTION-DRIVEN
GENERATIVE DESIGNER**



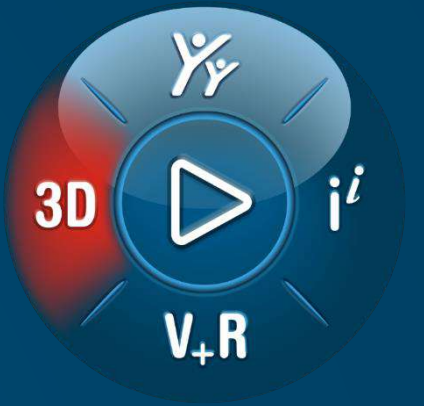
IMAGINE & SHAPE



3D CREATOR



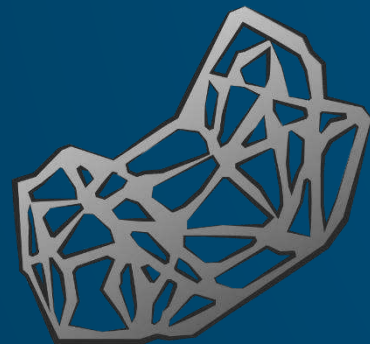
3D SCULPTOR



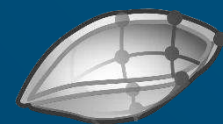
SOLIDWORKS



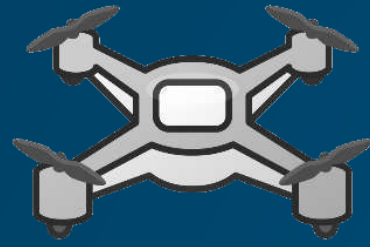
3D SCULPTOR



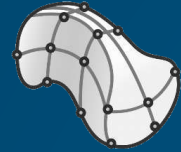
**FUNCTION-DRIVEN
GENERATIVE DESIGNER**



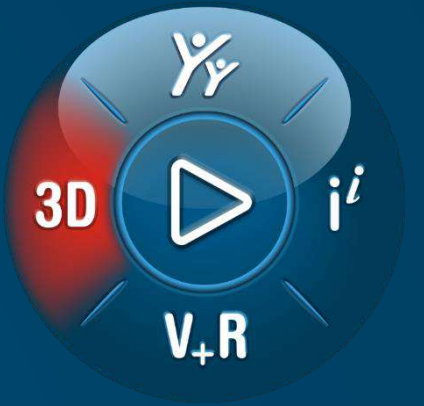
IMAGINE & SHAPE



3D CREATOR



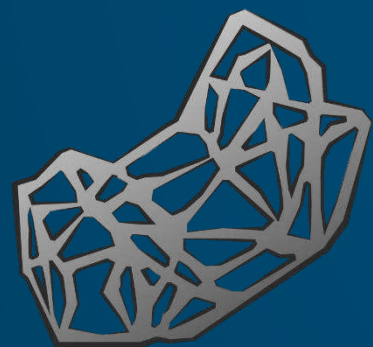
3D SCULPTOR



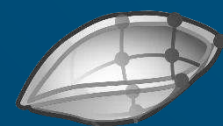
SOLIDWORKS



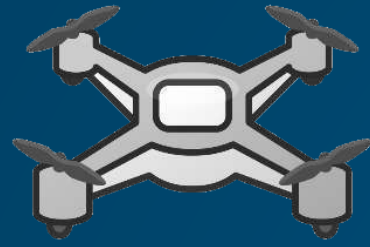
3D SCULPTOR



**FUNCTION-DRIVEN
GENERATIVE DESIGNER**



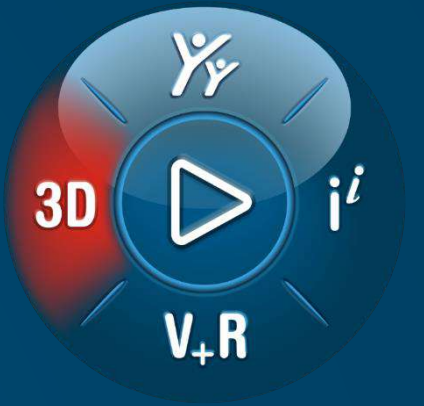
IMAGINE & SHAPE



3D CREATOR



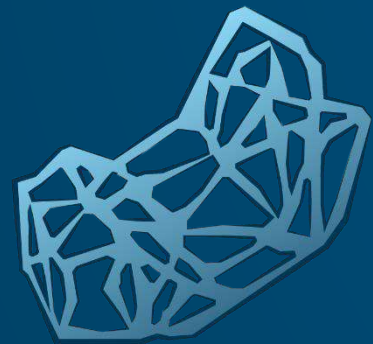
3D SCULPTOR



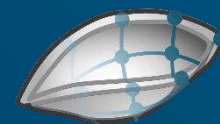
SOLIDWORKS



3D SCULPTOR



**FUNCTION-DRIVEN
GENERATIVE DESIGNER**



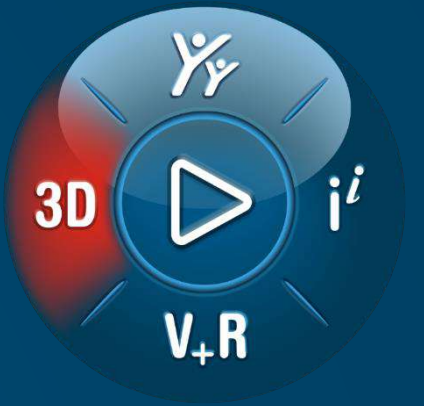
IMAGINE & SHAPE



3D CREATOR



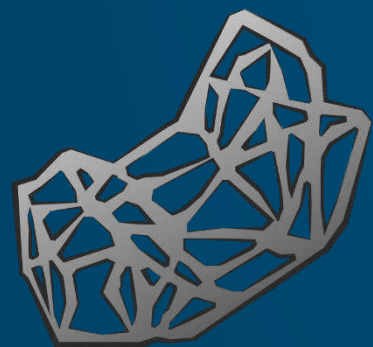
3D SCULPTOR



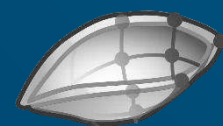
SOLIDWORKS



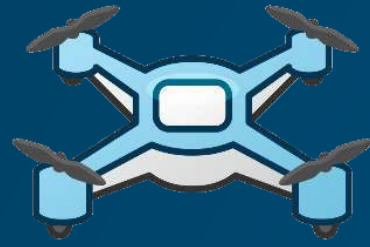
3D SCULPTOR



**FUNCTION-DRIVEN
GENERATIVE DESIGNER**



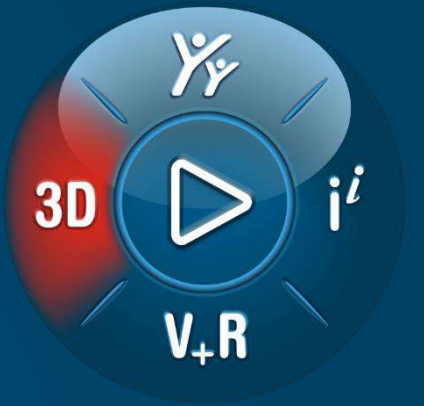
IMAGINE & SHAPE



3D CREATOR



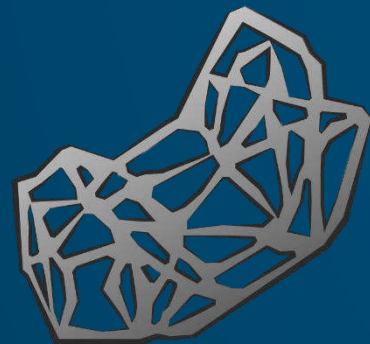
3D SCULPTOR



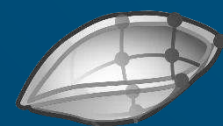
SOLIDWORKS



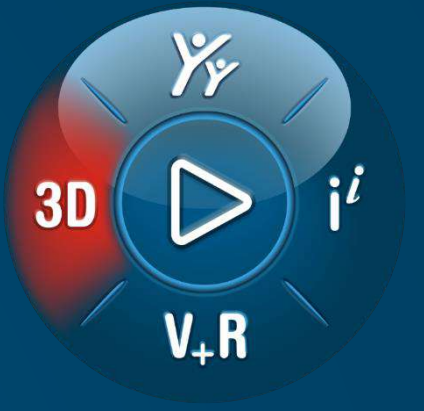
3D SCULPTOR



FUNCTION-DRIVEN GENERATIVE DESIGNER



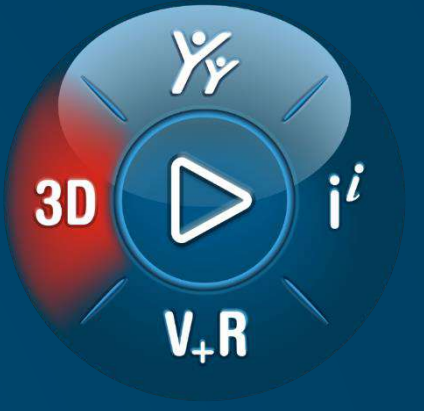
IMAGINE & SHAPE



xDesign

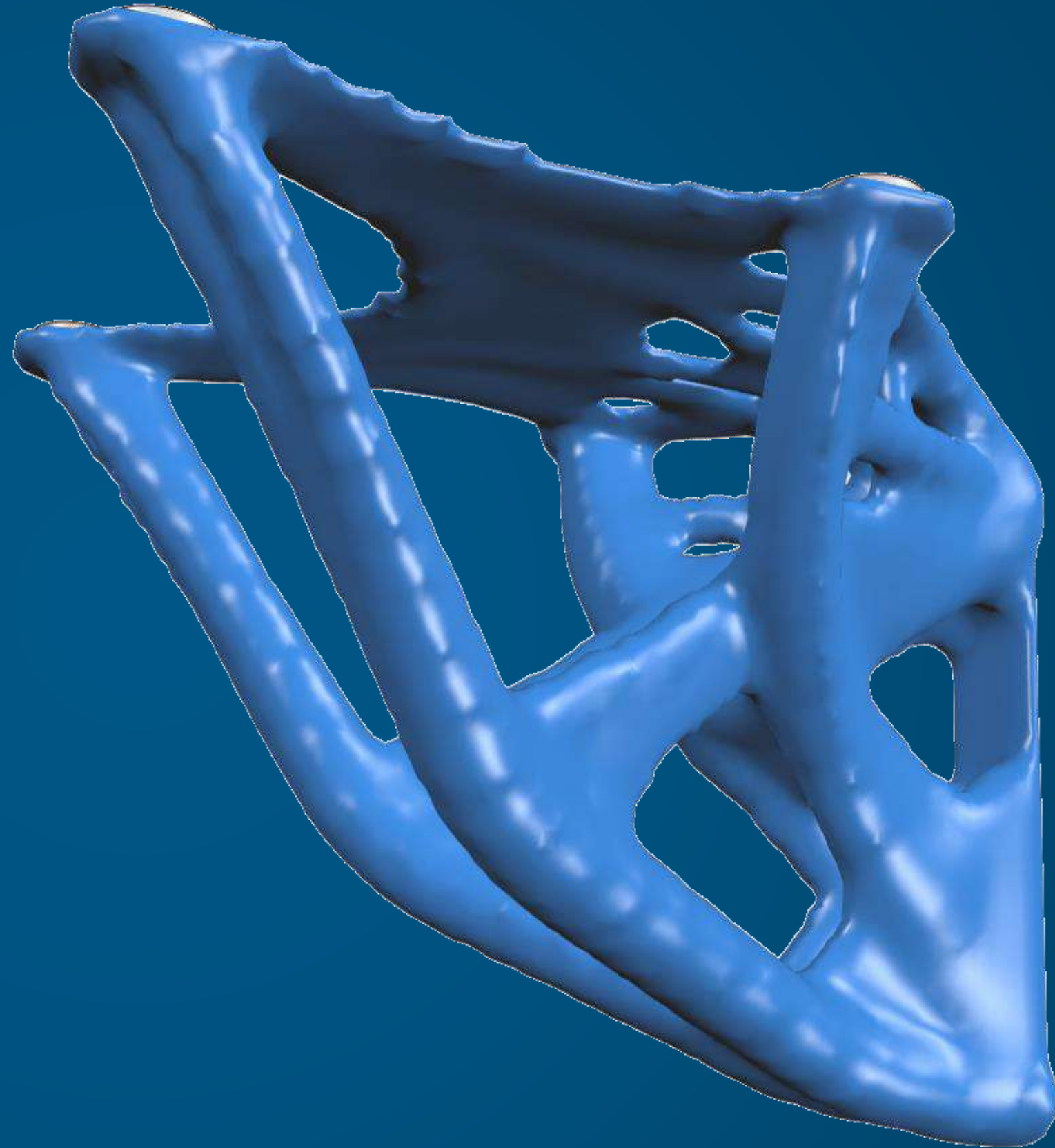
- PARAMETRIC MODELING
- CAD ON ANY DEVICE
- DESIGN GUIDANCE





xDesign

- PARAMETRIC MODELING
- CAD ON ANY DEVICE
- DESIGN GUIDANCE



xDesign

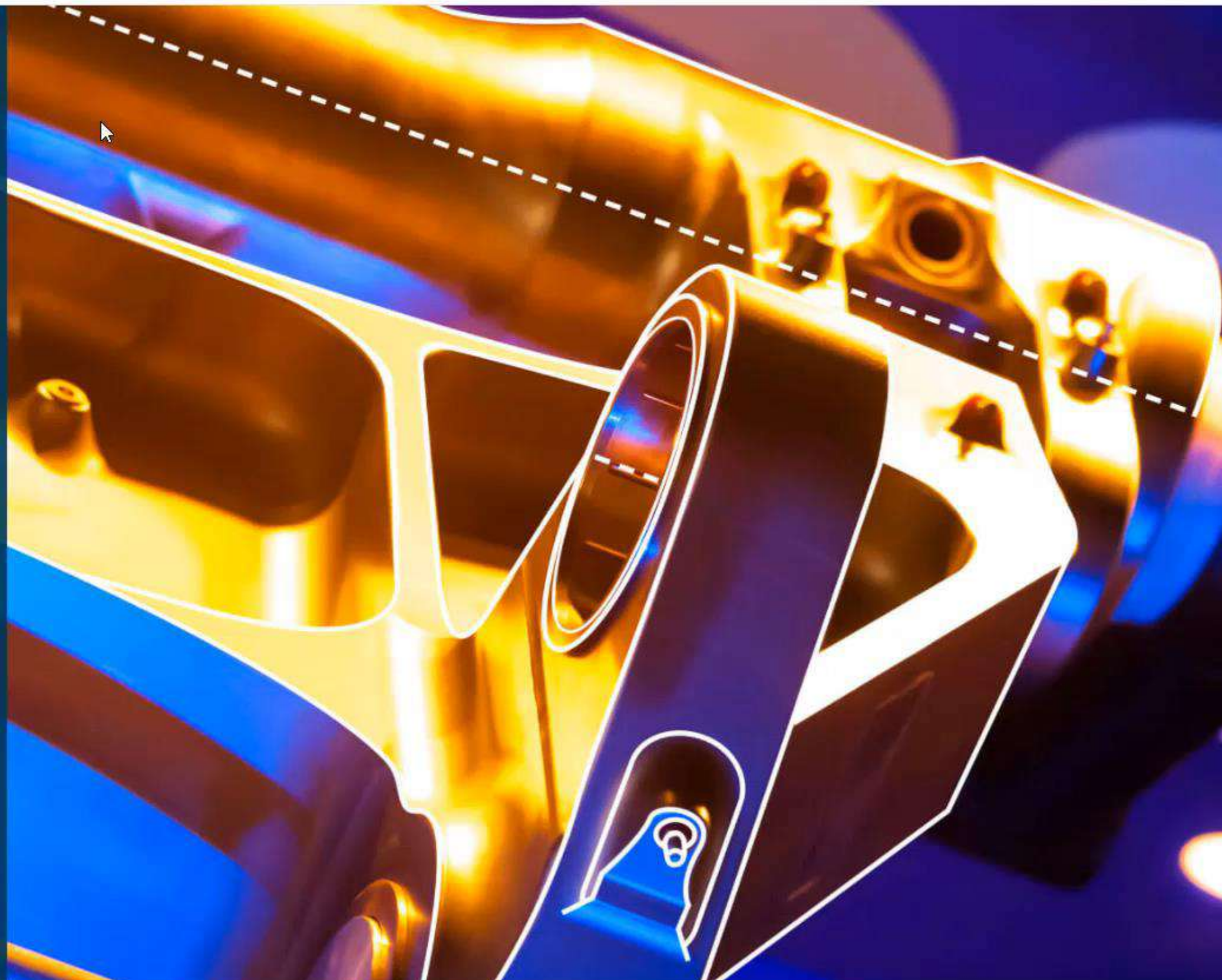
Inspiring Design

- New Component
- Open
- Import File
- Quick Tour

Or drag and drop your content anywhere

Content & Knowledge: User Assistance, Training, What's New

Social networks: Community



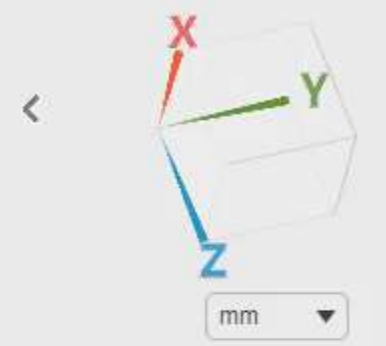
ENOVIA - Bookmark Editor

Title	Revision
Arm Opto_Topology Study 1_smoothed_mes...	A.1
Arm Topology	A.1
Arm Topology Study Results	A.1
Arm Topology Sub D	A.1
Arm Topology Sub D - Complete	A.1
Arm Topology Sub D - Complete with xDesign	A.1
Holmatro Arm - Additive Optimized	A.1
Lattice	A.1
Record Player Wall Support	A.1
Record player wall support - DG Study	B.1
Record player wall support - DG Study empty	A.1
Record Player Wall Support Assembly	A.1
Record Sub D	A.1
Technic_Assembly	A.1

Bookmark | Document | View | Tools



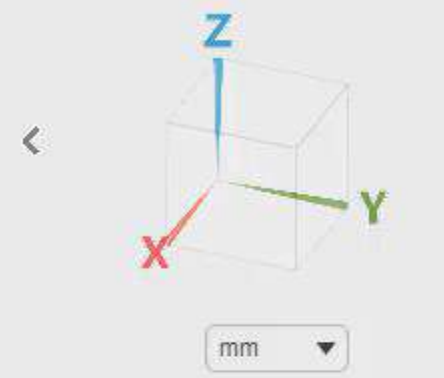
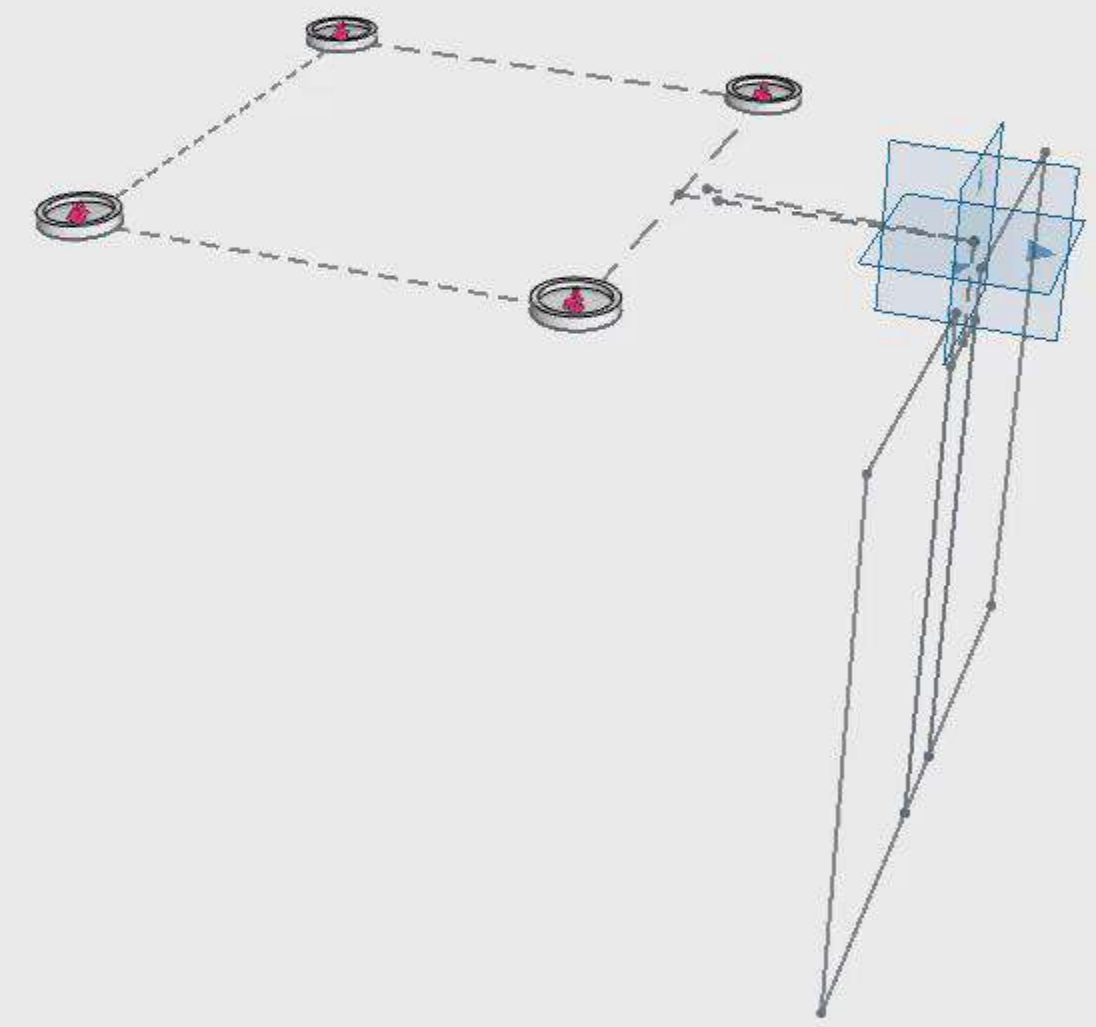
xDesign



xDesign

Design Manager Find...

- Record player wall support - DG Study empty
 - defaultdefault3D Shape00203825
 - Ordered Geometrical Set.1
 - Sketch.1
 - Extrude.1
 - Shell.1
 - Sketch.2
 - Sketch.4
 - Sketch.5
 - Extrude.2
 - Mirror.1
 - Move Body.1
 - Linear Pattern.2
 - Sketch.6
 - Design Guidance
 - Distributed Force.1
 - Distributed Force.2
 - Distributed Force.3
 - Load Case.1
 - Load Case.2
 - Load Case.3
 - Torque.4
 - Load Case.4



Standard Sketch Features Surfaces Assembly Design Guidance Tools Lifecycle Marketplace View

3D Modeling toolbar with icons for various functions such as create, delete, copy, paste, and view.

xDesign

Design Manager Find...

- Record player wall support - DG Study empty
 - defaultdefault3D Shape00203825
 - Ordered Geometrical Set.1
 - Sketch.1
 - Extrude.1
 - Shell.1
 - Sketch.2
 - Sketch.4
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 - Sketch.6
 - Design Guidance
 - Distributed Force.1
 - Distributed Force.2
 - Distributed Force.3
 - Load Case.1
 - Load Case.2
 - Load Case.3
 - Torque.4
 - Load Case.4

Force

Distributed Point

Value: Hard push by hand (200 N)

Magnitude: 200 N

Select faces 4: Face.1, Face.2, Face.3, Face.4

Force Direction:

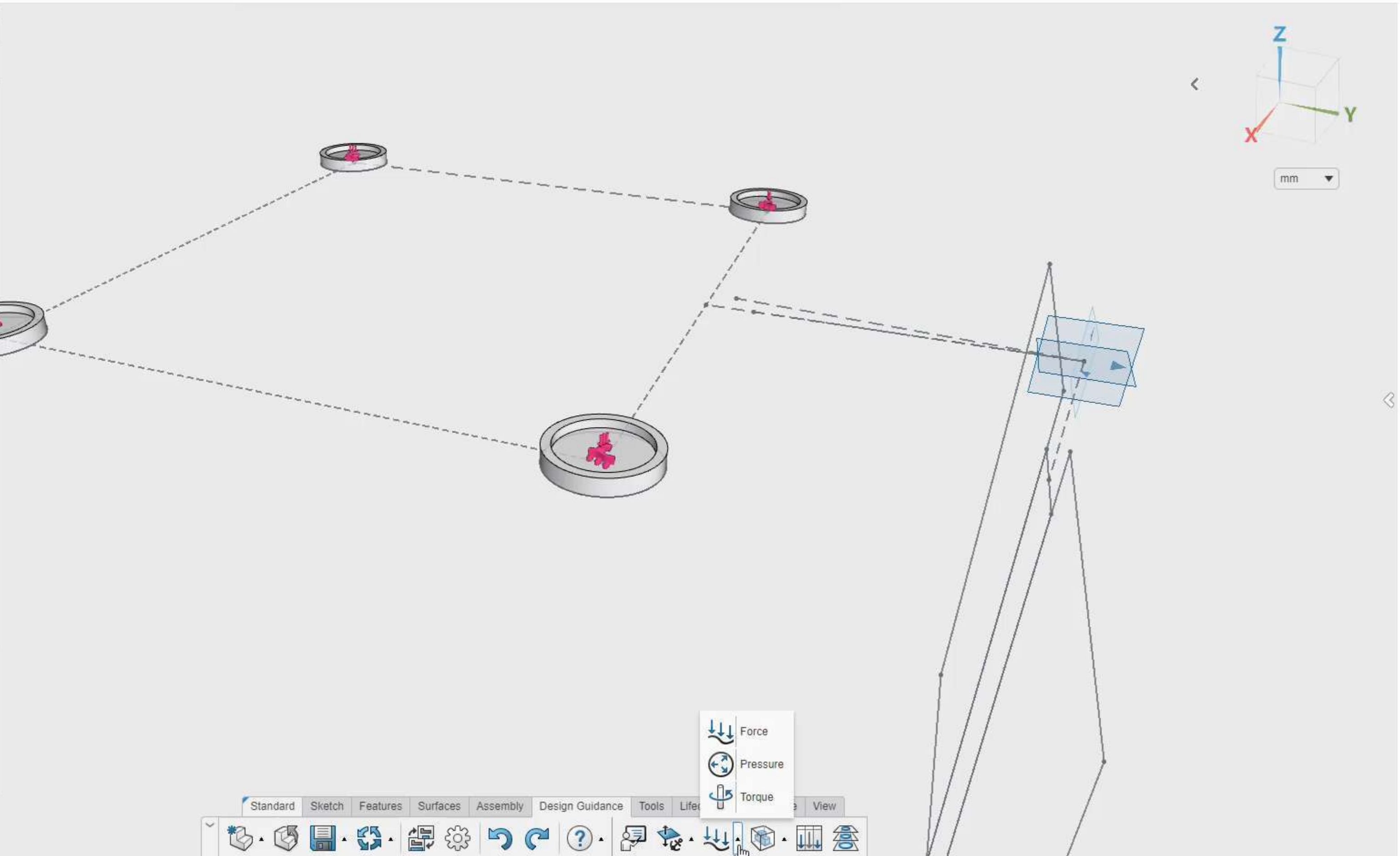
- Normal to face at center
- Other direction

The main workspace shows a 3D model of a mechanical part. Three circular force application points are visible, connected to the main model by dashed lines. A coordinate system (X, Y, Z) is shown in the top right corner. The bottom of the screen features a ribbon with tabs for Standard, Sketch, Features, Surfaces, Assembly, Design Guidance, Tools, Lifecycle, Marketplace, and View. The Design Guidance tab is currently active, showing various force and load case icons.

xDesign

Design Manager Find...

- Record player wall support - DG Study empty
 - defaultdefault3D Shape00203825
 - Ordered Geometrical Set.1
 - Sketch.1
 - Extrude.1
 - Shell.1
 - Sketch.2
 - Sketch.4
 - Sketch.5
 - Extrude.2
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 - Distributed Force.2
 - Distributed Force.3
 - Load Case.1
 - Load Case.2
 - Load Case.3
 - Torque.4
 - Load Case.4



- Force
- Pressure
- Torque

Standard Sketch Features Surfaces Assembly Design Guidance Tools Life View

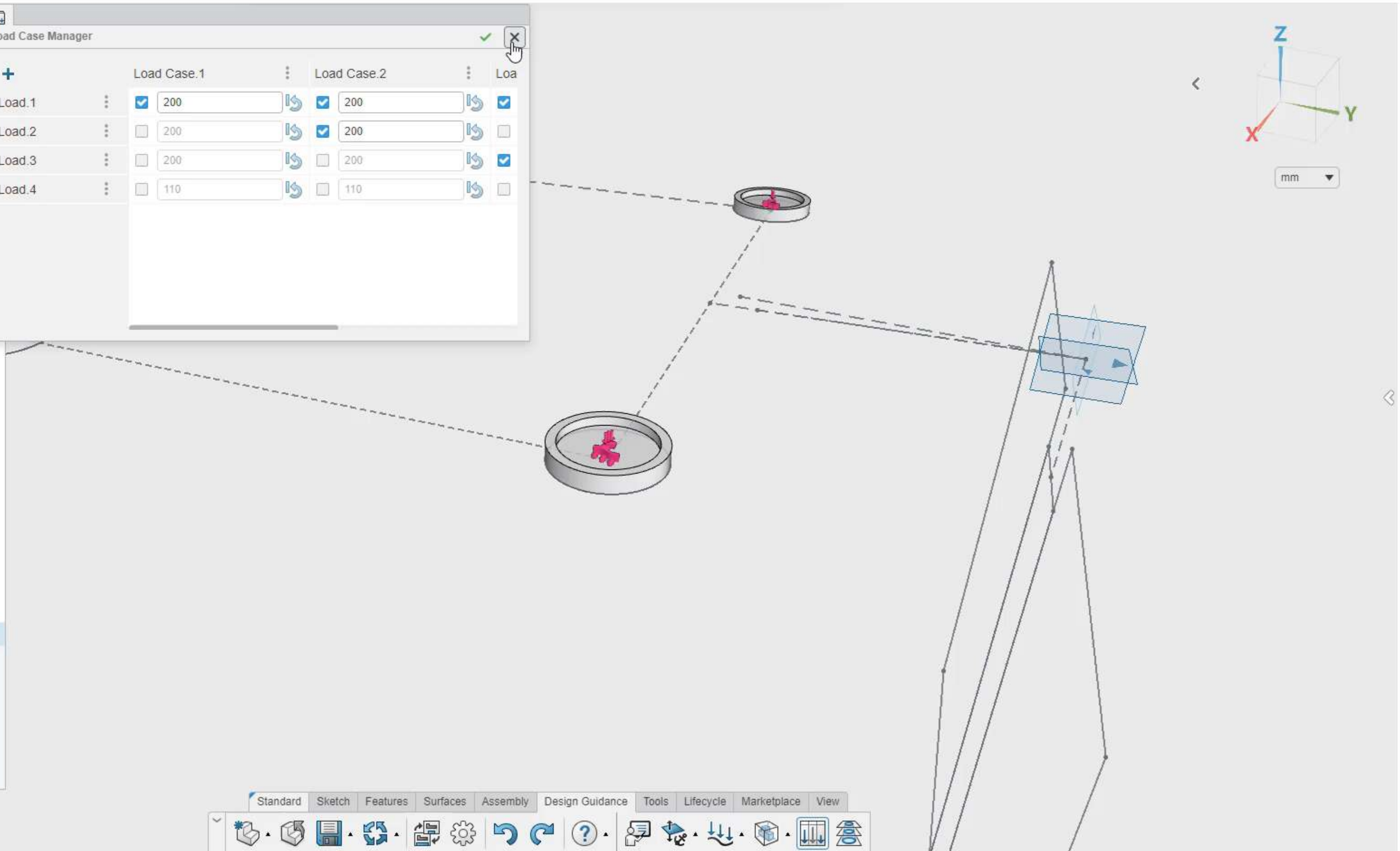
xDesign

Design Manager Find...

- Record player wall support - DG Study empty
 - defaultdefault3D Shape00203825
 - Ordered Geometrical Set.1
 - Sketch.1
 - Extrude.1
 - Shell.1
 - Sketch.2
 - Sketch.4
 - Sketch.5
 - Extrude.2
 - Mirror.1
 - Move Body.1
 - Linear Pattern.2
 - Sketch.6
 - Design Guidance
 - Distributed Force.1
 - Distributed Force.2
 - Distributed Force.3
 - Load Case.1
 - Load Case.2
 - Load Case.3
 - Torque.4
 - Load Case.4

Load Case Manager

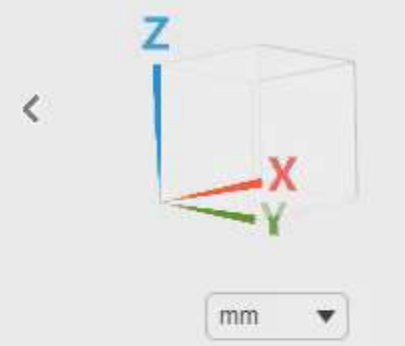
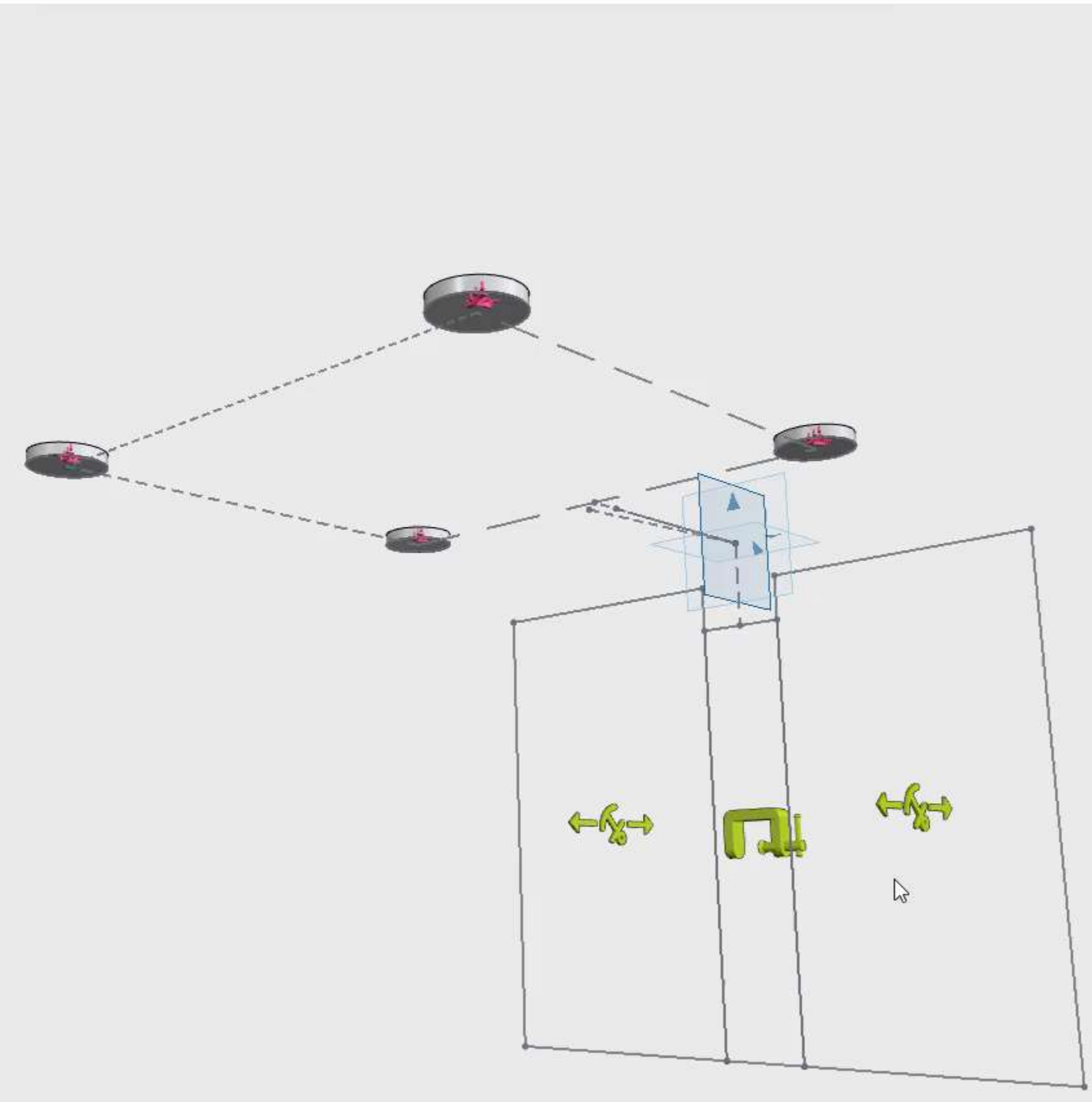
	Load Case.1	Load Case.2	Loa
Load.1	<input checked="" type="checkbox"/> 200	<input checked="" type="checkbox"/> 200	<input checked="" type="checkbox"/>
Load.2	<input type="checkbox"/> 200	<input checked="" type="checkbox"/> 200	<input type="checkbox"/>
Load.3	<input type="checkbox"/> 200	<input type="checkbox"/> 200	<input checked="" type="checkbox"/>
Load.4	<input type="checkbox"/> 110	<input type="checkbox"/> 110	<input type="checkbox"/>



xDesign

Design Manager Find...

- Record player wall support - DG Study empty
 - defaultdefault3D Shape00203825
 - Ordered Geometrical Set.1
 - Sketch.1
 - Extrude.1
 - Shell.1
 - Sketch.2
 - Sketch.4
 - Sketch.5
 - Extrude.2
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 - Linear Pattern.2
 - Sketch.6
 - Design Guidance
 - Distributed Force.1
 - Distributed Force.2
 - Distributed Force.3
 - Load Case.1
 - Load Case.2
 - Load Case.3
 - Torque.4
 - Load Case.4
 - Clamp.3
 - Fixture.4



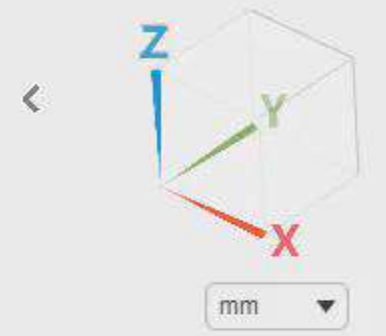
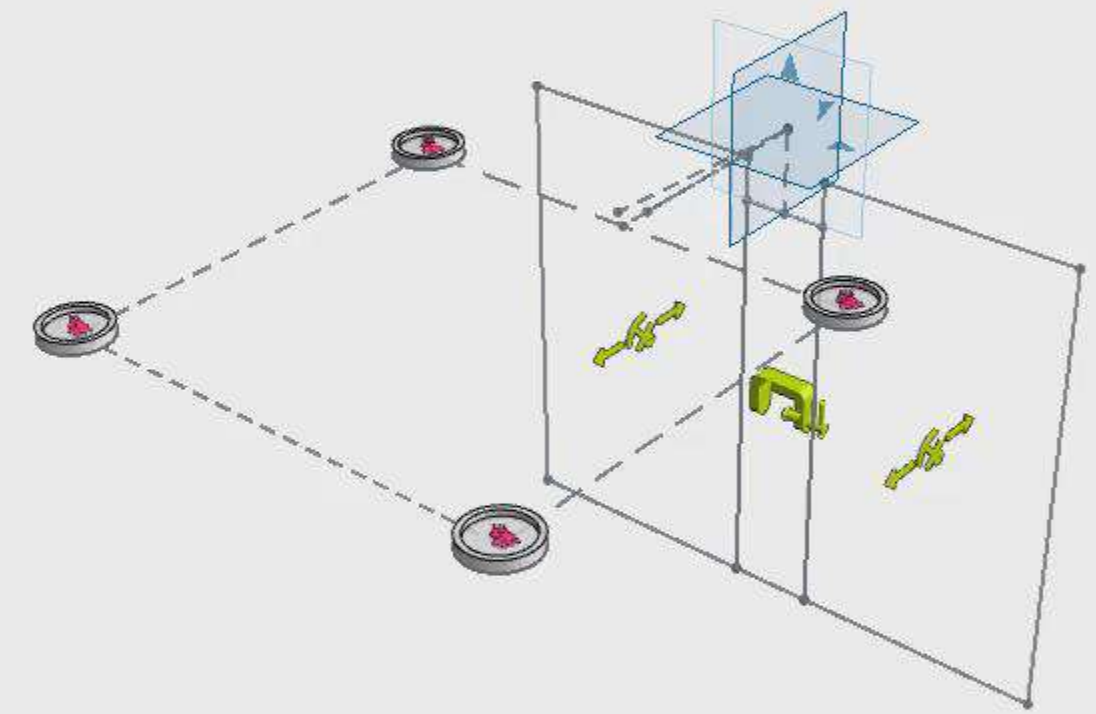
Standard Sketch Features Surfaces Assembly Design Guidance Tools Lifecycle Marketplace View

The toolbar contains various icons for CAD operations, including a 3D model, a document, a refresh symbol, a gear, a circular arrow, a question mark, a person icon, a force vector, a torque symbol, a cube, a list icon, and a stack icon.

xDesign

Design Manager Find...

- Record player wall support - DG Study empty
 - defaultdefault3D Shape00203825
 - Ordered Geometrical Set.1
 - Sketch.1
 - Extrude.1
 - Shell.1
 - Sketch.2
 - (-) Sketch.4
 - Sketch.5
 - Extrude.2
 - Mirror.1
 - Move Body.1
 - Linear Pattern.2
 - (-) Sketch.6
 - Design Guidance
 - Distributed Force.1
 - Distributed Force.2
 - Distributed Force.3
 - Load Case.1
 - Load Case.2
 - Load Case.3
 - Torque.4
 - Load Case.4
 - Clamp.3
 - Fixture.4



Standard Sketch Features Surfaces Assembly Design Guidance Tools Lifecycle M

New Design Redesign

The toolbar contains various icons for CAD operations, including a 3D model icon, a sketch icon, a features icon, a surfaces icon, an assembly icon, a design guidance icon, a tools icon, a lifecycle icon, and a menu icon. The 'New Design' and 'Redesign' buttons are highlighted in a tooltip.

xDesign

Design Manager Find...

- Record player wall support - DG Study empty
 - defaultdefault3D Shape00203825
 - Ordered Geometrical Set.1
 - Sketch.1
 - Extrude.1
 - Shell.1
 - Sketch.2
 - (-) Sketch.4
 - Sketch.5
 - Extrude.2
 - Mirror.1
 - Move Body.1
 - Linear Pattern.2
 - (-) Sketch.6
 - Design Guidance
 - Distributed Force.1
 - Distributed Force.2
 - Distributed Force.3
 - Load Case.1
 - Load Case.2
 - Load Case.3
 - Torque.4
 - Load Case.4
 - Clamp.3
 - Fixture.4
 - Design Guidance Study.1

Design Guidance

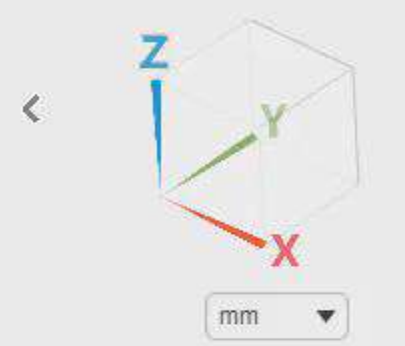
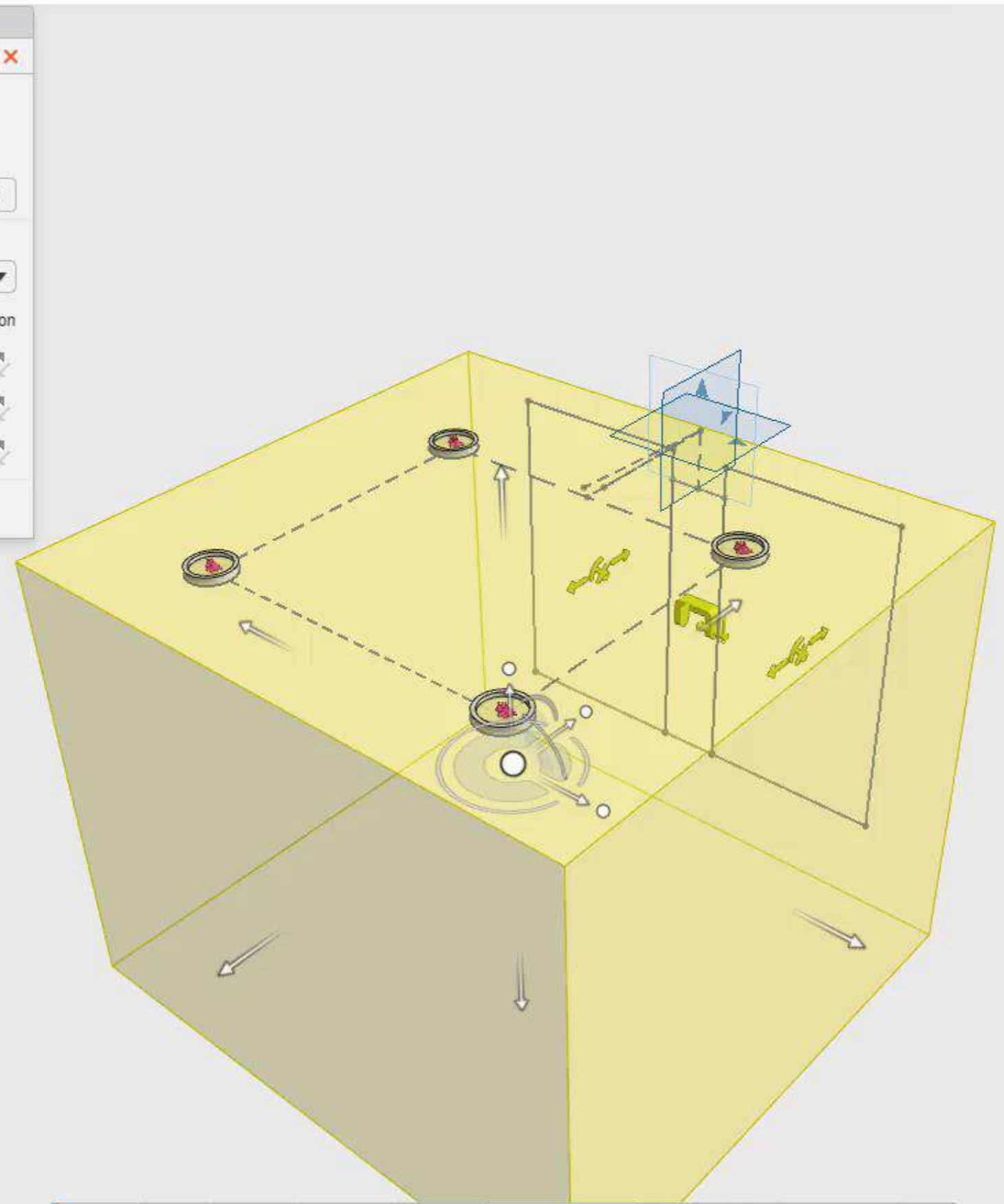
New Design | Redesign

Settings | Volume | **Symmetry** | Results

Plane Location: At Center

Axis	Direction
<input type="checkbox"/> X-axis	↕
<input type="checkbox"/> Y-axis	↔
<input type="checkbox"/> Z-axis	↕

Generate



xDesign

Design Manager Find... ^ v

- Record player wall support - DG Study empty
 - defaultdefault3D Shape00203825
 - Ordered Geometrical Set.1
 - Sketch.1
 - Extrude.1
 - Shell.1
 - Sketch.2
 - Sketch.4
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 - Distributed Force.3
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 - Load Case.2
 - Load Case.3
 - Torque.4
 - Load Case.4
 - Clamp.3
 - Fixture.4
 - Design Guidance Study.1

Design Guidance

New Design Redesign

Settings Volume Symmetry Results

Add or Remove Material

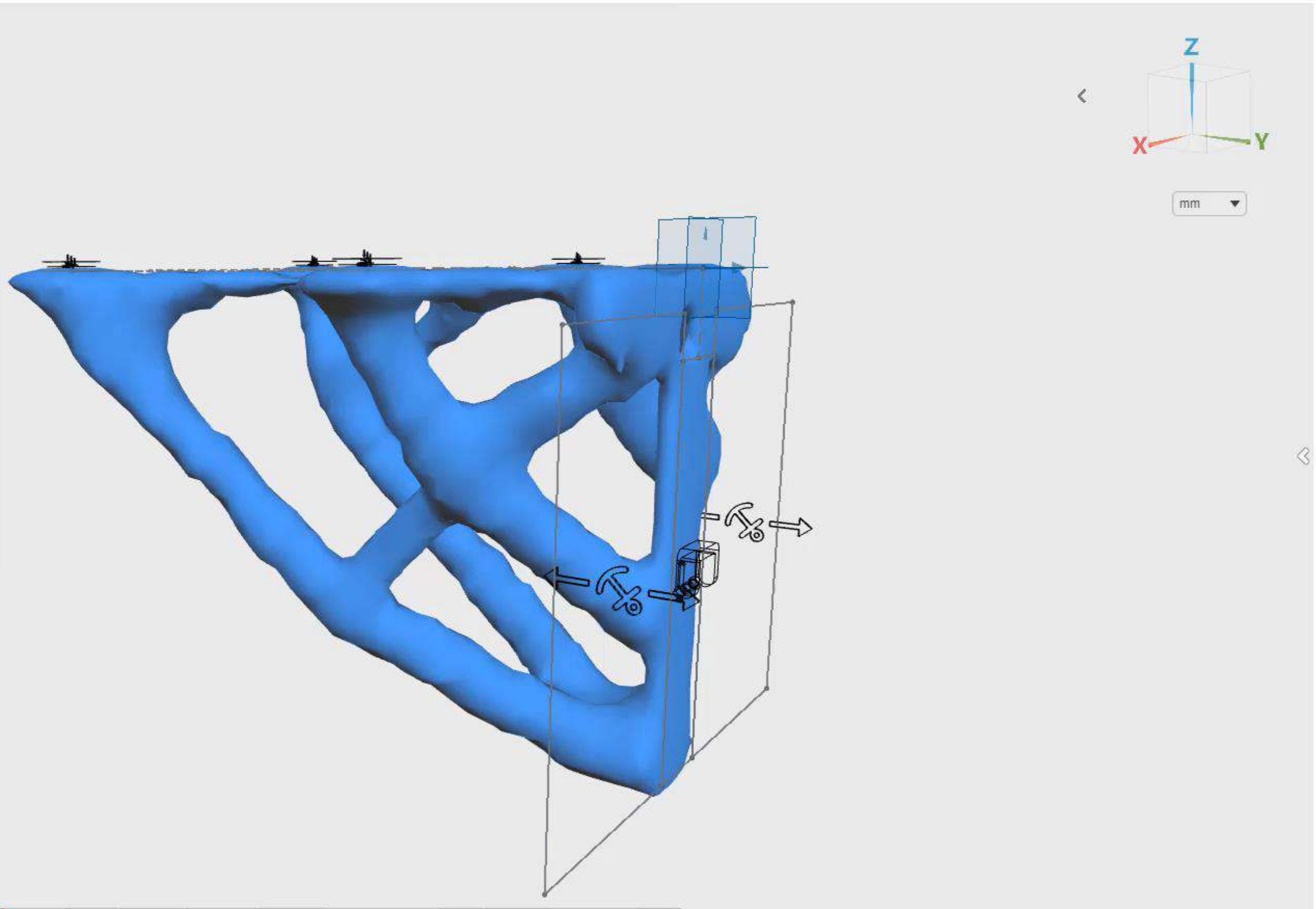
Resulting Mass: 3252 g

Results Display

- Show granular results
- Increase surface smoothing
- Switch to mesh display
- Show contact with boundaries
- Inspect details

Shape Transparency:

Tip: Save STL in Tools->Print 3D



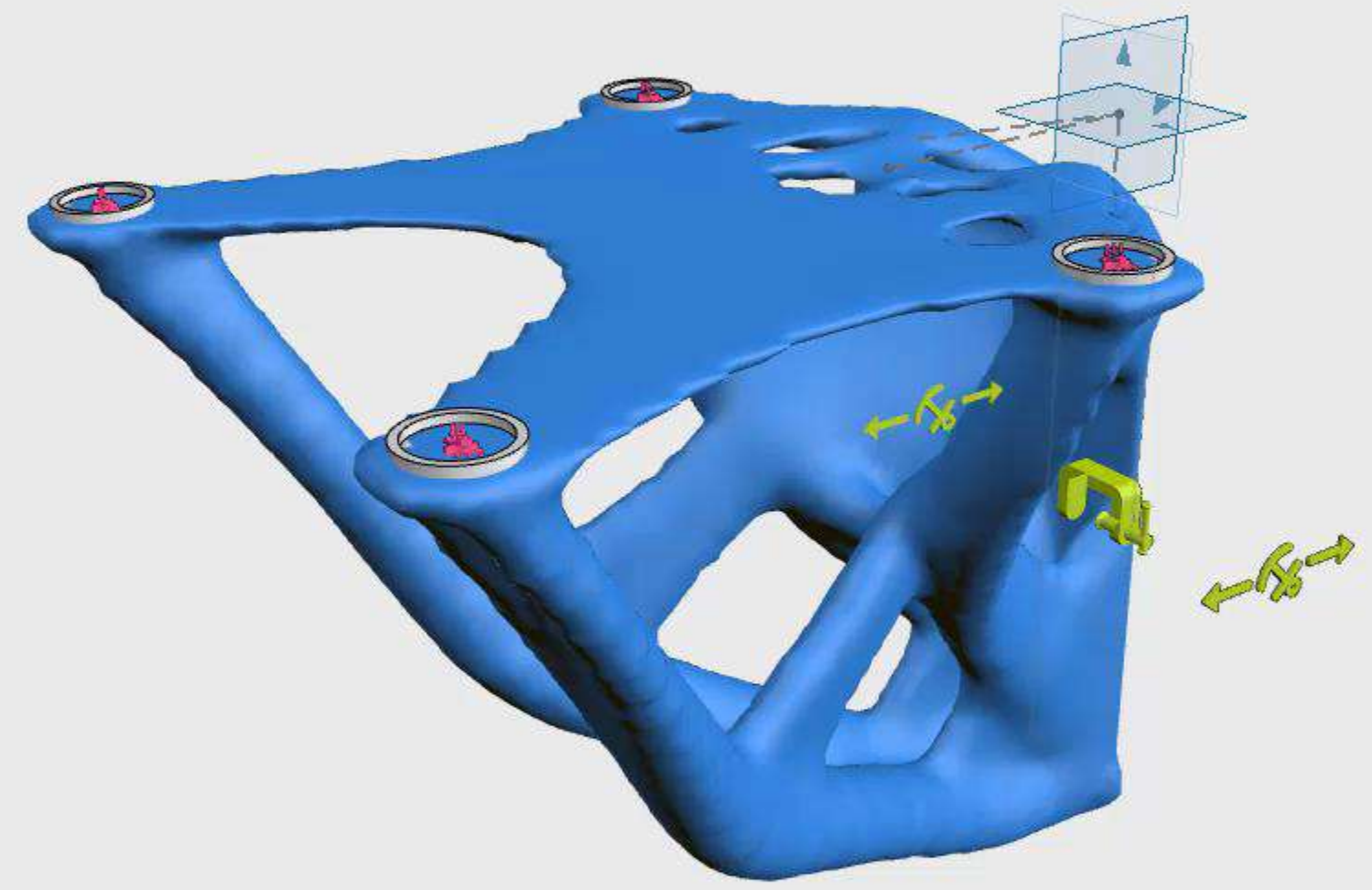
Standard Sketch Features Surfaces Assembly Design Guidance Tools Lifecycle Marketplace View

3D Modeling Tools

xDesign

Design Manager Find...

- Record player wall support - DG Study
 - default3D Shape00203825
 - Ordered Geometrical Set.1
 - Sketch.1
 - Extrude.1
 - Shell.1
 - Sketch.2
 - Sketch.4
 - Sketch.5
 - Extrude.2
 - Mirror.1
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 - Sketch.6
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 - Clamp.1
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 - Distributed Force.2
 - Distributed Force.3
 - Load Case.1
 - Load Case.2
 - Load Case.3
 - Fixture.2
 - Torque.4
 - Load Case.4
 - Design Guidance Study.1



Standard Sketch Features Surfaces Assembly Design Guidance Tools Lifecycle Marketplace View

A toolbar containing various icons for CAD operations. From left to right, the icons include: a 3D model, a sketch, a document, a circular arrow (refresh), a gear (settings), a circular arrow (undo), a circular arrow (redo), a question mark (help), a speech bubble (comment), a hand (pan), a double-headed arrow (dimension), a cube (isometric view), a vertical double-headed arrow (vertical dimension), and a horizontal double-headed arrow (horizontal dimension).

xDesign

Design Manager Find... ^ v

- Record player wall support - DG Study
 - default3D Shape00203825
 - Ordered Geometrical Set.1
 - Sketch.1
 - Extrude.1
 - Shell.1
 - Sketch.2
 - Sketch.4
 - Sketch.5
 - Extrude.2
 - Mirror.1
 - Move Body.1
 - Linear Pattern.2
 - Sketch.6
 - Design Guidance
 - Clamp.1
 - Distributed Force.1
 - Distributed Force.2
 - Distributed Force.3
 - Load Case.1
 - Load Case.2
 - Load Case.3
 - Fixture.2
 - Torque.4
 - Load Case.4
 - Design Guidance Study.1

Print 3D

Envelope
User Defined:200x200x150

Base 0
Select a plane or face

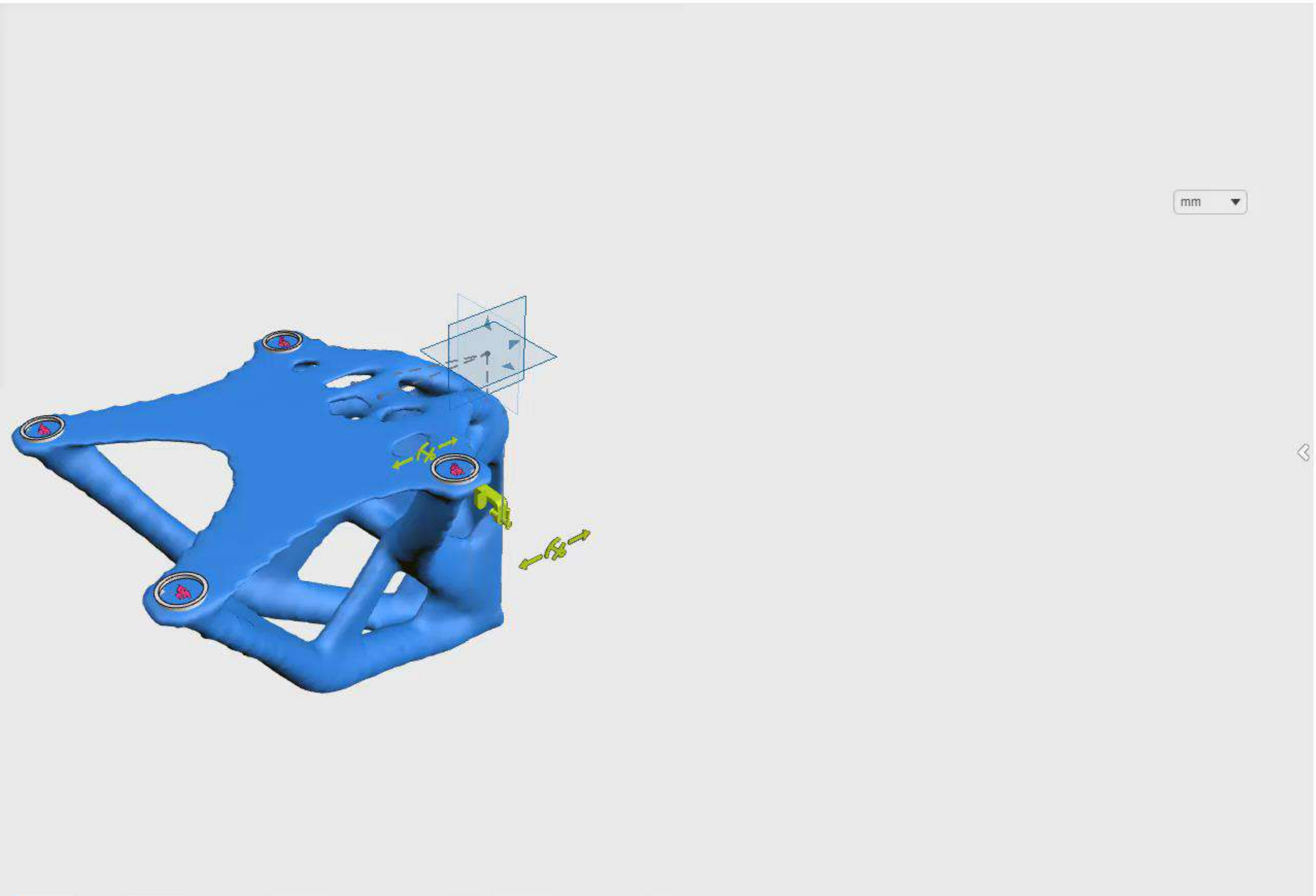
Orient model to fit envelope

Scale model to fit envelope

Scale 1

Analysis

Ok Cancel



xDesign

Design Manager Find... ^ v

- Record player wall support - DG Study
 - default3D Shape00203825
 - xy yz zx
 - Ordered Geometrical Set.1
 - Sketch.1
 - Extrude.1
 - Shell.1
 - Sketch.2
 - Sketch.4
 - Sketch.5
 - Extrude.2
 - Mirror.1
 - Move Body.1
 - Linear Pattern.2
 - Sketch.6
 - Design Guidance
 - Clamp.1
 - Distributed Force.1
 - Distributed Force.2
 - Distributed Force.3
 - Load Case.1
 - Load Case.2
 - Load Case.3
 - Fixture.2
 - Torque.4
 - Load Case.4
 - Design Guidance Study.1

Print 3D

Envelope: Big:500x500x500

Base 1: xy plane

Orient model to fit envelope

Scale model to fit envelope

Scale: 1

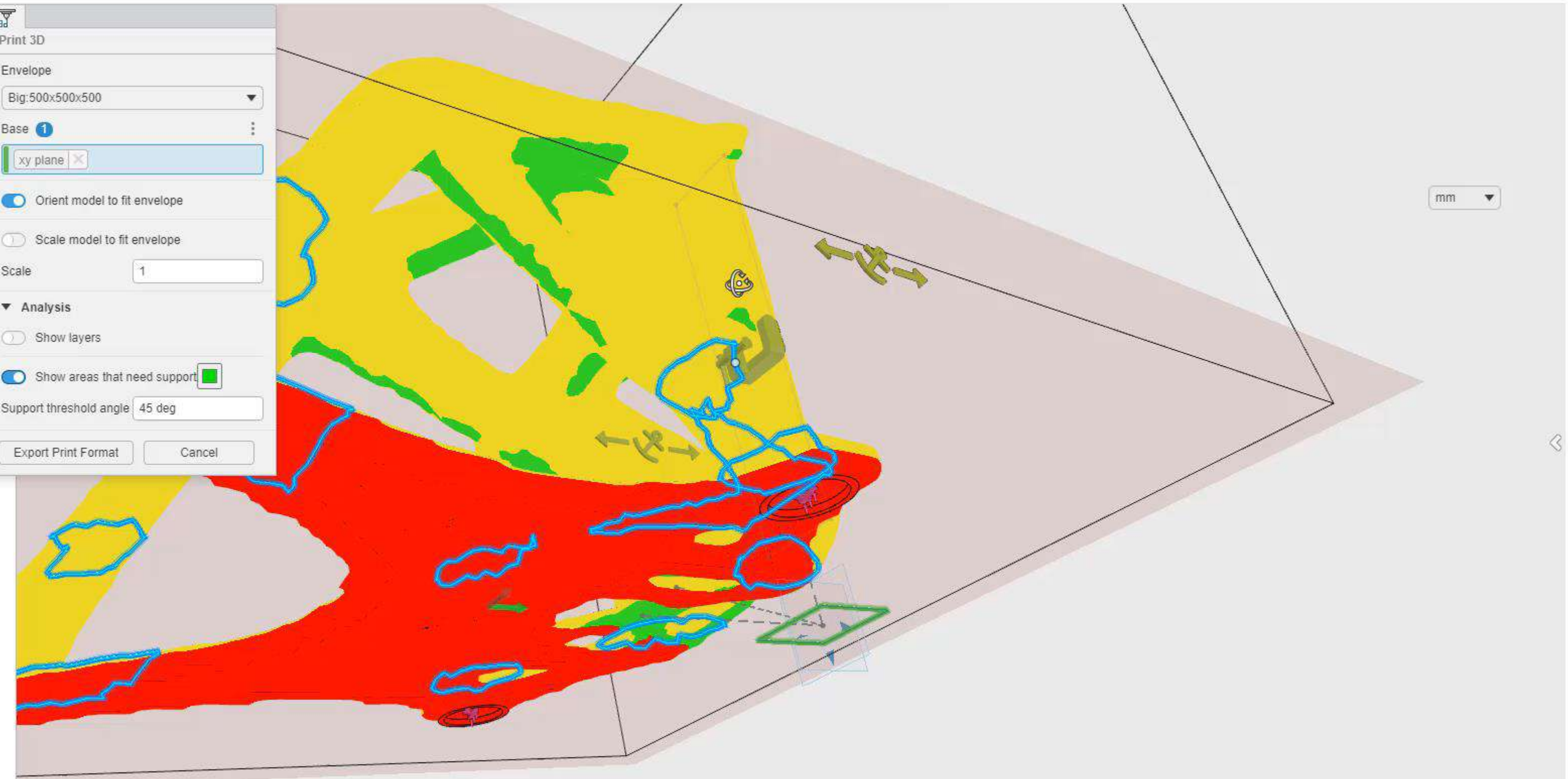
Analysis

Show layers

Show areas that need support

Support threshold angle: 45 deg

Export Print Format Cancel

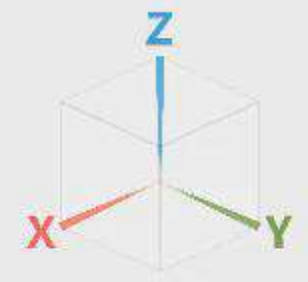
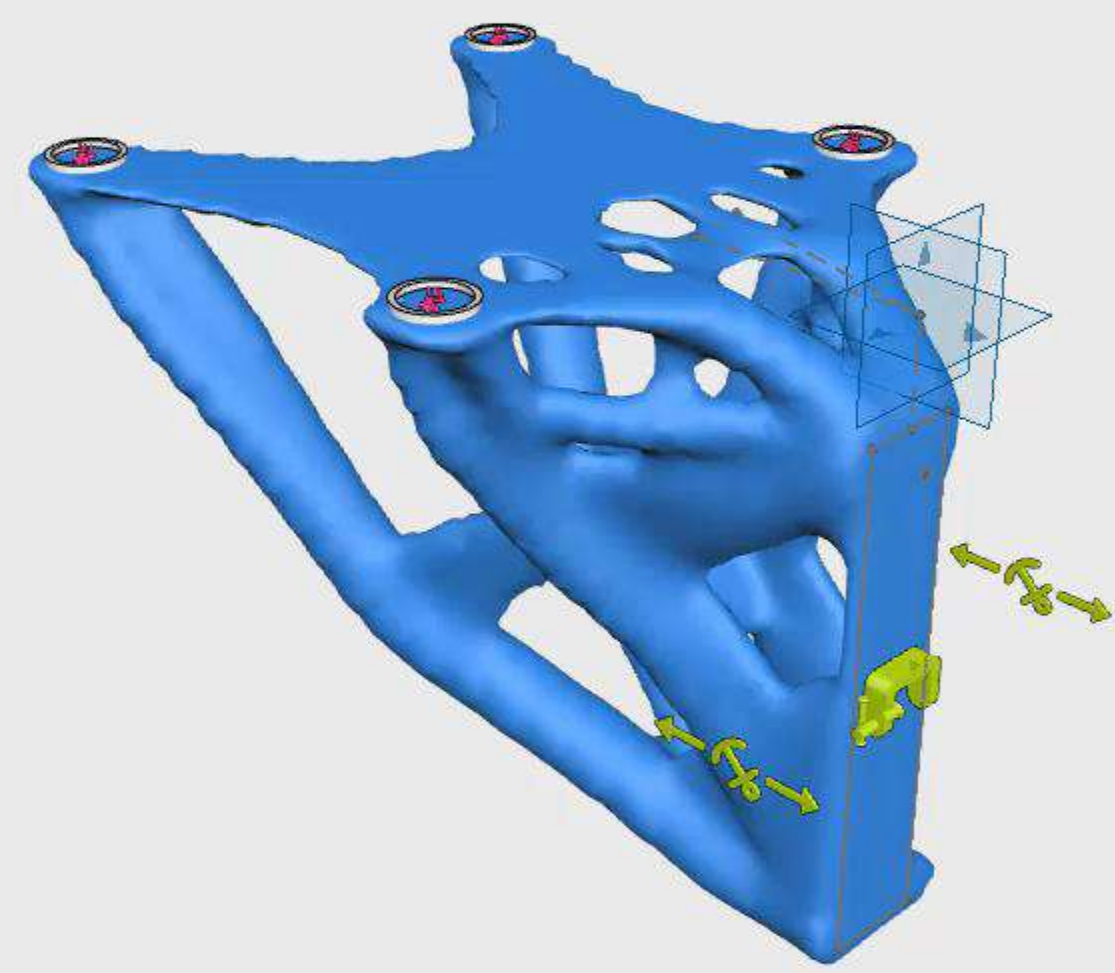




xDesign

Design Manager Find...

- Record player wall support - DG Study
 - default3D Shape00203825
 - Ordered Geometrical Set.1
 - Sketch.1
 - Extrude.1
 - Shell.1
 - Sketch.2
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 - Distributed Force.3
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 - Load Case.2
 - Load Case.3
 - Fixture.2
 - Torque.4
 - Load Case.4
 - Design Guidance Study.1

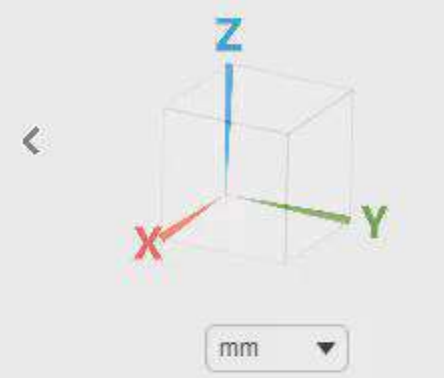
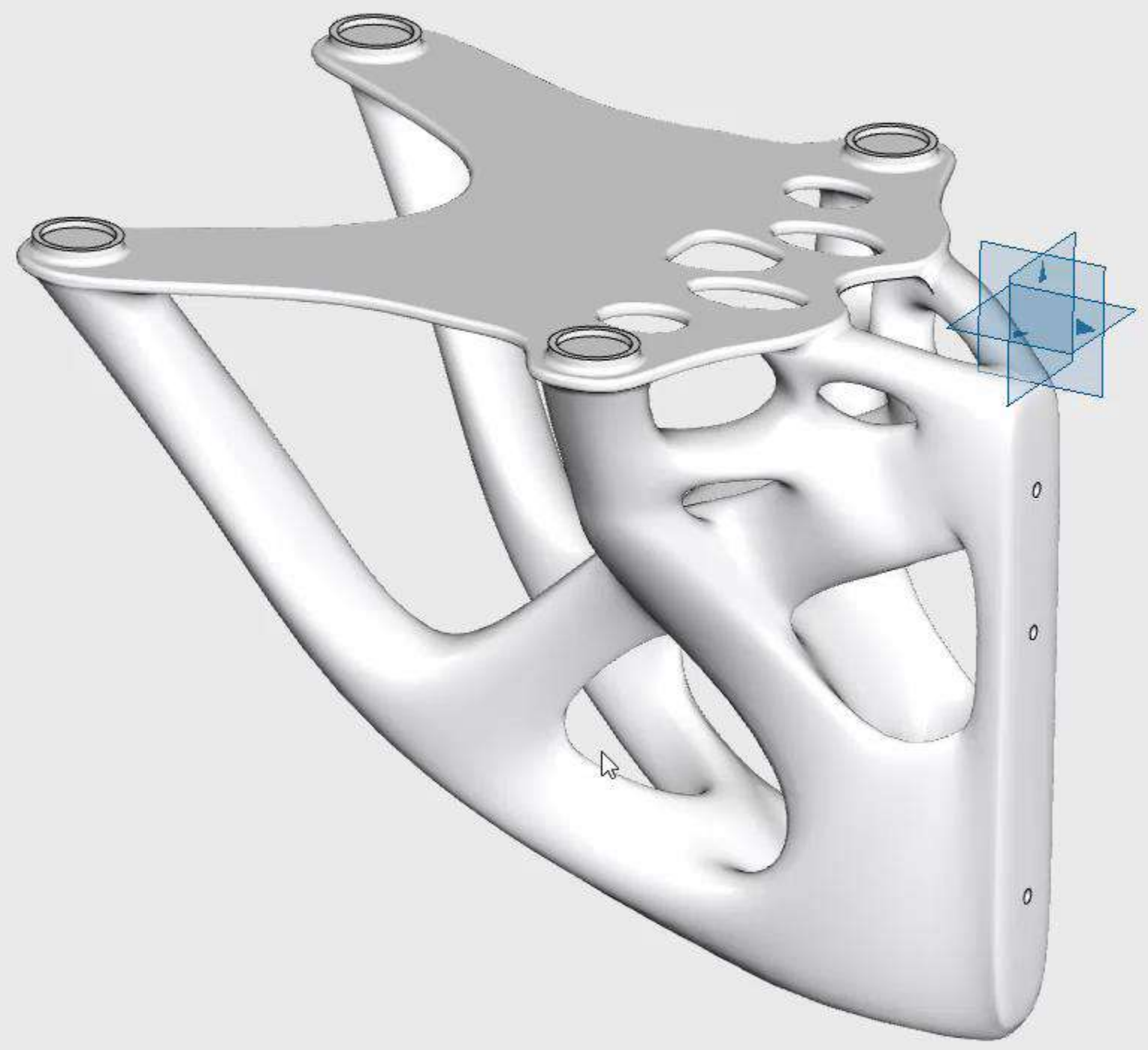


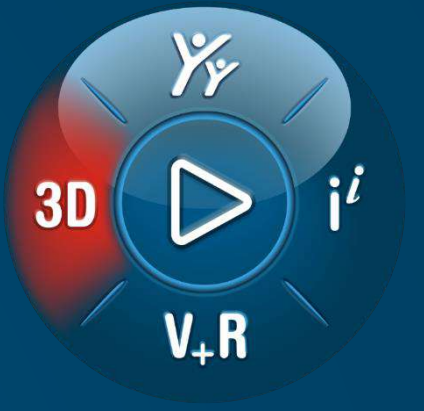
mm





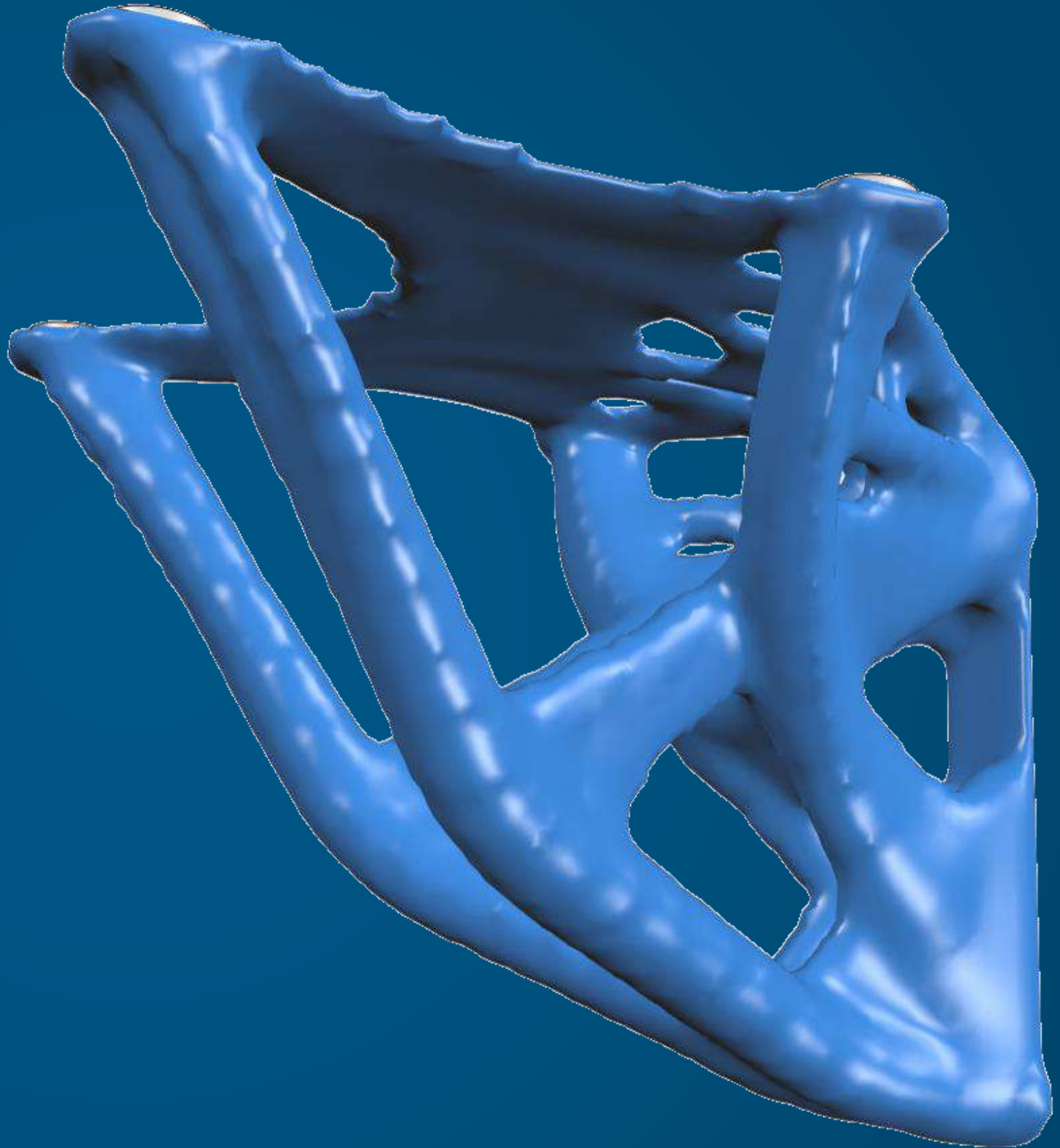
xShape

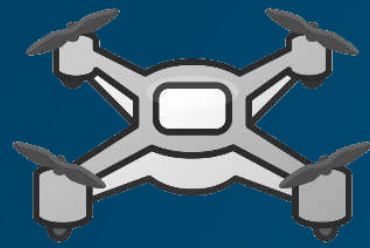




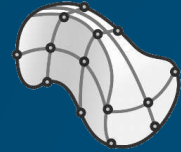
xDesign

- PARAMETRIC MODELING
- CAD ON ANY DEVICE
- DESIGN GUIDANCE

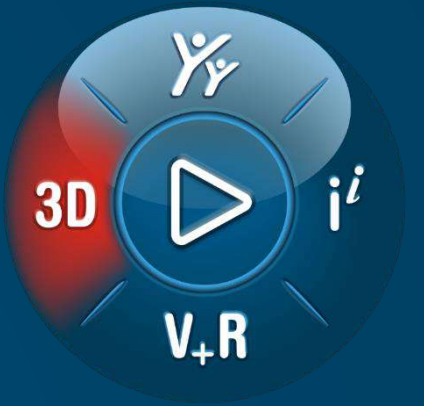




3D CREATOR



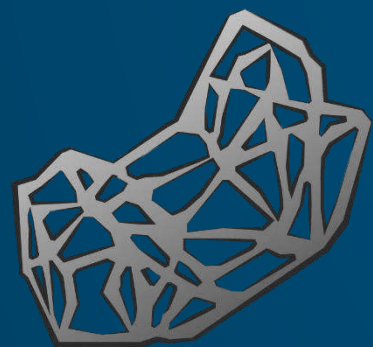
3D SCULPTOR



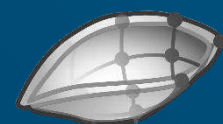
SOLIDWORKS



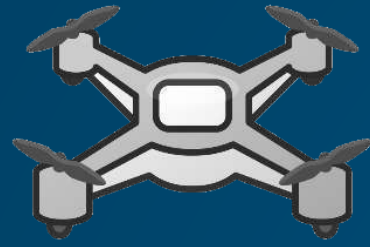
3D SCULPTOR



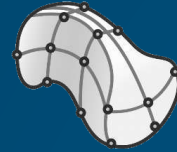
**FUNCTION-DRIVEN
GENERATIVE DESIGNER**



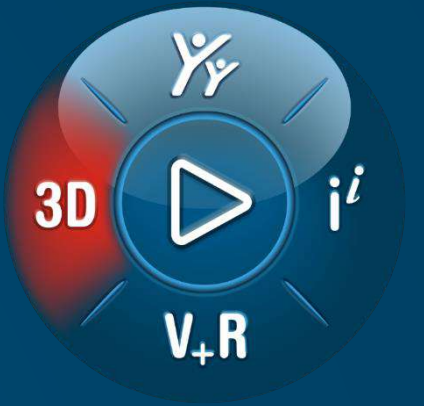
IMAGINE & SHAPE



3D CREATOR



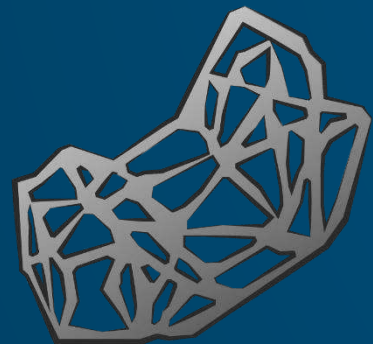
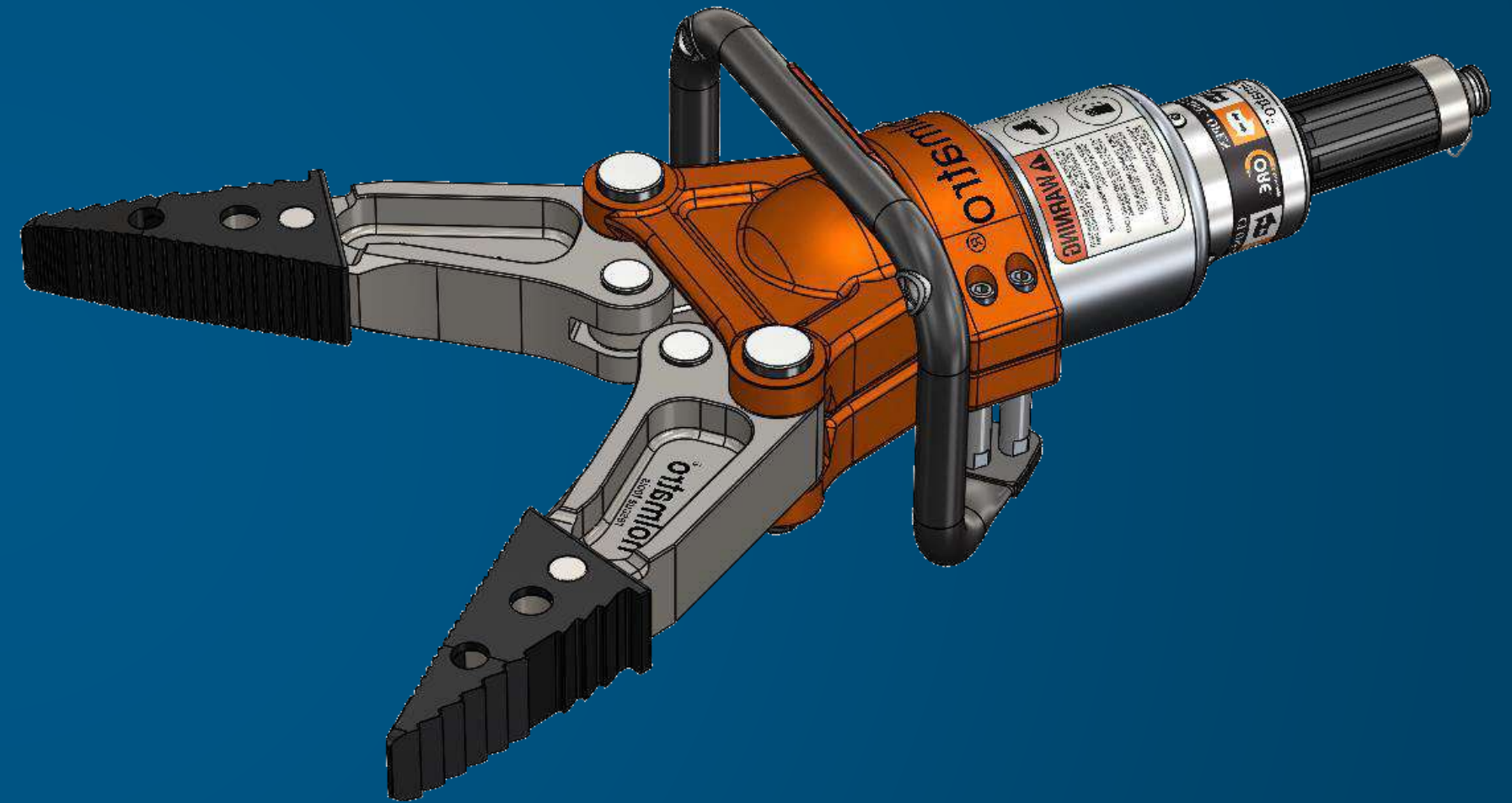
3D SCULPTOR



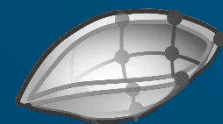
SOLIDWORKS



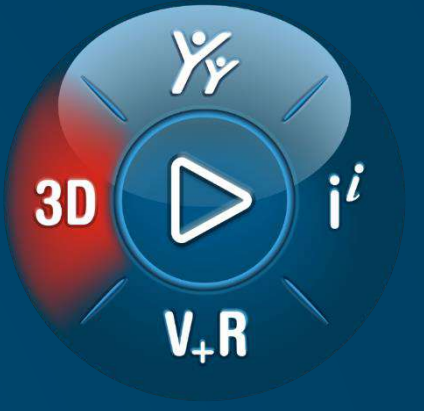
3D SCULPTOR



FUNCTION-DRIVEN
GENERATIVE DESIGNER

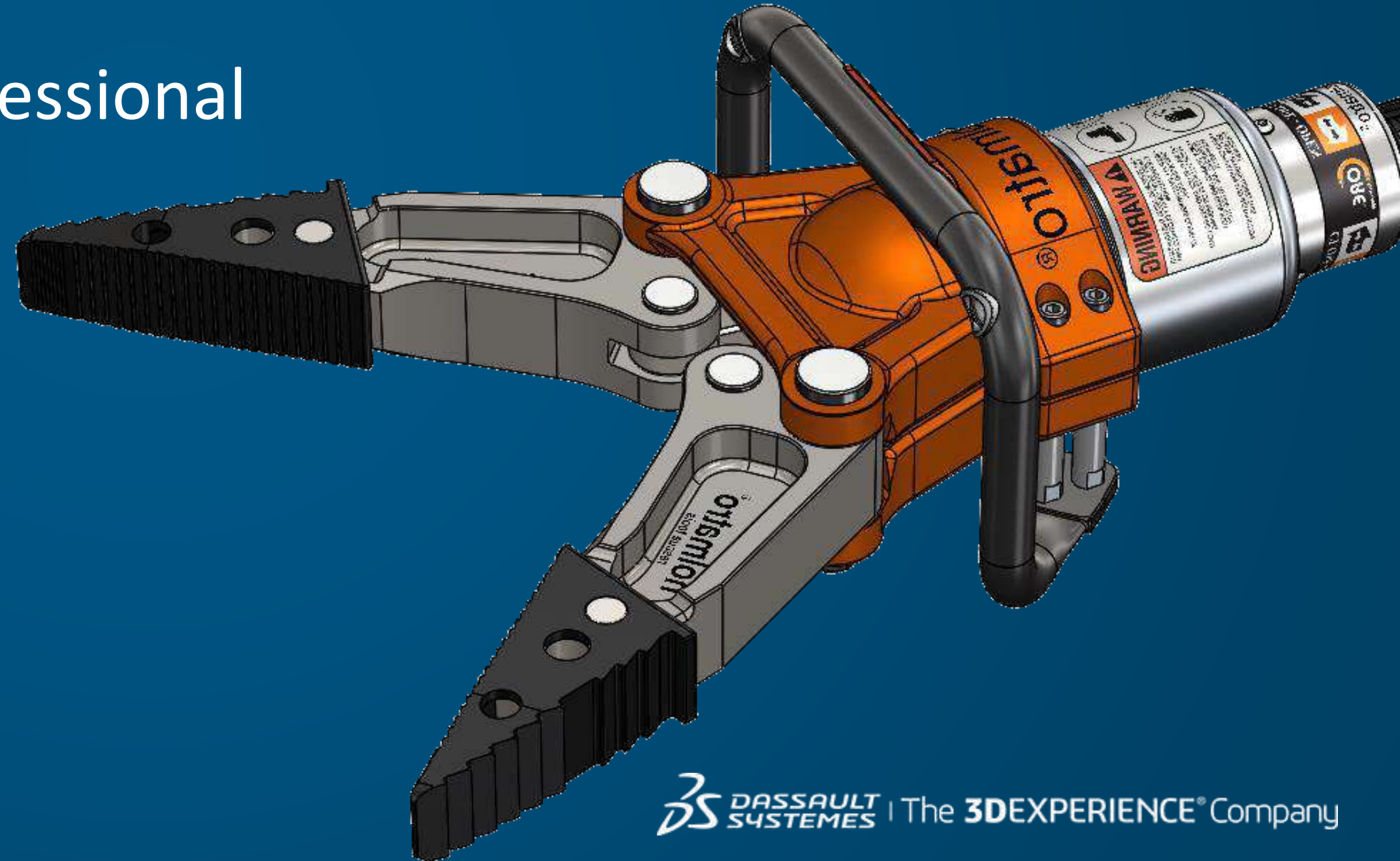


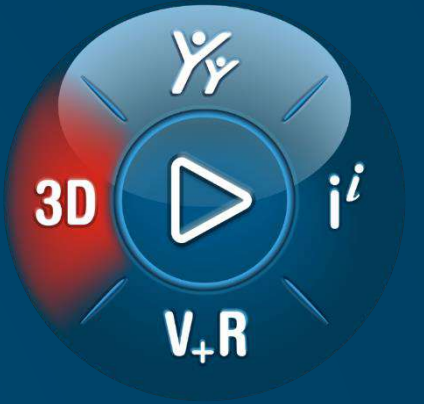
IMAGINE & SHAPE



SOLIDWORKS Topology Optimization

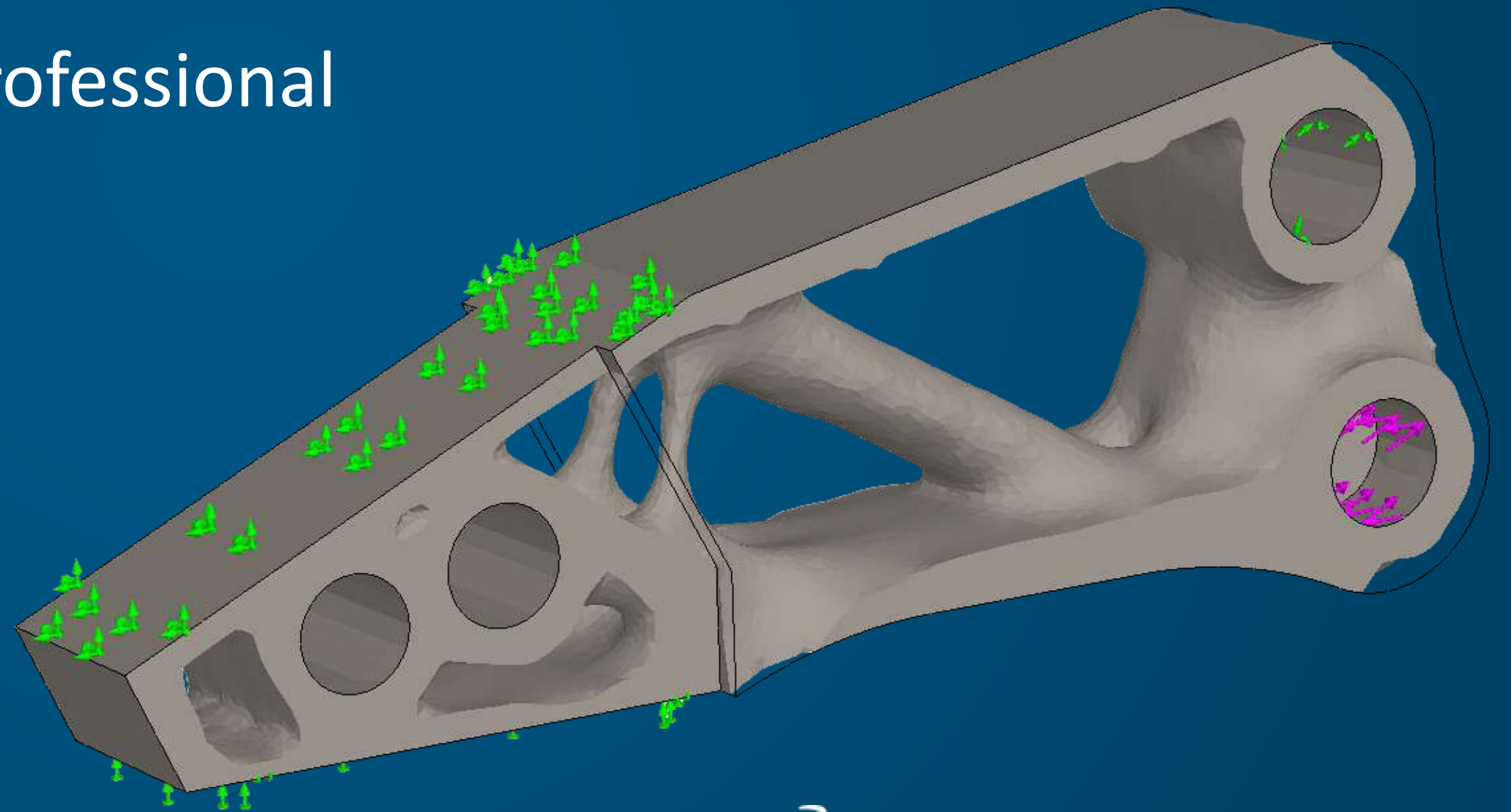
- SOLIDWORKS Simulation Professional
- Runs inside SOLIDWORKS
- TOSCA Solver

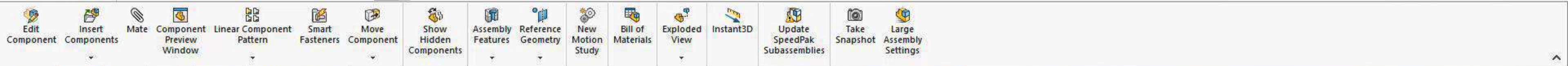




SOLIDWORKS Topology Optimization

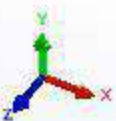
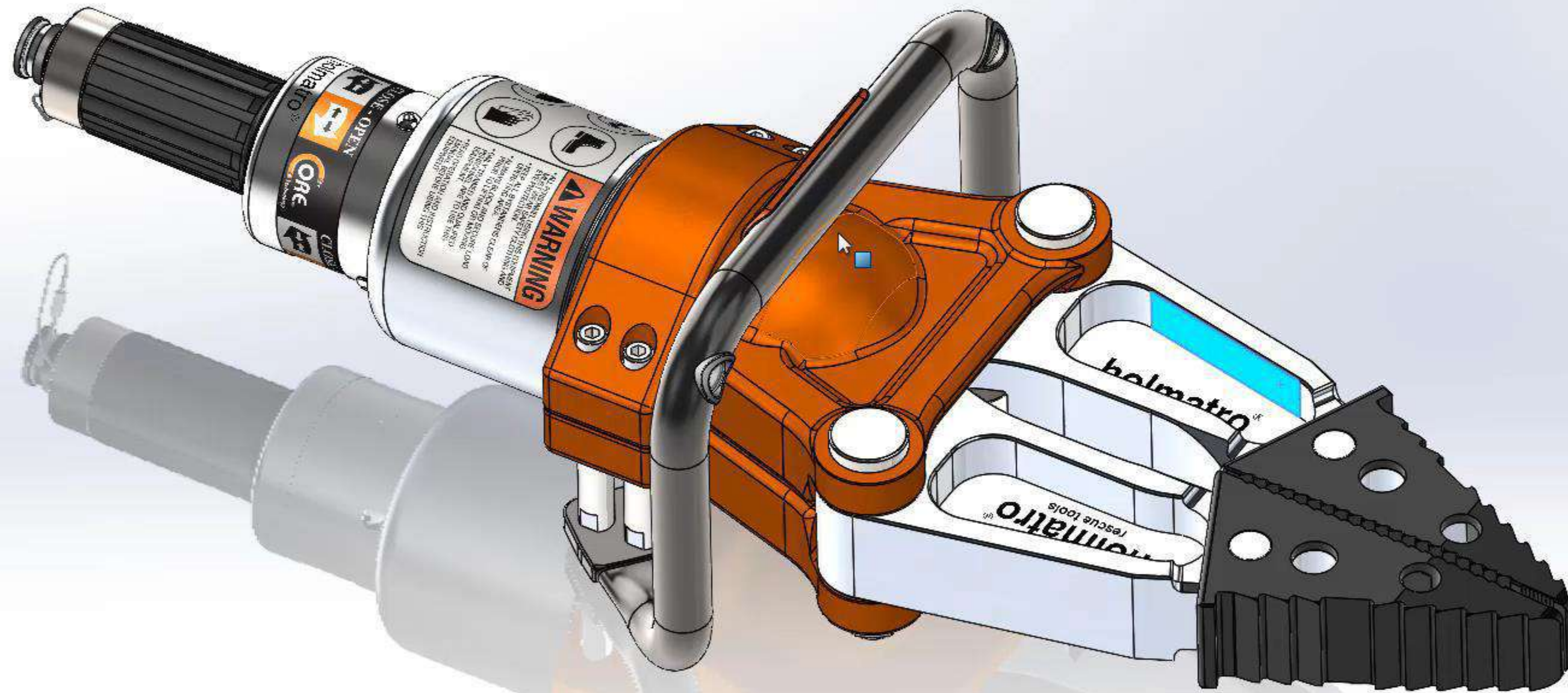
- SOLIDWORKS Simulation Professional
- Runs inside SOLIDWORKS
- TOSCA Solver

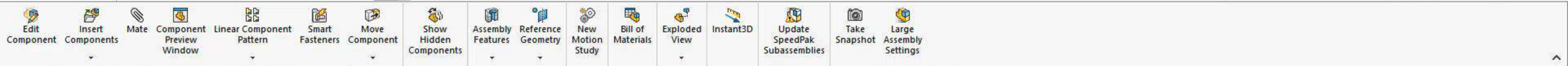




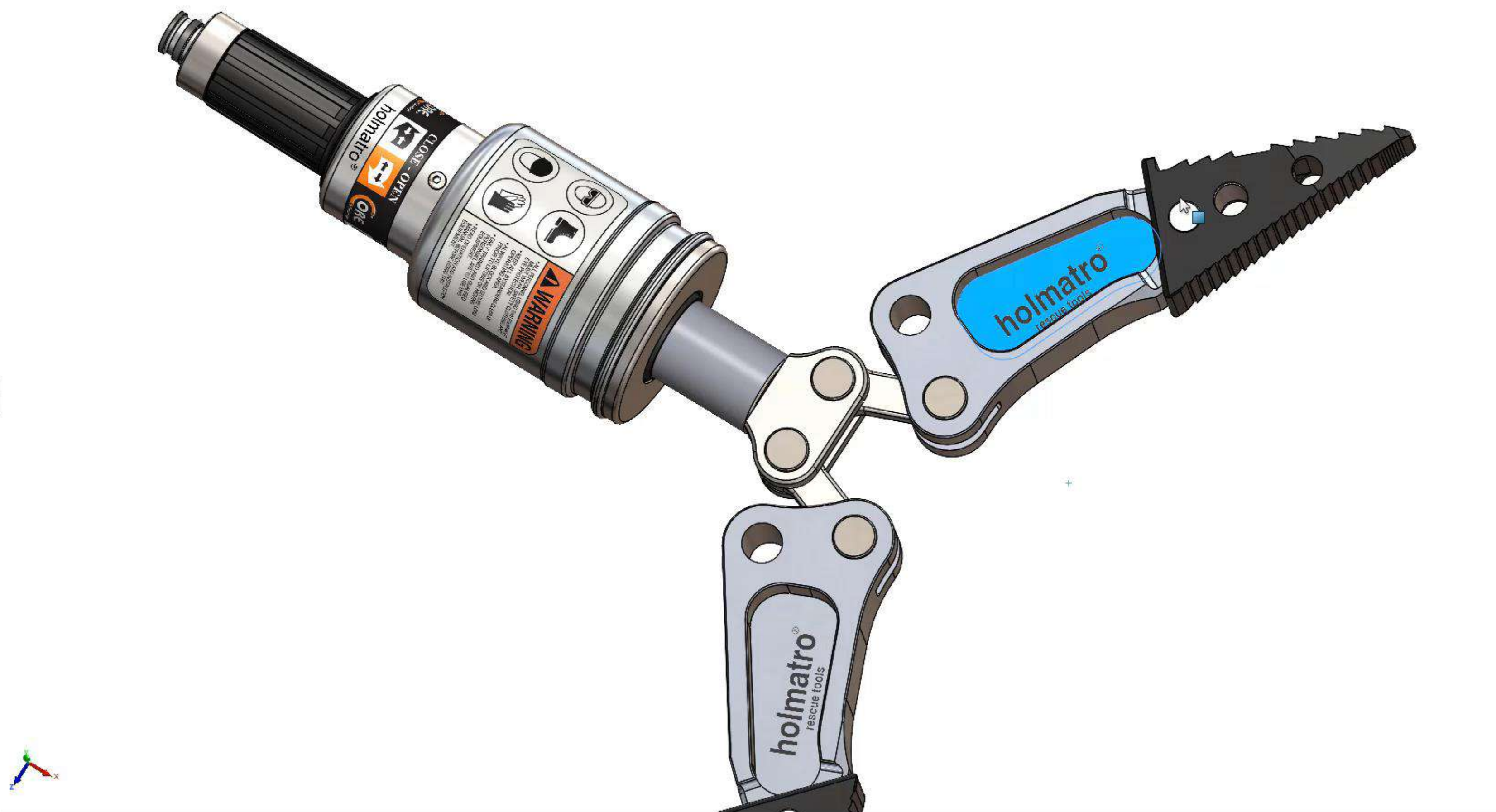
Assembly Layout Sketch Markup Evaluate SOLIDWORKS Add-Ins

- 4240 Spreader (Default)
- History
- Sensors
- Annotations
- Front Plane
- Top Plane
- Right Plane
- Origin
- (f) Yoke Cylinder Assembly<1>
- Hydraulic Controls Assembly<1
- Plunger Assembly<1> (Default)
- Yoke Half<3> (Default)
- Yoke Half<4> (Default)
- Handle Assembly<1> (Default)
- Arm Pivot Pin<4> (Default)
- Arm Pivot Pin<6> (Default)
- Pivot Pin Washer<6> (Default)
- Pivot Pin Washer<4> (Default)
- Pivot Pin Lock Nut<4> (Default)
- Pivot Pin Lock Nut<6> (Default)
- Pivot Pin Bushing<9> (Default)
- Pivot Pin Bushing<10> (Default)
- Pivot Pin Bushing<13> (Default)
- Pivot Pin Bushing<14> (Default)
- Arm Opto<1> ->? (Standard)
- Tip2<6> (Default)
- (-) Tip Pin<6> (Default)
- Hardware
- ROD END<1> (Default)
- 170-012-011<1> (Default)
- (-) H70-035-541<1> (22 Dia x 50)
- (-) H70-035-541<2> (22 Dia x 40)
- Mates
- MirrorComponent1





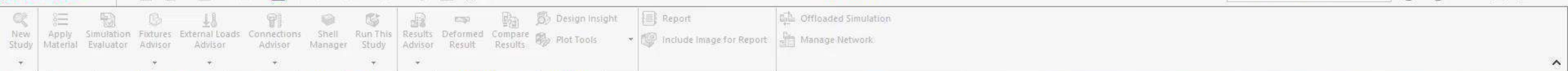
- 4240 Spreader (Default)
 - History
 - Sensors
 - Annotations
 - Front Plane
 - Top Plane
 - Right Plane
 - Origin
 - (f) Yoke Cylinder Assembly<1>
 - Hydraulic Controls Assembly<1>
 - Plunger Assembly<1> (Default)
 - Yoke Half<3> (Default)
 - Yoke Half<4> (Default)
 - Handle Assembly<1> (Default)
 - Arm Pivot Pin<4> (Default)
 - Arm Pivot Pin<6> (Default)
 - Pivot Pin Washer<6> (Default)
 - Pivot Pin Washer<4> (Default)
 - Pivot Pin Lock Nut<4> (Default)
 - Pivot Pin Lock Nut<6> (Default)
 - Pivot Pin Bushing<9> (Default)
 - Pivot Pin Bushing<10> (Default)
 - Pivot Pin Bushing<13> (Default)
 - Pivot Pin Bushing<14> (Default)
 - (-) Arm Opto<1> ->? (Standard)
 - (-) Tip2<6> (Default)
 - (-) Tip Pin<6> (Default)
 - Hardware
 - ROD END<1> (Default)**
 - 170-012-011<1> (Default)
 - (-) H70-035-541<1> (22 Dia x 50)
 - (-) H70-035-541<2> (22 Dia x 40)
 - Mates
 - MirrorComponent1





- Arm Opto (Standard)->?
- History
- Sensors
- Annotations
- Solid Bodies(1)
 - 7075-T6 (SN)
 - Front Plane
 - Top Plane
 - Right Plane
 - Origin
- Boss-Extrude1
- Boss-Extrude2
- Cut-Extrude1
- Cut-Extrude5
- Chamfer1
- Fillet2
- Chamfer2
- Fillet1
- Boss-Extrude3
- Arm Topology Sub D
- Cut-Extrude12
- Boss-Extrude7
- Fillet6
- Body-Move/Copy1
- Shell10
- Boss-Extrude8
- Combine3
- Cut-Extrude13
- Cut-Extrude14
- Mirror3





Features Sketch Surfaces Mesh Modeling Direct Editing Evaluate MBD Dimensions SOLIDWORKS Add-Ins Simulation

Arm Opto (Default)->

Study

Message
Study stresses, displacements, strains and factor of safety for components with linear material

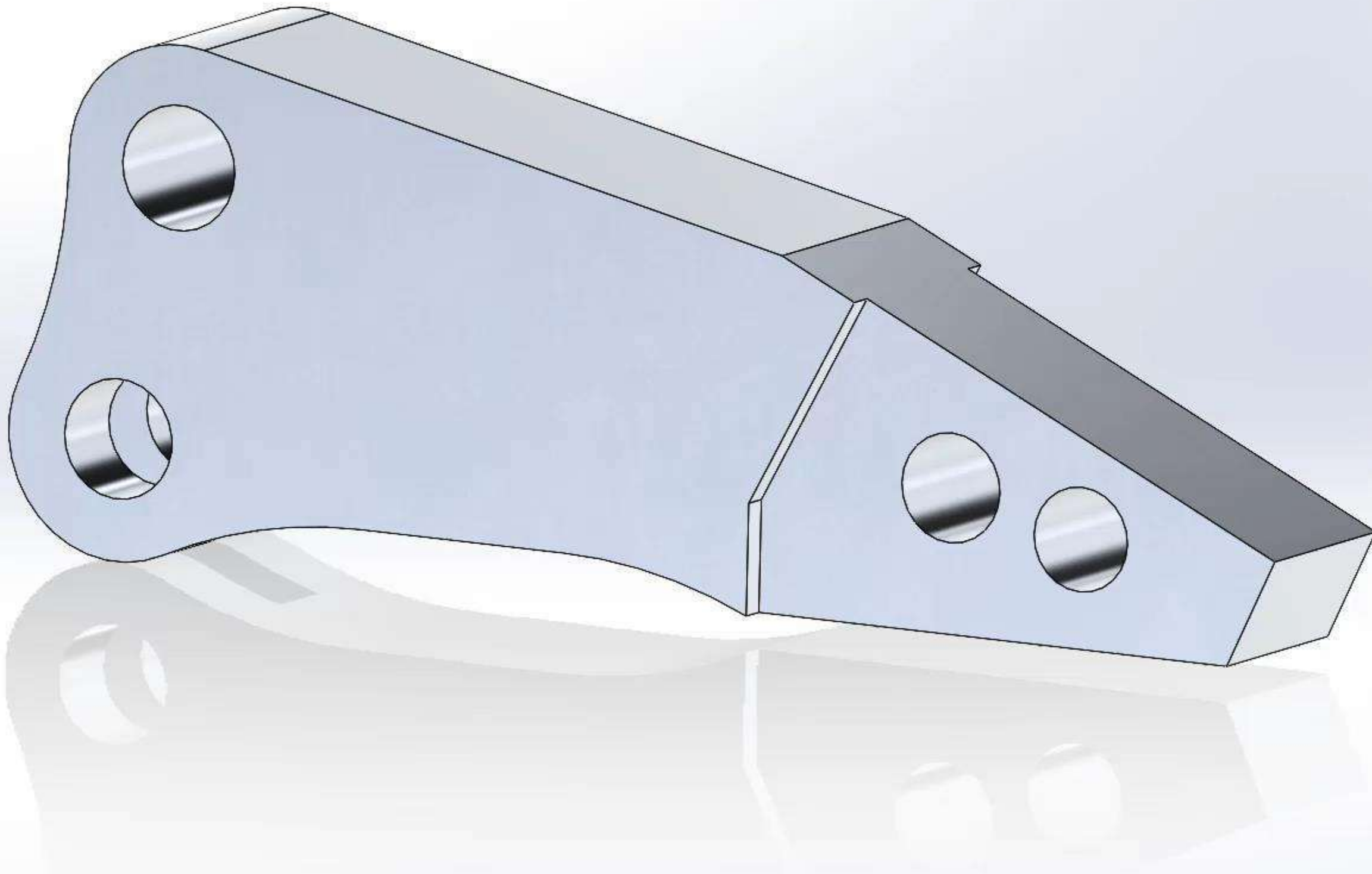
Name
Static 1

General Simulation
Static
 Use 2D Simplification
Frequency

Design Insight
Topology Study
Design Study

Advanced Simulation
Thermal
Buckling
Fatigue
Nonlinear
Linear Dynamic

Specialized Simulation
Submodeling
Drop Test
Pressure Vessel Design



Material

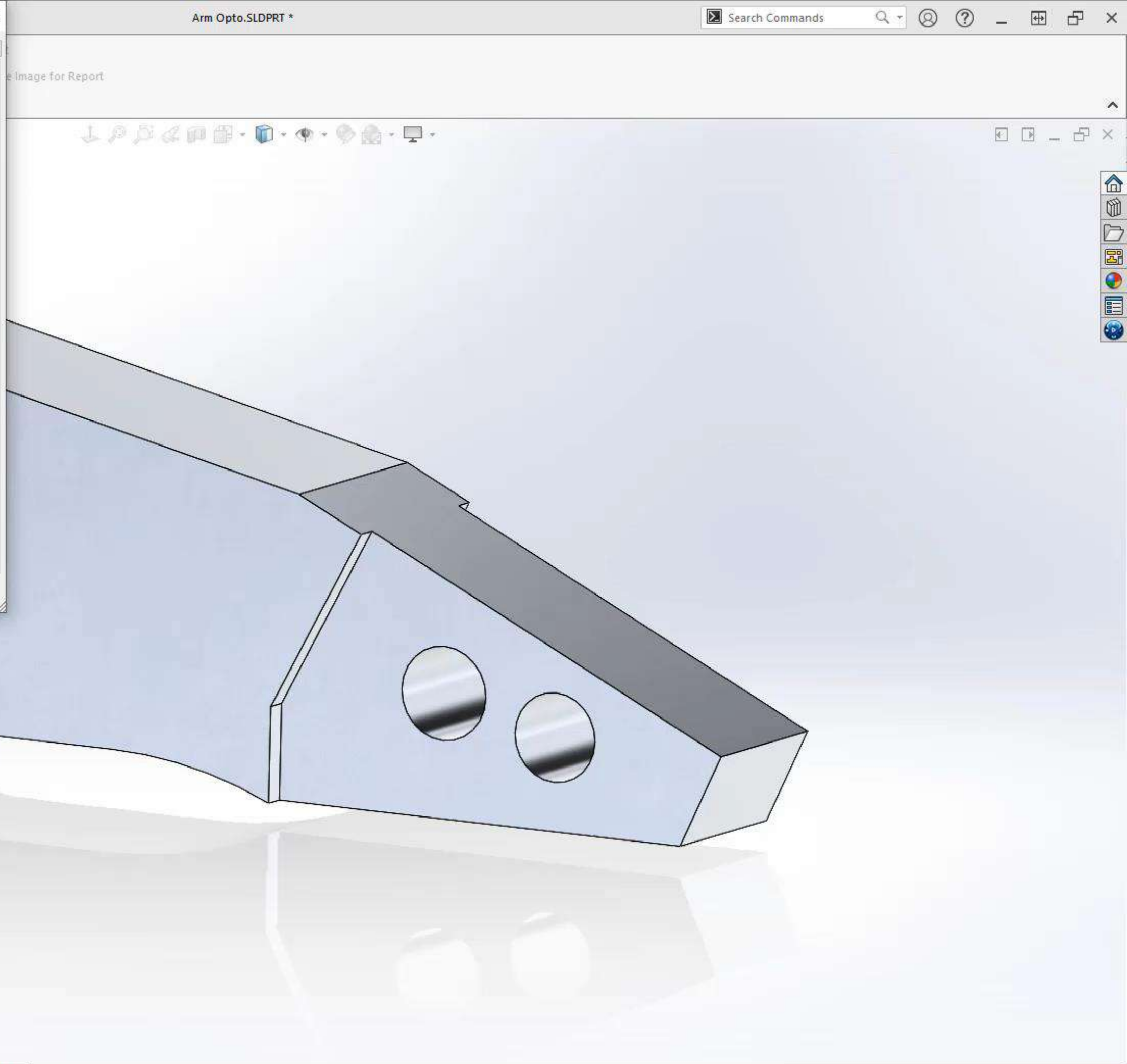
Search...

- Alumina
- C355.0-T61 Permanent Mold cast (SS)
- Copper Alloys
- Titanium Alloys
- Zinc Alloys
- Other Alloys
- Plastics
- Other Metals
- Other Non-metals
- Generic Glass Fibers
- Carbon Fibers
- Silicons
- Rubber
- Woods
- Sustainability Extras
- Custom Materials
 - Plastic
 - Additive Materials**
 - EOS 316L
 - EOS Titanium Ti64
 - Arm Opto

Properties | Tables & Curves | Appearance | CrossHatch | Custom | Application Data

Select a material to Apply/Edit

Access more materials from [SOLIDWORKS Materials Web Portal](#) Add... Save Config... Apply Close Help

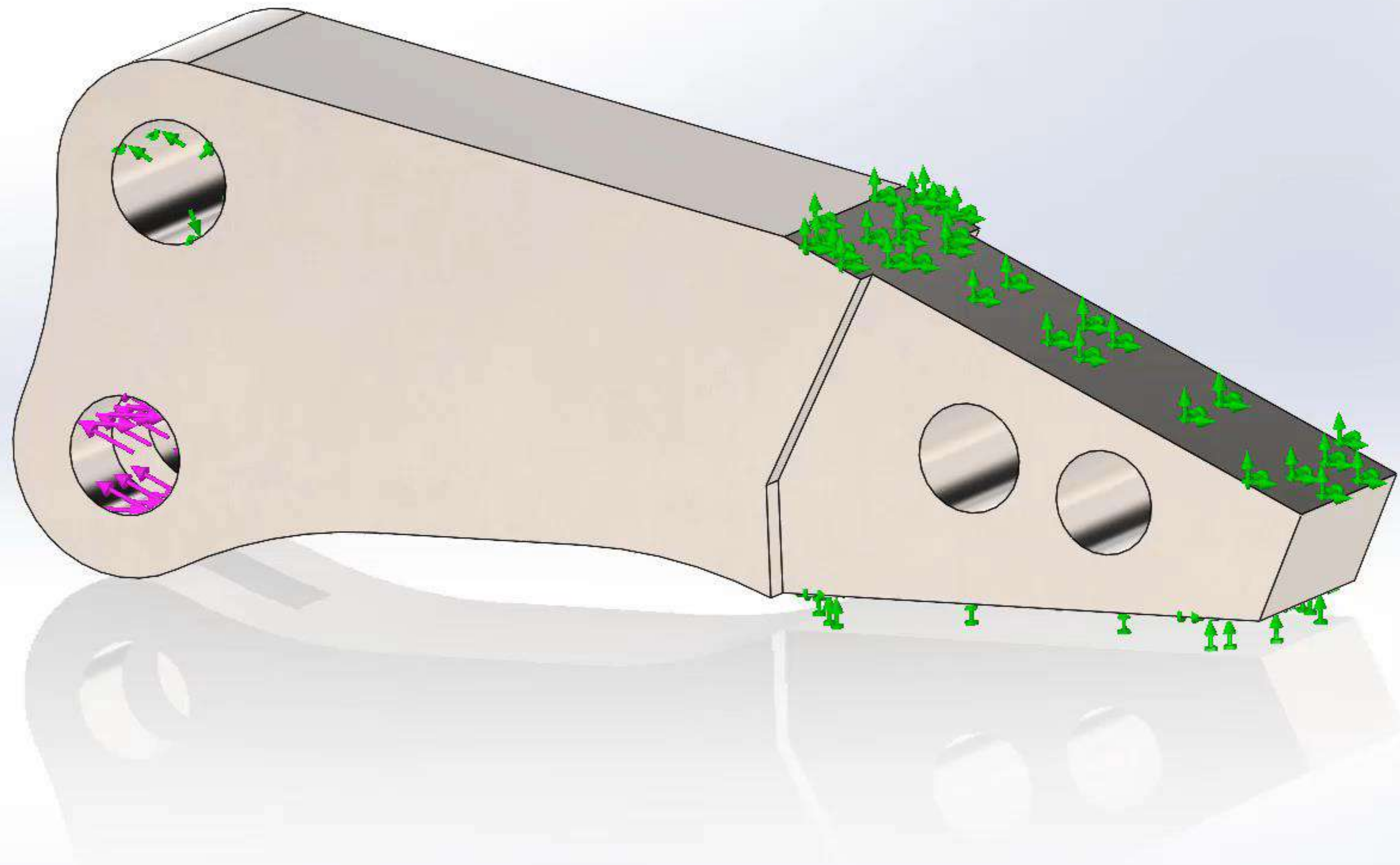




- Solid Bodies(1)
- 7075-T6 (SN)
- Front Plane
- Top Plane
- Right Plane
- Origin
- Boss-Extrude1
- Boss-Extrude2

Topology Study 4 (-Default-)

- Run
- Update All Components
- Save Results to 3DEXPERIENCE
- Multiple Load Cases
- Copy Study
- Simulation Evaluator...
- Details...
- Properties...
- Tasklist...
- Mass Properties...
- Rename
- Delete

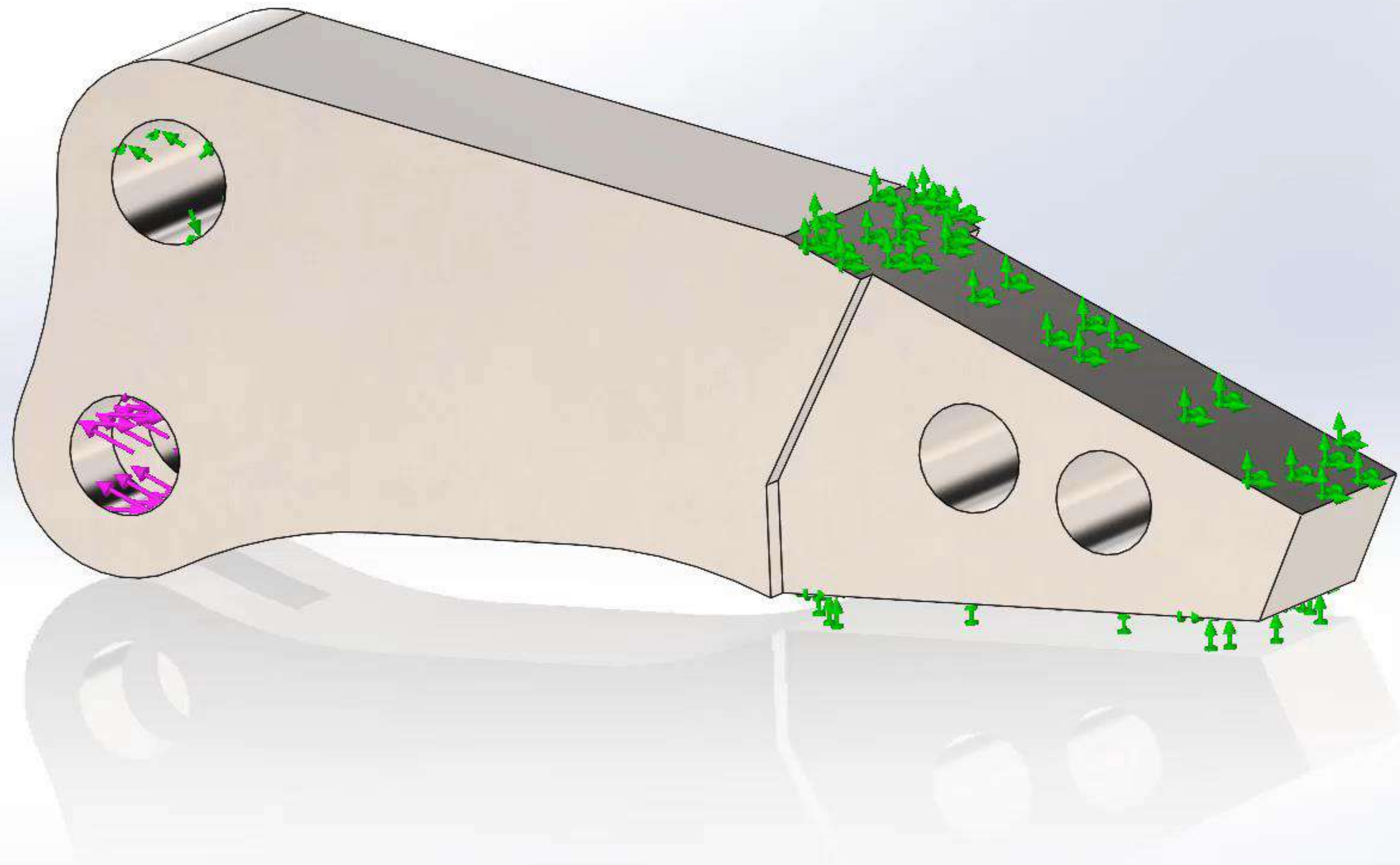


New Study Apply Material Simulation Evaluator Fixtures Advisor External Loads... Connections Advisor Goals and Constraints Manufacturing Controls Run This Study Results Advisor Compare Results Plot Tools Report Include Image for Report

Features Sketch Surfaces Mesh Modeling Direct Editing Evaluate MBD Dimensions SOLIDWORKS Add-Ins Simulation

Arm Opto (Default)->? History Sensors Annotations Solid Bodies(1) 7075-T6 (SN) Front Plane Top Plane

Topology Study 4 (-Default-) Multiple Load Cases Arm Opto (-EOS 316L-) Connections Fixtures Fixed Hinge-1 Fixed-1 Fixed-2 External Loads Force-1 (:Per item: -5,000 N:) Force-2 (:Per item: -5,000 N:) Goals and C Best Stiffness to Weight ratio (default) Minimize Maximum Displacement Minimize Mass



Arm Opto (Default)->

Goals and Constraints

Message

Topology study will try to find the stiffest structure possible given a certain amount of material removal. Defining the goal and constraints will impact the material removal.

A default constraint will be chosen when a goal is selected. You can create additional constraints based on your design requirements.

Frequency constraint always run with 'Intel direct sparse' solver.

Select Goal

Best Stiffness to Weight

Displacement Constraint

Mass Constraint (Default)

Mass Constraint

Reduce mass by (percent): 75 %

Current mass of part: 5.77896 kg

Final mass of part: 1.444739 kg

Frequency Constraint

Stress/Factor of Safety Constraint

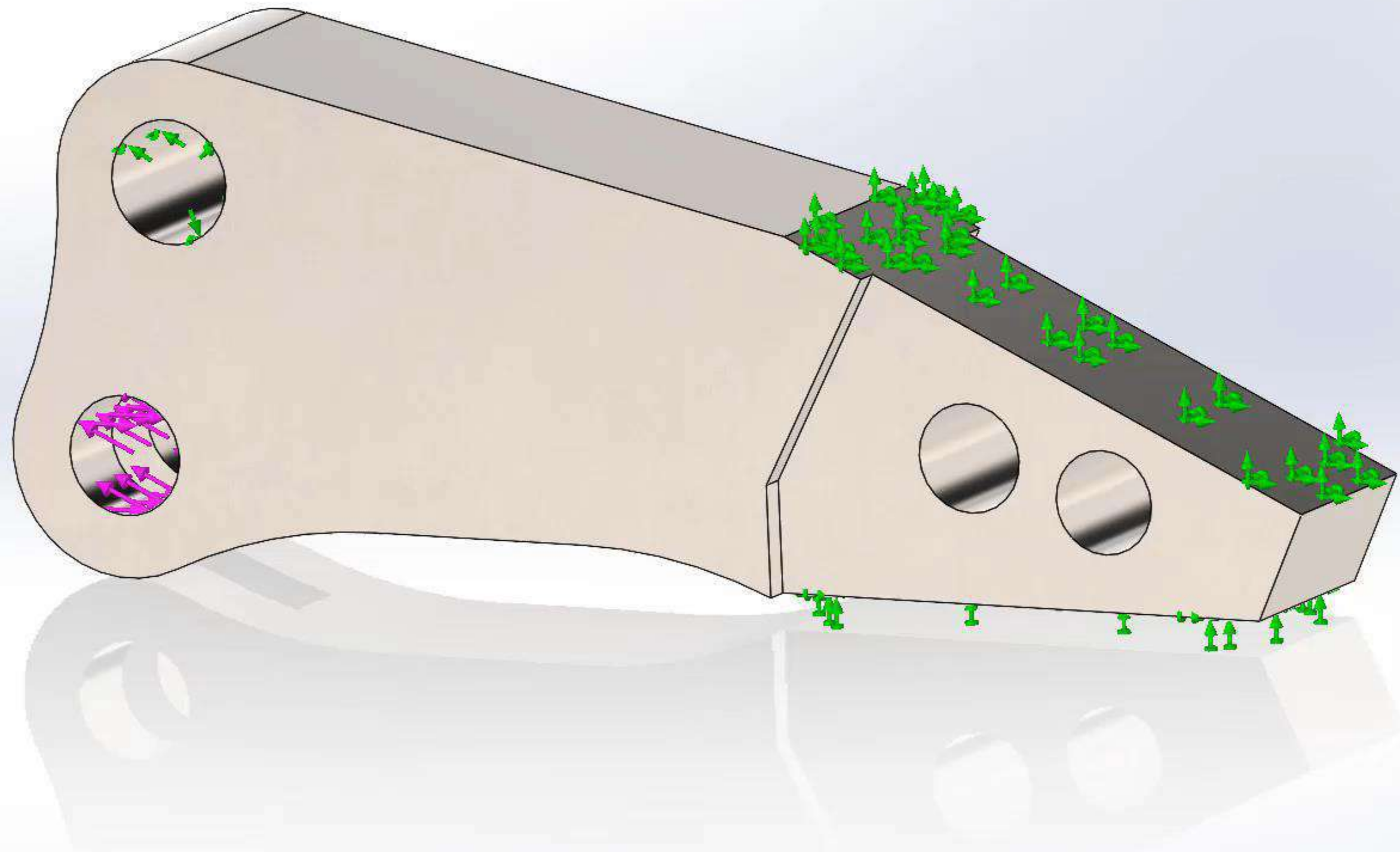
Factor of Safety Constraint

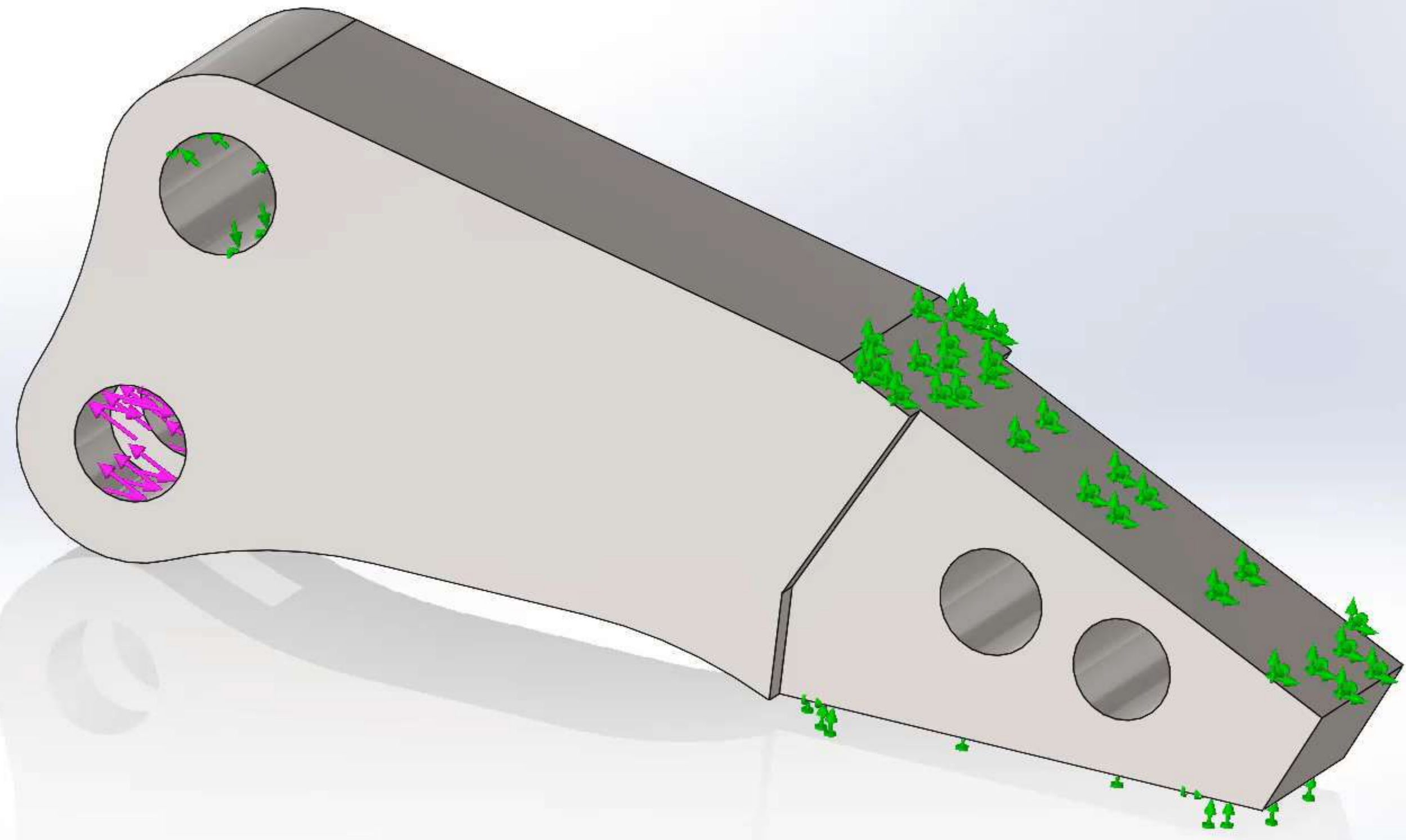
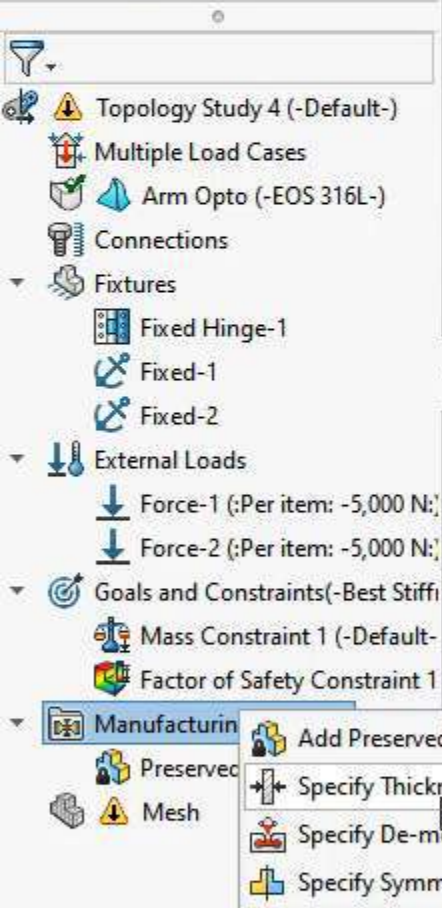
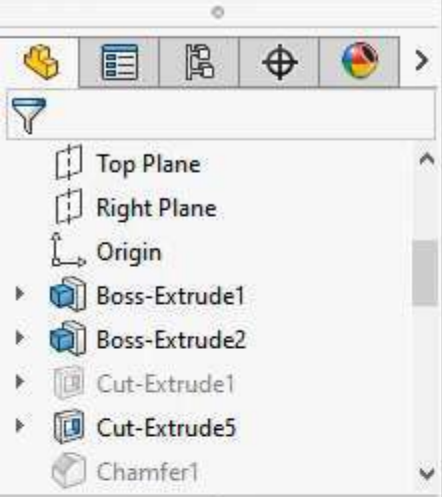
is greater than 1.25

Default failure criterion: Maximum von Mises Stress

Material yield strength: $1.72369e+08 \text{ N/m}^2$

Final stress value: $1.37895e+08 \text{ N/m}^2$







Mesh

Definition Mesh Quality

Message
A high quality mesh is recommended for a Stress/Factor of Safety constraint

Mesh Density
Coarse Fine
Reset

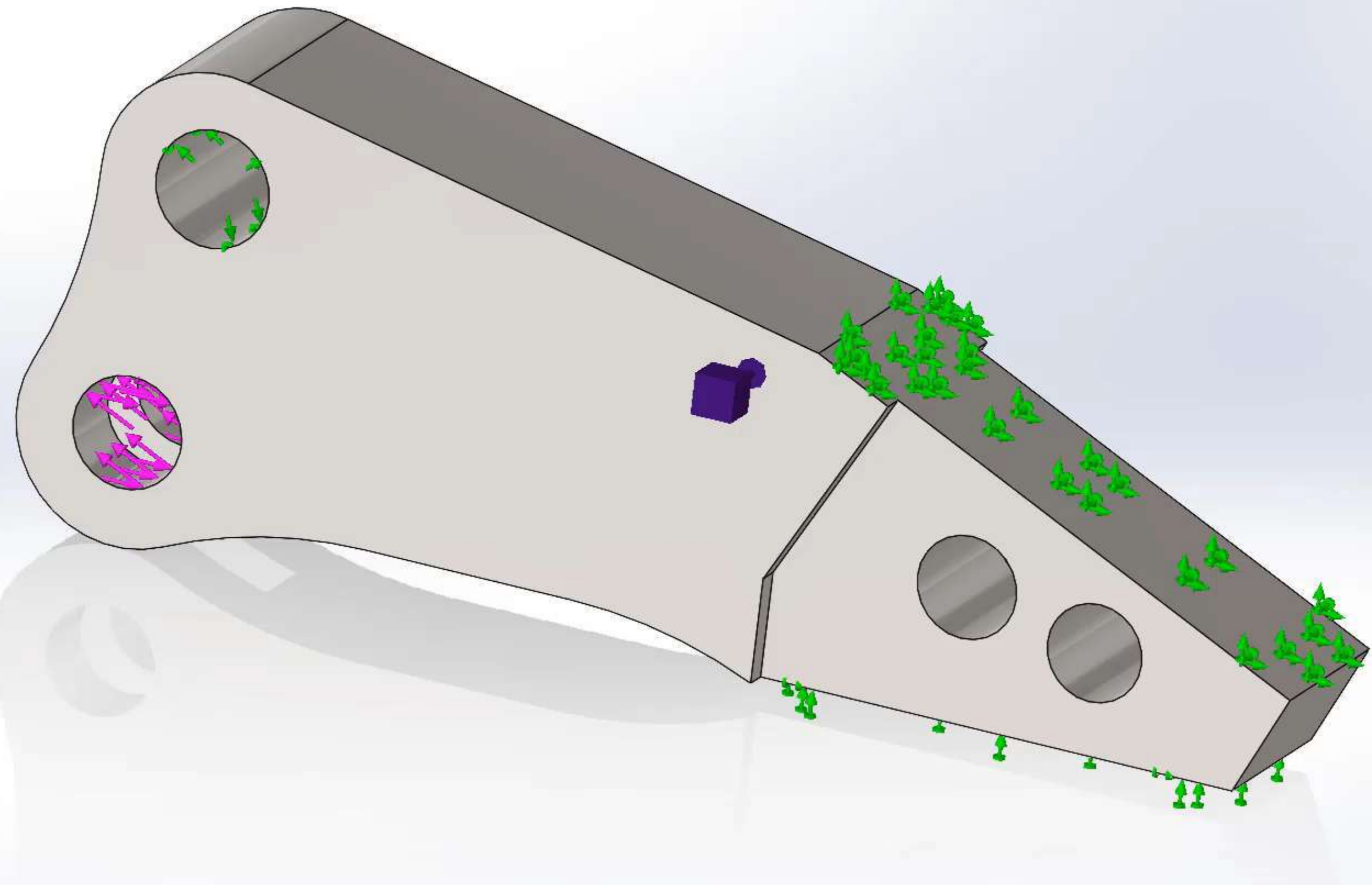
Issue warning for distorted elements

Mesh Parameters

Advanced

Options
 Save settings without meshing
 Run (solve) the analysis

- Arm Opto (Default)->?
- History
- Sensors
- Annotations
- Solid Bodies(1)
- 7075-T6 (SN)
- Front Plane
- Top Plane
- Right Plane
- Origin
- Boss-Extrude1
- Boss-Extrude2
- Cut-Extrude1
- Cut-Extrude5
- Chamfer1
- Fillet2
- Chamfer2
- Fillet1
- Boss-Extrude3
- Arm Topology Sub D
- Cut-Extrude12
- Boss-Extrude7
- Fillet6
- Body-Move/Copy1
- Shell10
- Boss-Extrude8
- Combine3
- Cut-Extrude13
- Cut-Extrude14
- Mirror3



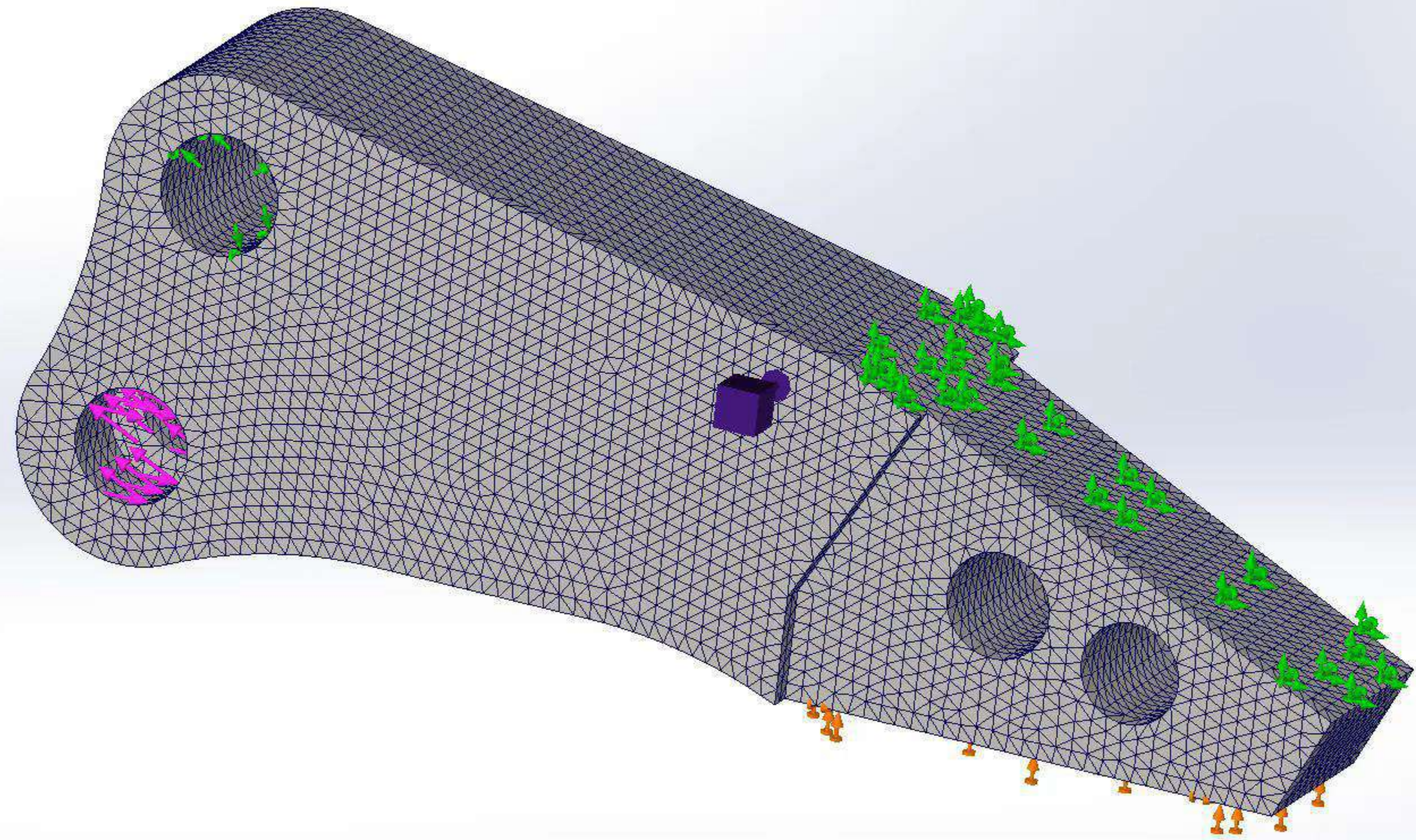
New Study Apply Material Simulation Evaluator Fixtures Advisor External Loads... Connections Advisor Goals and Constraints Manufacturing Controls Run This Study Results Advisor Compare Results Plot Tools Report Include Image for Report

Features Sketch Surfaces Mesh Modeling Direct Editing Evaluate MBD Dimension Run This Study

- Top Plane
- Right Plane
- Origin
- Boss-Extrude1
- Boss-Extrude2
- Cut-Extrude1
- Cut-Extrude5
- Chamfer1

Model name: Arm Opto
Study name: Topology Study 4(-Default-)
Plot type: Mesh Quality1

- Topology Study 4 (-Default-)
 - Multiple Load Cases
 - Arm Opto (-EOS 316L-)
 - Connections
 - Fixtures
 - Fixed Hinge-1
 - Fixed-1
 - Fixed-2
 - External Loads
 - Force-1 (:Per item: -5,000 N;)
 - Force-2 (:Per item: -5,000 N;)
 - Goals and Constraints(-Best Stiffi)
 - Mass Constraint 1 (-Default-)
 - Factor of Safety Constraint 1
 - Manufacturing Controls
 - Preserved Region 1
 - Symmetry control 1 (-Half S)
 - Mesh
 - Mesh Quality Plot
 - Quality1 (-Mesh-)



Run This Study
Starts the solver for the active study.

Material Mass

Definition Chart Options Settings

Message

Use the isovalue slider to add or remove material from the optimized shape. The Default position of the slider closely matches the percentage of reduced mass set in your goals and constraints (includes all elements with relative mass density larger than 0.3). Convert the final shape to smoothed mesh.

Display

Material Mass

Heavy Light

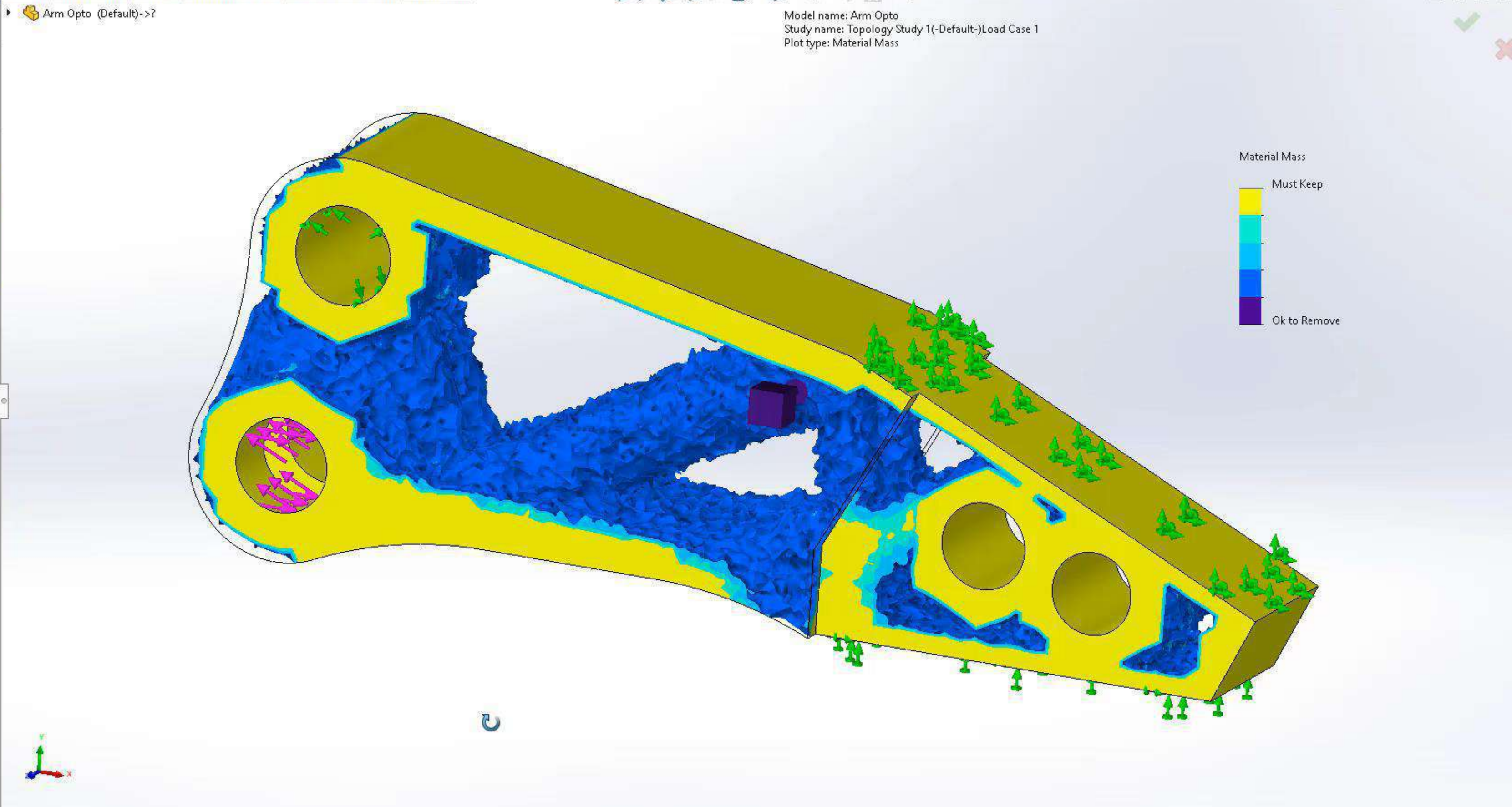
Calculated Element Mass : 2,8544 Kg

Percentage of original mass : 49%

Calculate Smoothed mesh

Default

Property



Arm Opto (Default)->

Material Mass

Definition Chart Options Settings

Message

Use the isovalue slider to add or remove material from the optimized shape. The Default position of the slider closely matches the percentage of reduced mass set in your goals and constraints (includes all elements with relative mass density larger than 0.3). Convert the final shape to smoothed mesh.

Display

Material Mass

Heavy Light

Calculated Element Mass : 2.826 Kg

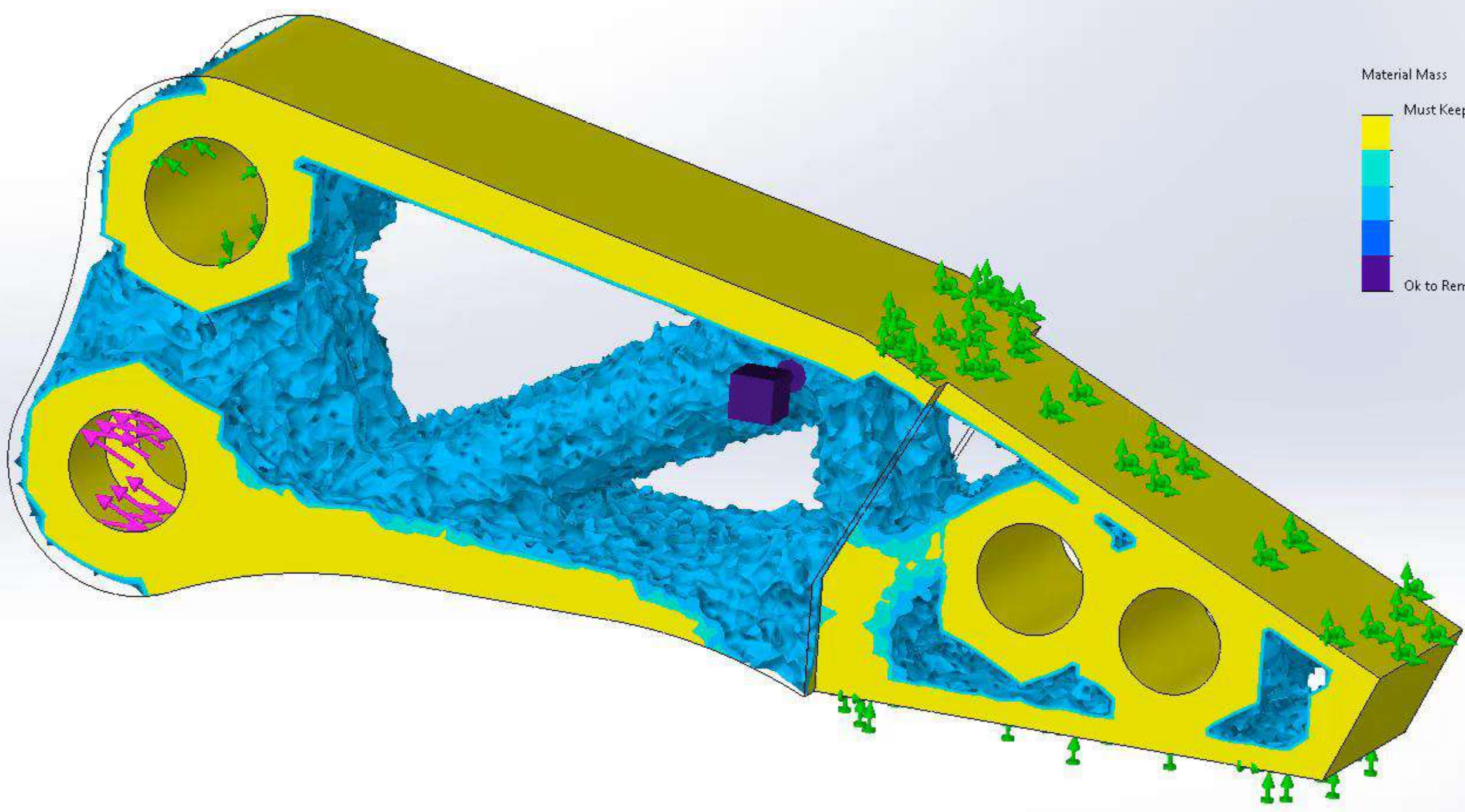
Percentage of original mass : 49%

Calculate Smoothed mesh

Default

Property

Model name: Arm Opto
Study name: Topology Study 1(-Default-)Load Case 1
Plot type: Material Mass
Calculated Element Mass : 2.82605Kg





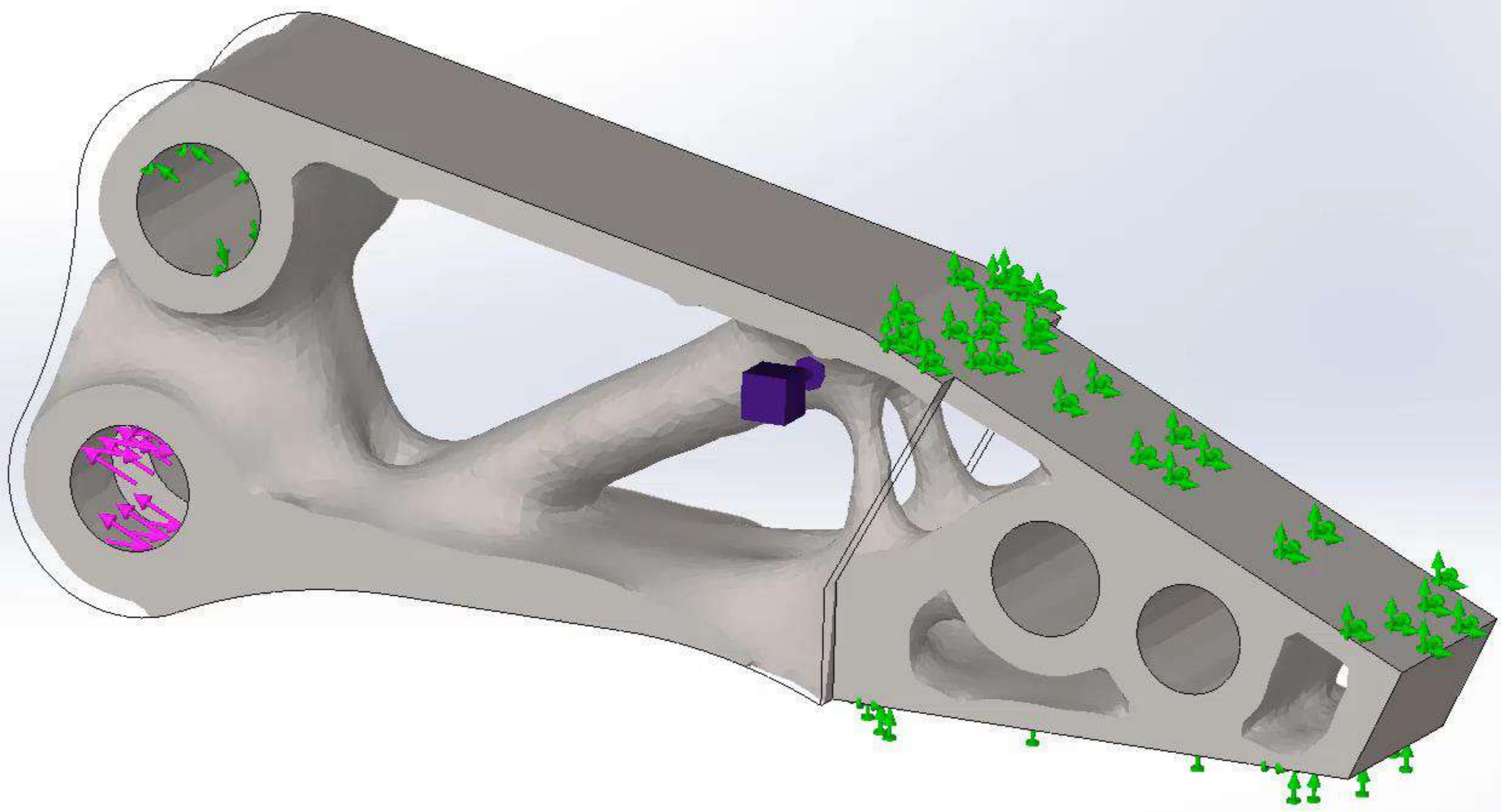
Features Sketch Surfaces Mesh Modeling Direct Editing Evaluate MBD Dimensions SOLIDWORKS Add-Ins Simulation

- Arm Opto (Default)->?
- History
- Sensors
- Annotations
- Solid Bodies(1)
- 7075-T6 (SN)
- Front Plane
- Top Plane

Model name: Arm Opto
 Study name: Topology Study 1(-Default-)Load Case 1
 Plot type: Material Mass

- Topology Study 1 (-Default-)
 - Multiple Load Cases
 - Arm Opto (-EOS Stainless St
 - Connections
 - Fixtures
 - Fixed Hinge-1
 - Fixed-1
 - Fixed-2
 - External Loads
 - Force-1 (:Per
 - Force-2 (:Per
 - Goals and Constr
 - Manufacturing Co
 - Preserved Reg
 - Symmetry co
 - Mesh
 - Results
 - Material Mas

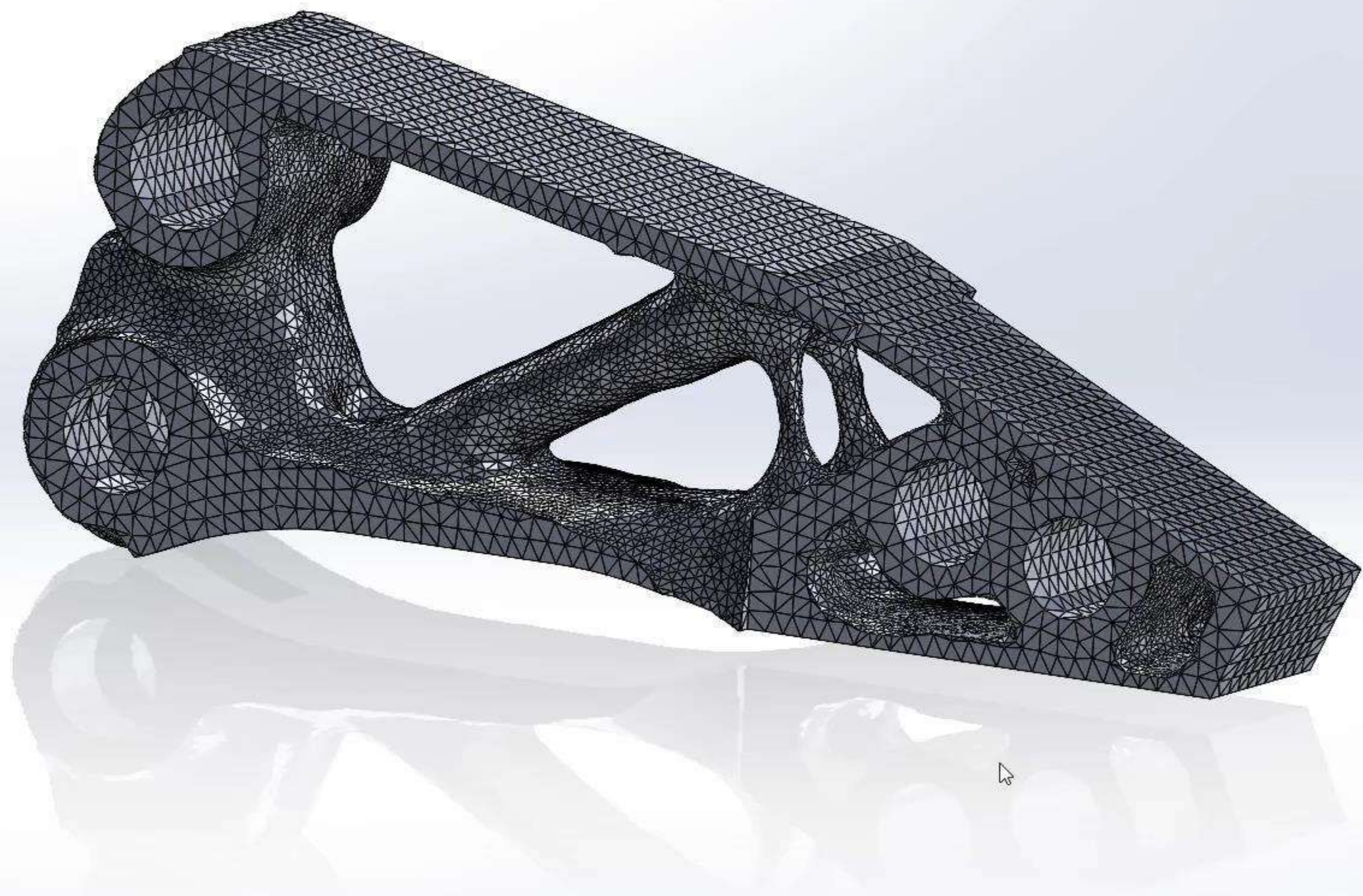
- Hide
- Edit Definition...
- Chart Options...
- Settings...
- Export Smoothed Mesh...
- Compare Results...
- Print...
- Save As ...
- Add to New Folder
- Delete...
- Copy



Extruded Boss/Base, Revolved Boss/Base, Swept Boss/Base, Swept Cut, Lofted Boss/Base, Lofted Cut, Boundary Boss/Base, Boundary Cut, Extruded Cut, Hole Wizard, Revolved Cut, Fillet, Linear Pattern, Rib, Draft, Shell, Mirror, Wrap, Intersect, Reference Geometry, Curves, Instant3D

Features, Sketch, Surfaces, Mesh Modeling, Direct Editing, Evaluate, MBD Dimensions, SOLIDWORKS Add-Ins, Simulation, Analysis Preparation

Arm Opto_Topology Study 1_deforme
History
Sensors
Annotations
Graphic Bodies(1)
Material <not specified>
Front Plane
Top Plane
Right Plane
Origin
Graphic1
Graphic (Closed) -1



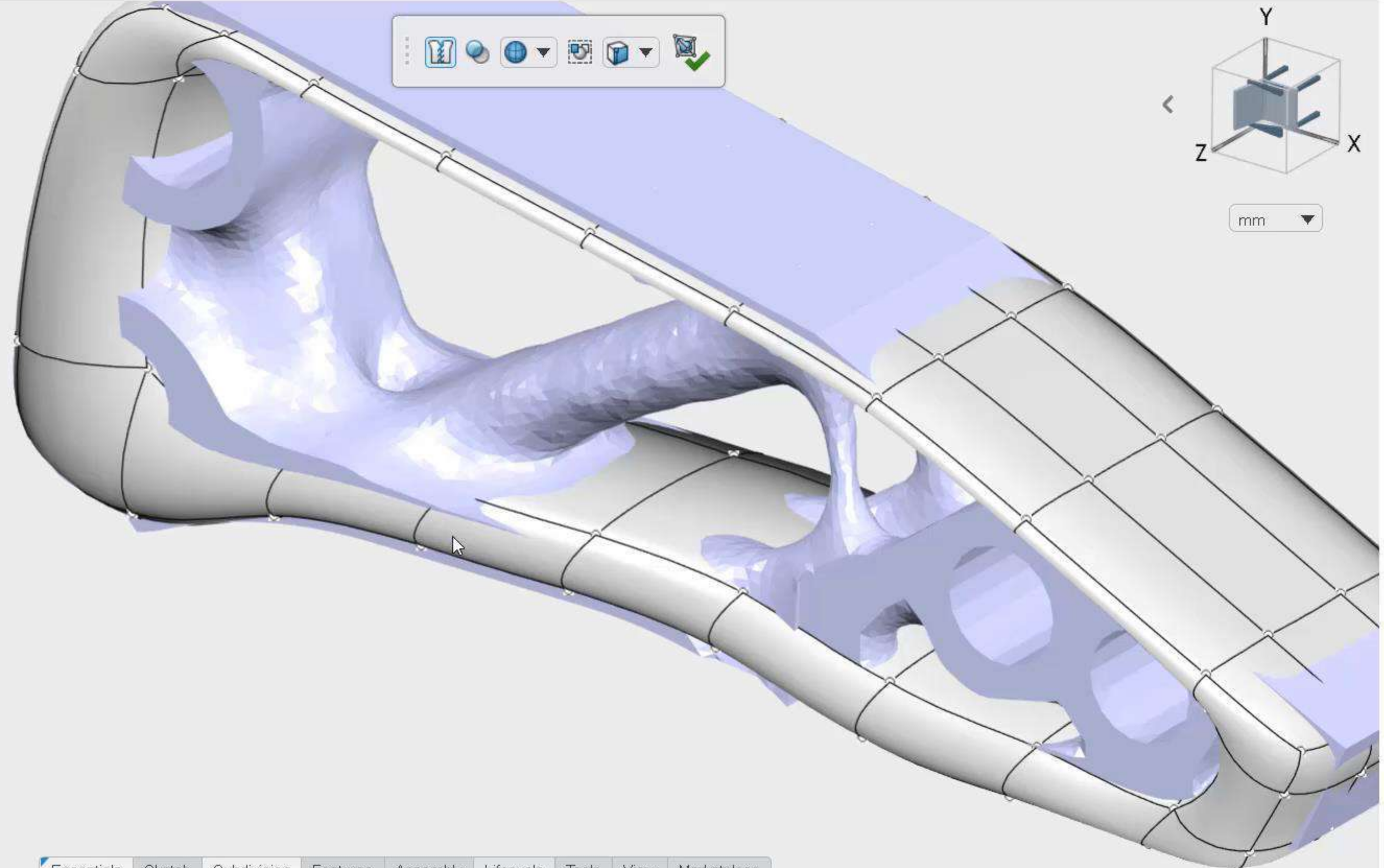


xShape - Common Space



Design Manager

- Arm Opto_Topology Study 1_deform...
- XY YZ ZX
- Mesh.1
- Subdivision Surface.1



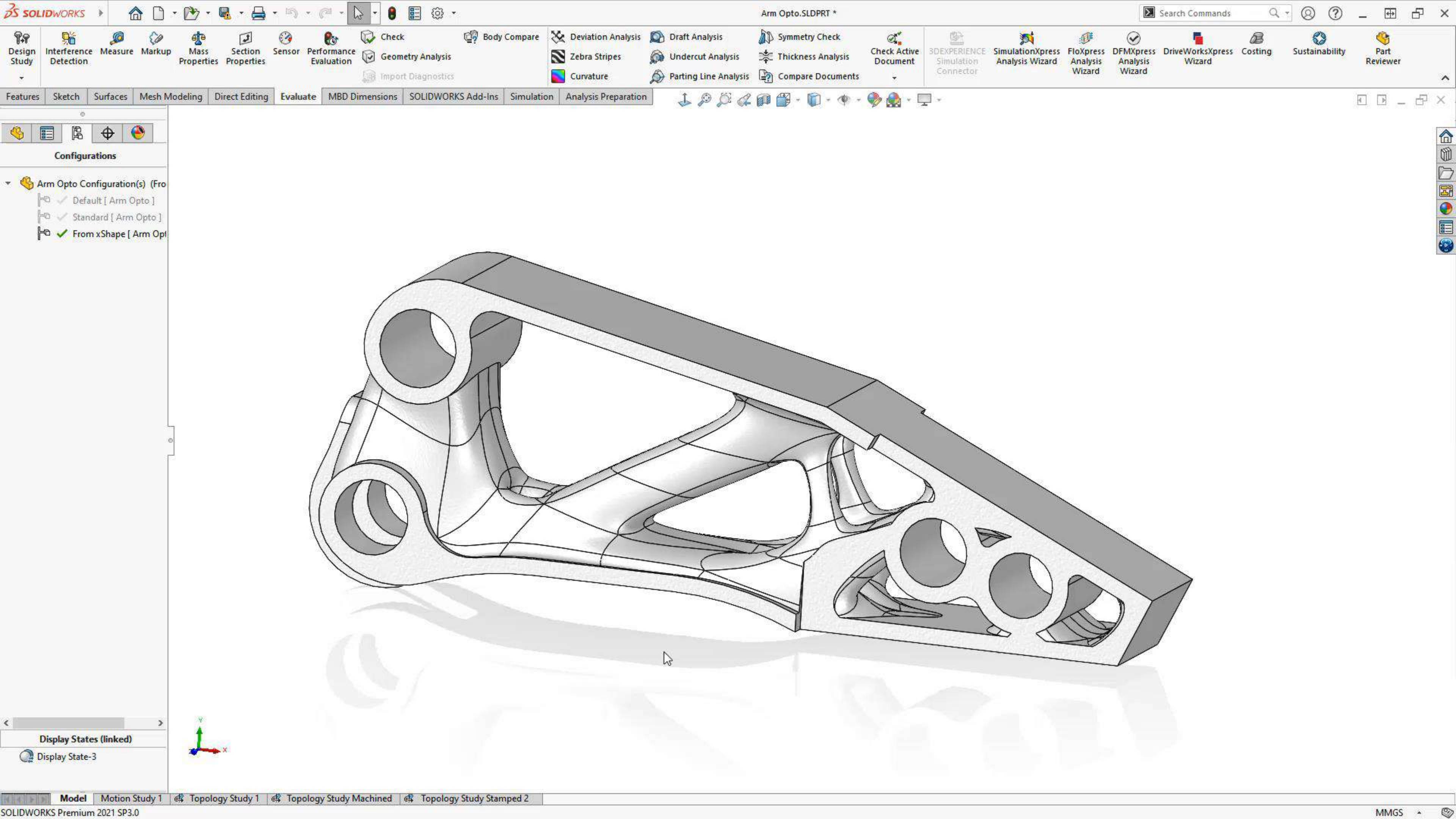
View and navigation toolbar with icons for:

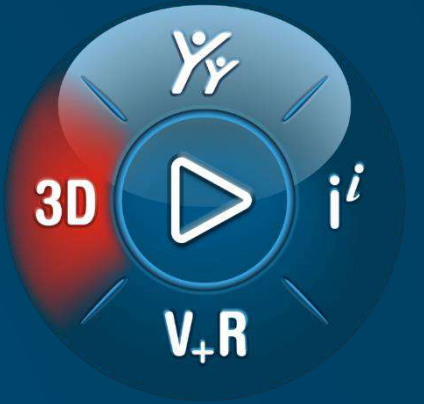
- Isometric view
- 3D rotation
- 2D rotation
- Zoom in
- Zoom out
- Fit
- Apply

Essentials | Sketch | Subdivision | Features | Assembly | Lifecycle | Tools | View | Marketplace

Main application toolbar with icons for:

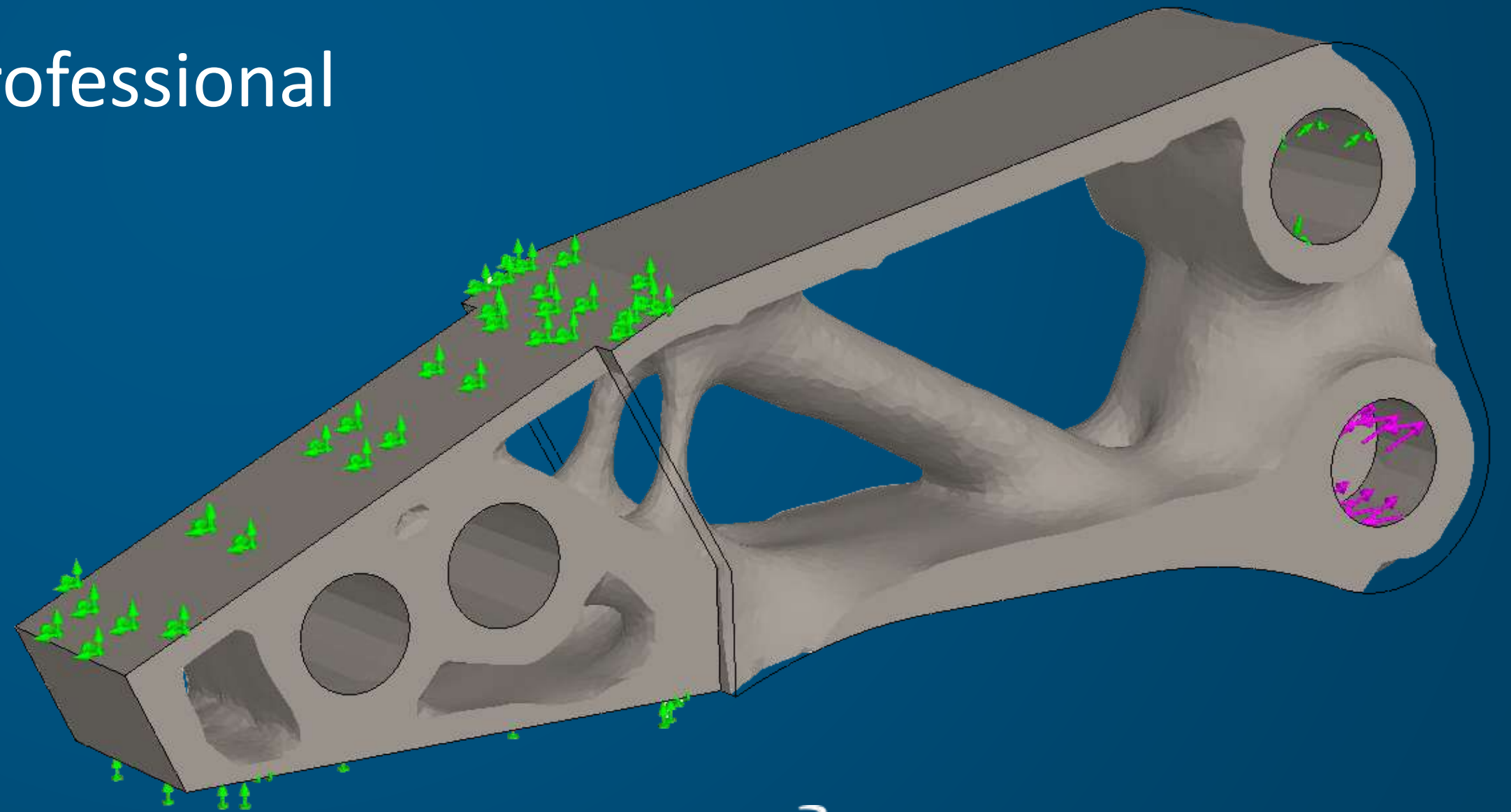
- File operations (Save, Open, Print)
- Navigation (Home, Rotate, Translate, Scale)
- Modeling (Sketch, Subdivision, Features)
- View (Isometric, 2D, 3D)
- Tools (Measure, Hide, Show)
- Help (Question mark)

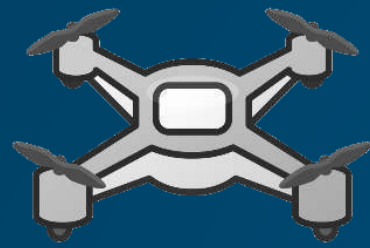




SOLIDWORKS Topology Optimization

- SOLIDWORKS Simulation Professional
- Runs inside SOLIDWORKS
- TOSCA Solver

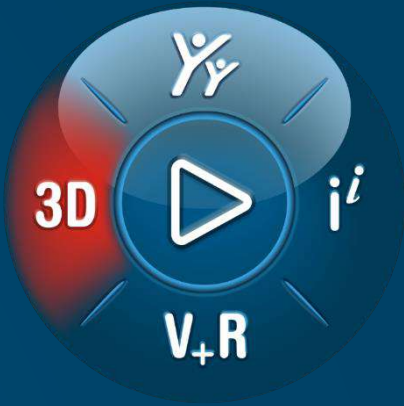




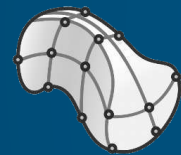
3D CREATOR



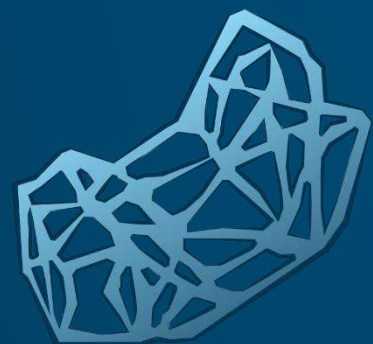
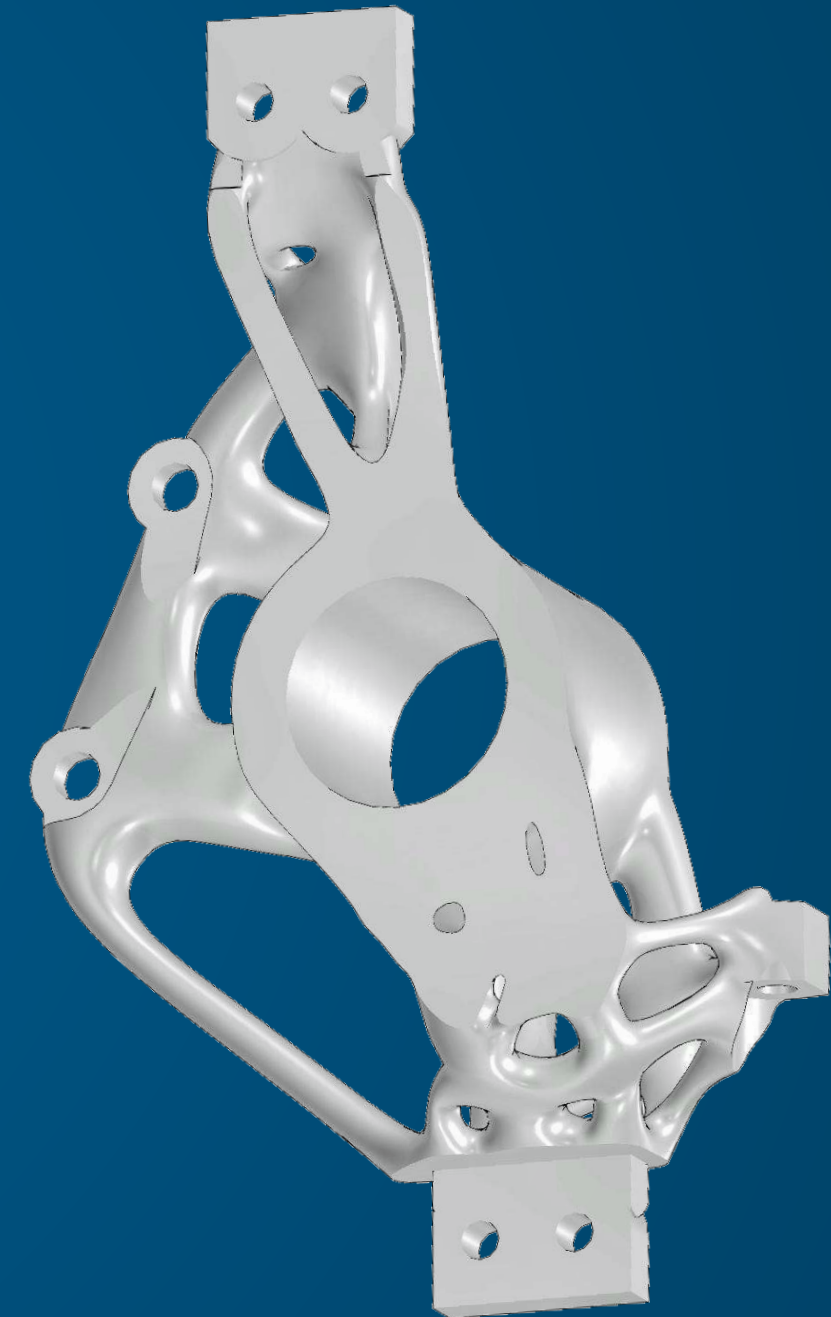
3D SCULPTOR



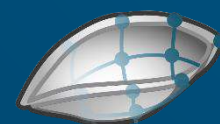
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3D SCULPTOR



**FUNCTION-DRIVEN
GENERATIVE DESIGNER**



IMAGINE & SHAPE