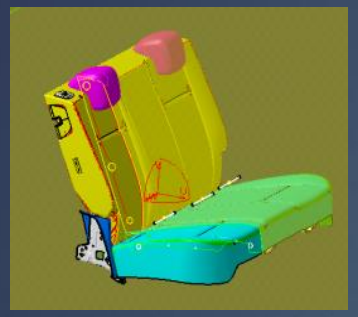
ENJOS
For Engineers

Master Diploma in Automotive Product designing.

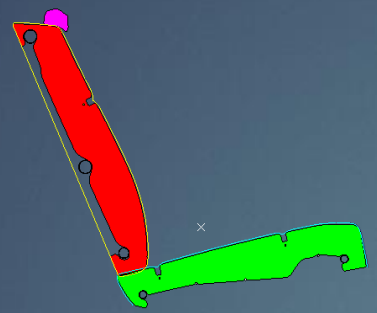
https://enjos.in/

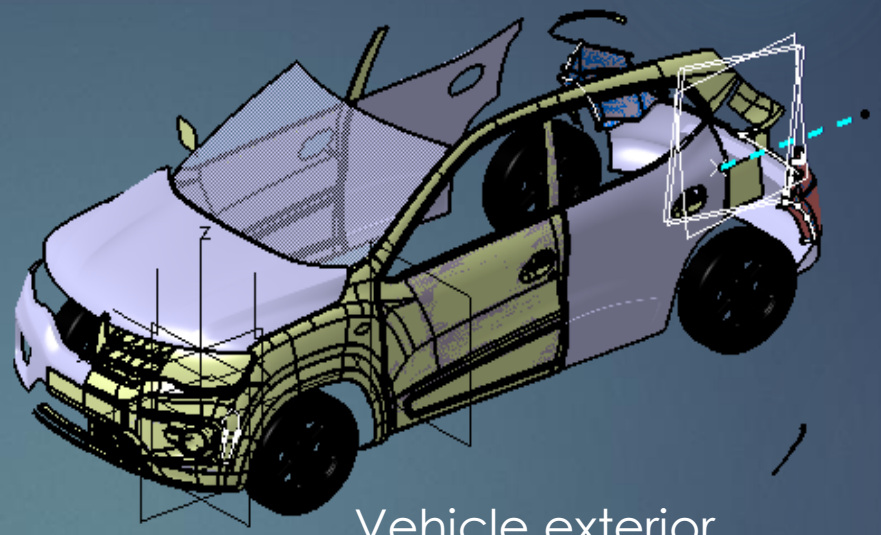
WhatsApp us :- 7042726022

Advance Automotive Design Training program using CATIA.

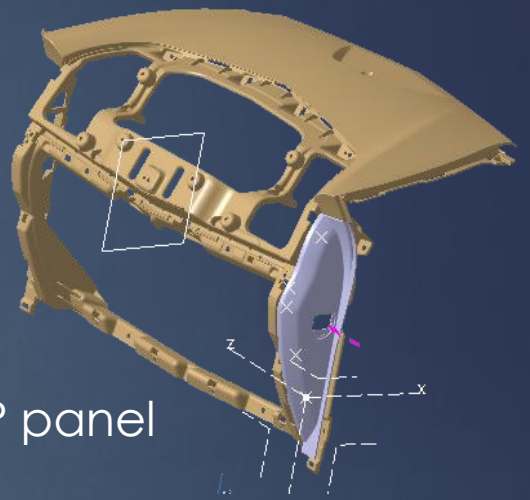


2R 50-50 seat



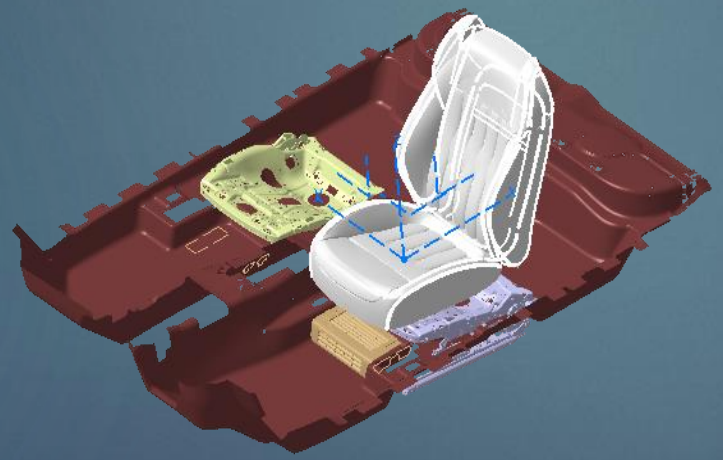


Vehicle exterior

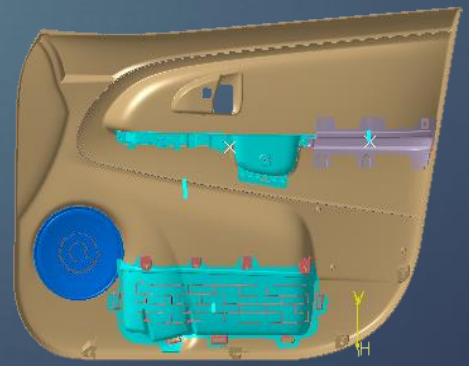


IP panel

1R seat plastics and foam



Vehicle carpet environment



Door trim

We will work on same data

JOB EXPOSURE -

JOB EXPOSURE AFTER COMPLETING THIS COURSE

- Adient
- Lear
- Megna
- Faurecia
- Varroc light
- Hinduja
- TATA Motors
- Mahindra & Mahindra
- Motherson
- Minda
- Hero motor
- IAC
- Groupo Antoline

Customers Exposure

- JLR
- BMW
- Honda Cars India Limited
- TATA Motors
- Mahindra & Mahindra
- Mahindra-CIE
- JBM
- Autoline Industries
- Lumax Auto
- Lear Corporation
- Mothersun Sumi
- Caparo
- Bentler Automotive
- Mungi Engineers & Many more

Projects Exposure

- Arm rest
- Door trim
- Switch bezel
- Recliner handle
- Top tether
- Belt bezel
- Side shield
- Seating Assembly
- Headliner
- Map pocket
- Front bumper

Product Skills:

- Automotive seat design
- Automotive trim design
- Automotive exterior design
- Automotive lighting design
- Automotive wire harness design
- GD&T

Software Skills:
CATIA V5

- **Master Diploma in Automotive Product Design using CATIA is a 6 to 9 month long, intensive program. The program comprises of 6 courses that train you on all the essential engineering concepts and tools that are essential to get into top OEMs.**
  Courses included:

  Automotive Plastic Design using CATIA V5
  Automotive Seating Design using CATIA V5

Whole process would be as per OEM procedure-

Design over view in automotive industries

Introduction to automotive design
Different domains

Sketcher workbench

Commands,
Rules to follow(position sketch)
Working in exercise

Basic and advance part design

Boolean operations
Working on Boolean exercise
Working on After Tool Go modification on
Automotive components. (OEM Working procedures)

Basic and advance surface design

Commands
Creation of Closed body, Thickened body
Parting line, parting surface

Whole process would be as per OEM procedure-

Remastering or reverse engineering

Part remastering
Surface remastering
How to create a parametric model from dump

A2B

Various analysis on class A- surface
Creation of B surface and C surface (closing surface)
Draft analysis
DFM of parts
DFM of parts

Engineering features

In this section we will learn on what is a mounting feature
How to create a locator and dog house?
Integrating the mounting features to the base part with Boolean operations

Design guidelines for injection molding

1. Thickness
2. Coring Out
3. Parting Line and Ejection
4. Lifter construction
5. Slider construction
6. Ribs
7. Boss
8. screws
9. Holes and Depressions
10. Radii, Fillets and Corners
11. Undercuts
12. slider lifter shutoff and draft mechanism
13. 5 Rules of Problem-Free Injection Molding

Development of plastic

Study of input received from OEMS

- Surface quality analysis
- Rat hole
- Join analysis
- Draft analysis
- Kinematics study with environments
- Gaps and flush study
- Head impact study

Creation of plastics

- Creation of b surface
- Strategy for b side feature
- Feasibility of feature we apply
- DMU analysis of features
- Checking of robustness of plastic

Engineering plastics

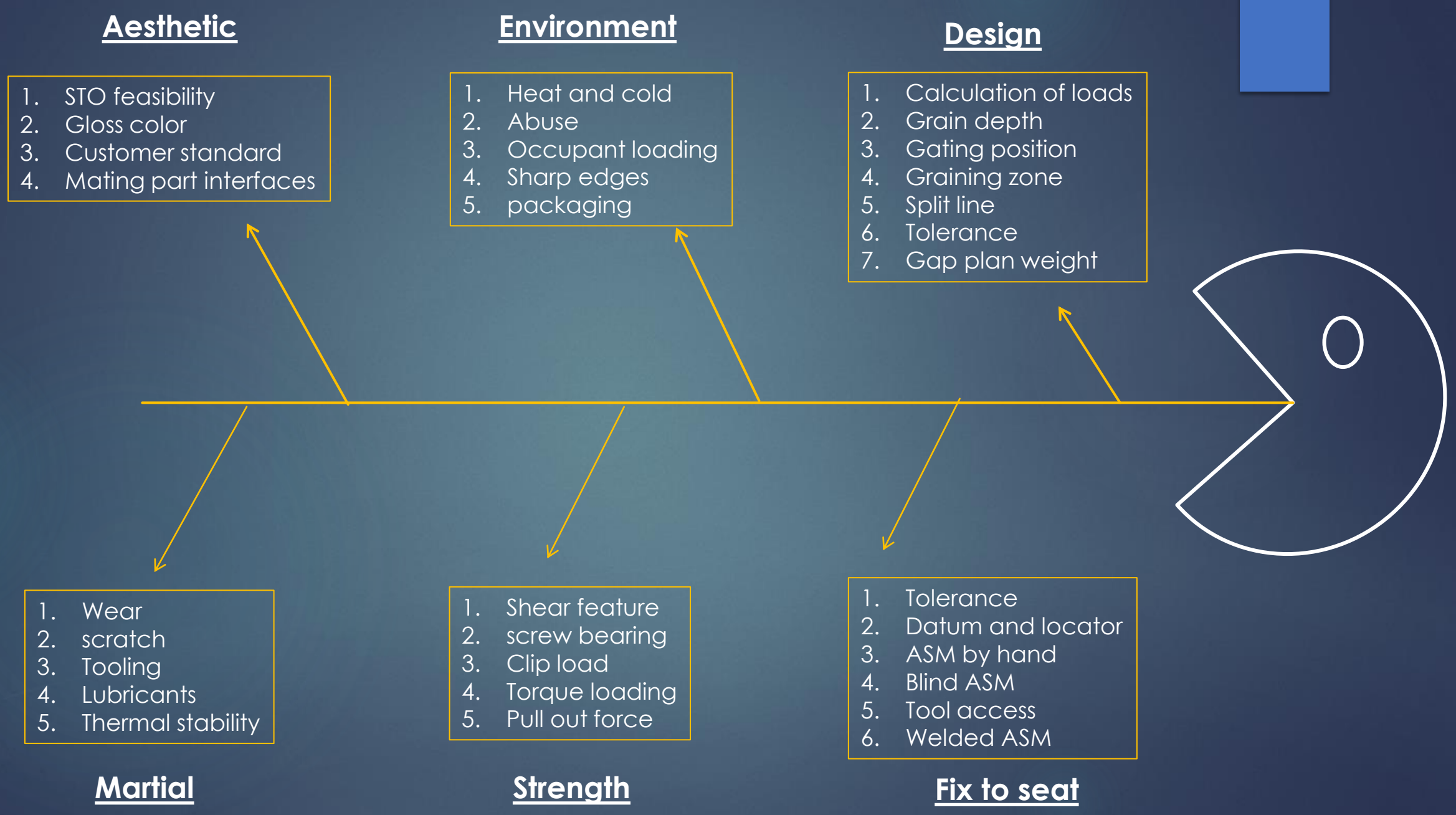
Thermoset and
Thermoplastics
Selection of plastic

Failure in Plastic

Voids and Shrinkage
Warpage
Sink marks
Weld line
Knight line
Blister

Fixation strategy
DFA of part
DFM of plastic
Drawing creation with GD&T
Design checklist

Fish bone-


Aesthetic
1. STO feasibility
2. Gloss color
3. Customer standard
4. Mating part interfaces
Environment
1. Heat and cold
2. Abuse
3. Occupant loading
4. Sharp edges
5. packaging
Design
1. Calculation of loads
2. Grain depth
3. Gating position
4. Graining zone
5. Split line
6. Tolerance
7. Gap plan weight
1. Wear
2. scratch
3. Tooling
4. Lubricants
5. Thermal stability
Martial
1. Shear feature
2. screw bearing
3. Clip load
4. Torque loading
5. Pull out force
Strength
1. Tolerance
2. Datum and locator
3. ASM by hand
4. Blind ASM
5. Tool access
6. Welded ASM
Fix to seat

Master sections

Inputs of class A and 2 environments past will be given

Master section should be developed to show

Part thickens

Fixation strategy

Assembly strategy

Plastics in automotive industries

Types of plastics (Thermoset Plastics, Thermoplastic)

Engineering plastic Materials

Manufacturing Process

Injection Molding

2d drawings

Drafting work bench.

Creation of detail drawing for the Components

Views creations (basic view & section views)

Application of GD&T in drawings

Template settings

Development of foam and plastics

Creation of CAD model considering following inputs as like in OEM and tier1 companies

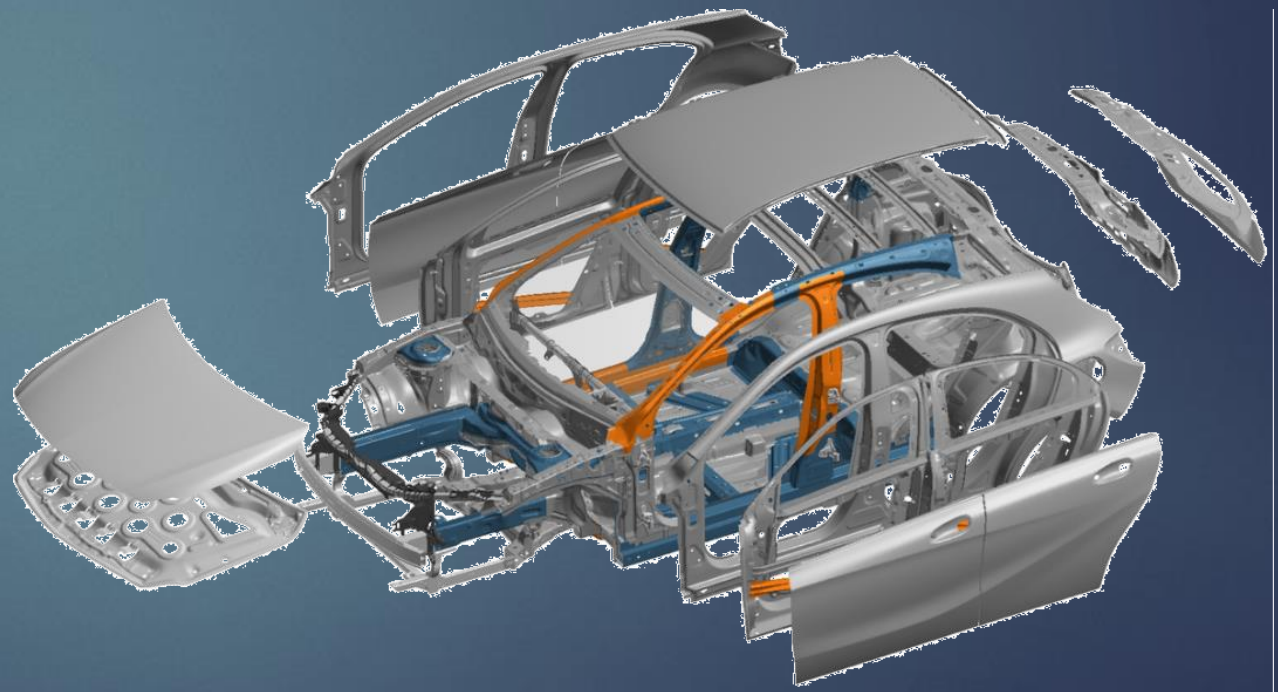
Class A surface, A-solid, B-solid, Trenches
Nominal thickness
Attachment strategy
Environment feasibility
Create the mounting features as per design guidelines in the industry
Apply required color and material details
Draft analysis & Tooling analysis

Creation of parting lines and check tooling feasibility

2d drawings

Drafting work bench.

Creation of detail drawing for the Components
Views creations (basic view & section views)
Application of GD&T in drawings
Template settings



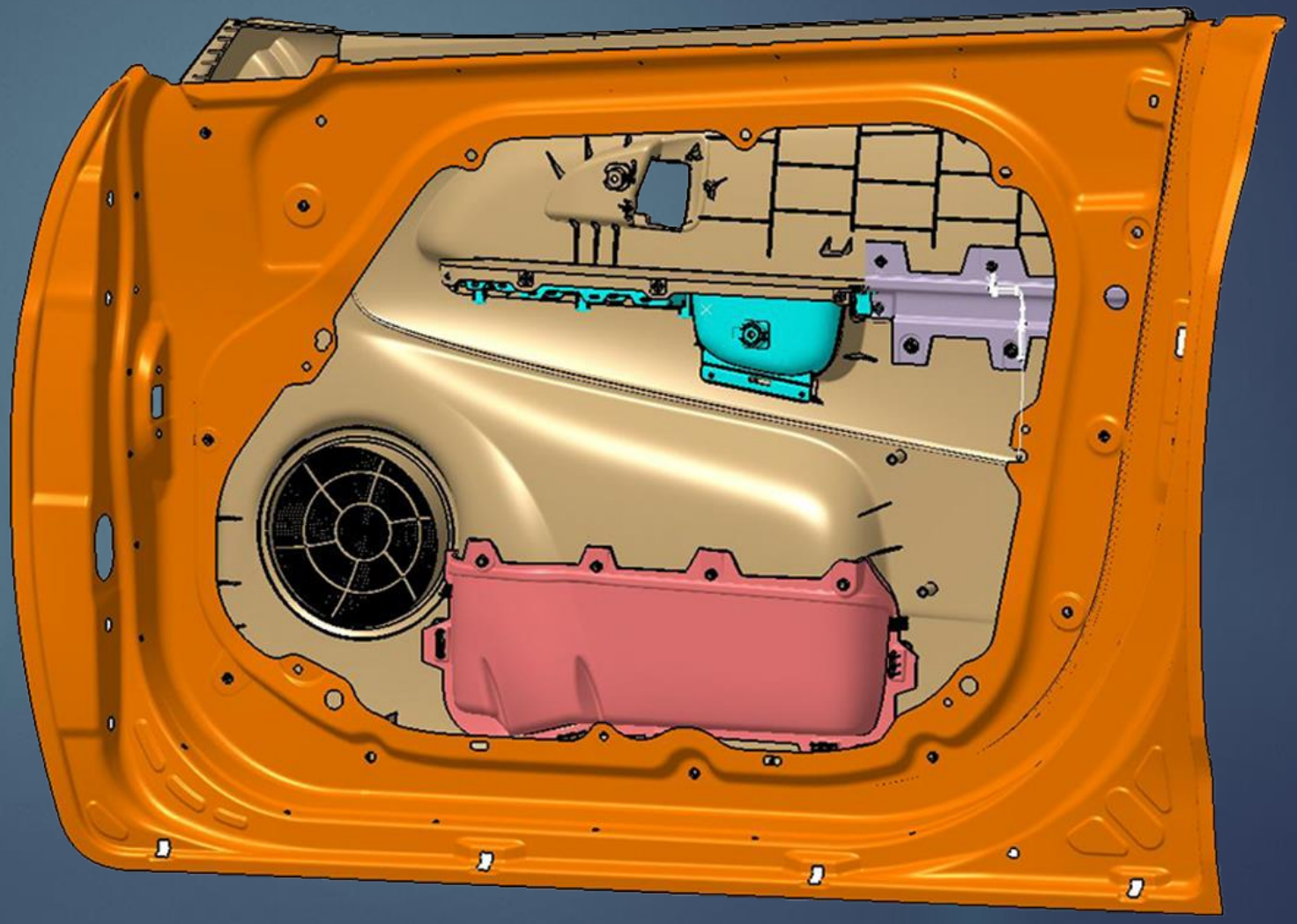
Assembly workbench

Assemble Automotive Sub-assemblies including Child part, Screws,

How to create Assemblies in CATIA?
Creating Constraints
Assembly sectioning analysis
Proximity analysis and output preparation.
Compare analysis of 2 similar components OEM Working procedure

Projects on which you will work

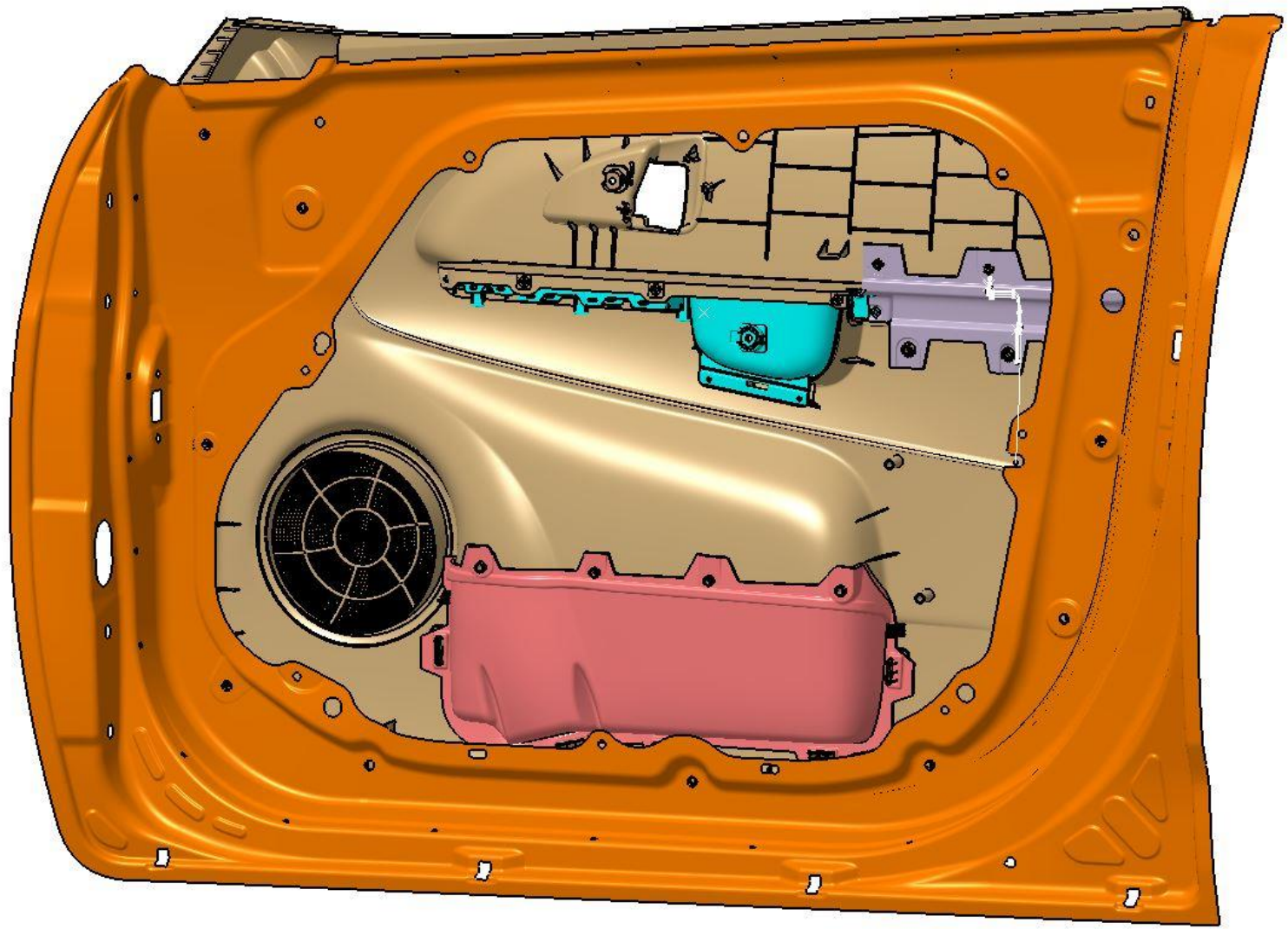
1. Door Panel



CATIA V5 - [Product1.CATProduct]

Start | ENOVIA V5 VPM | File | Edit | View | Insert | Tools | Analyze | Window | Help

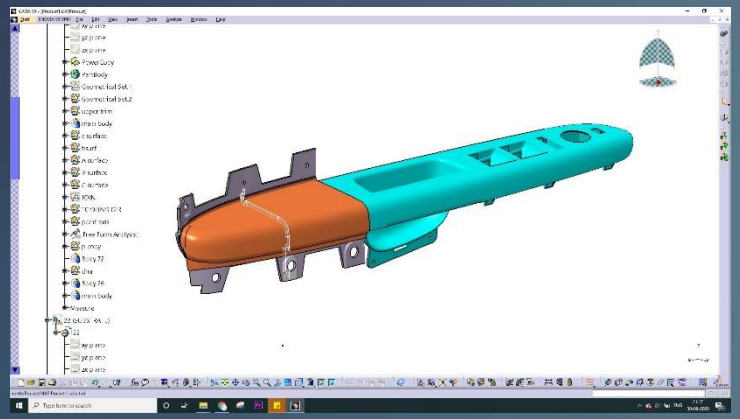
- Product1
  - Part3 (Part3.1 ARM REST)
  - Pocket (MAP Pocket.1)
  - 1 (1.1 BOLSTER)
  - 22 (SUBSTRATE)
  - Speaker Grill (Speaker Grill.1)
  - BIW of Door (BIW of Door.1)
  - Applications

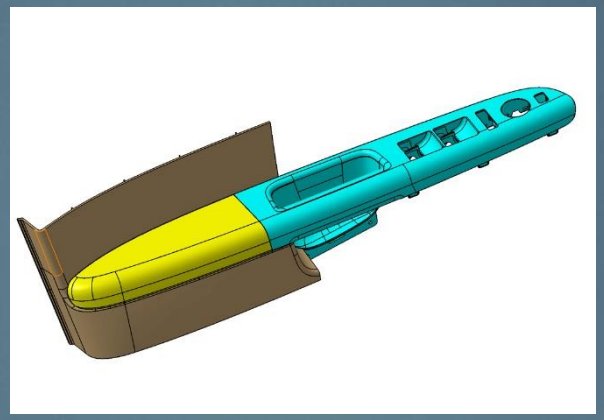


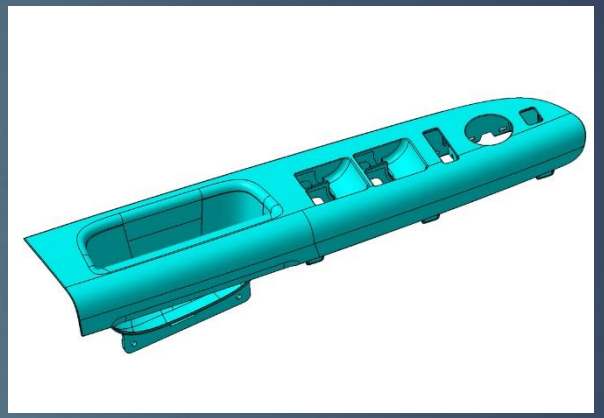
Select an object or a command

Projects on which you will work

2. Arm rest



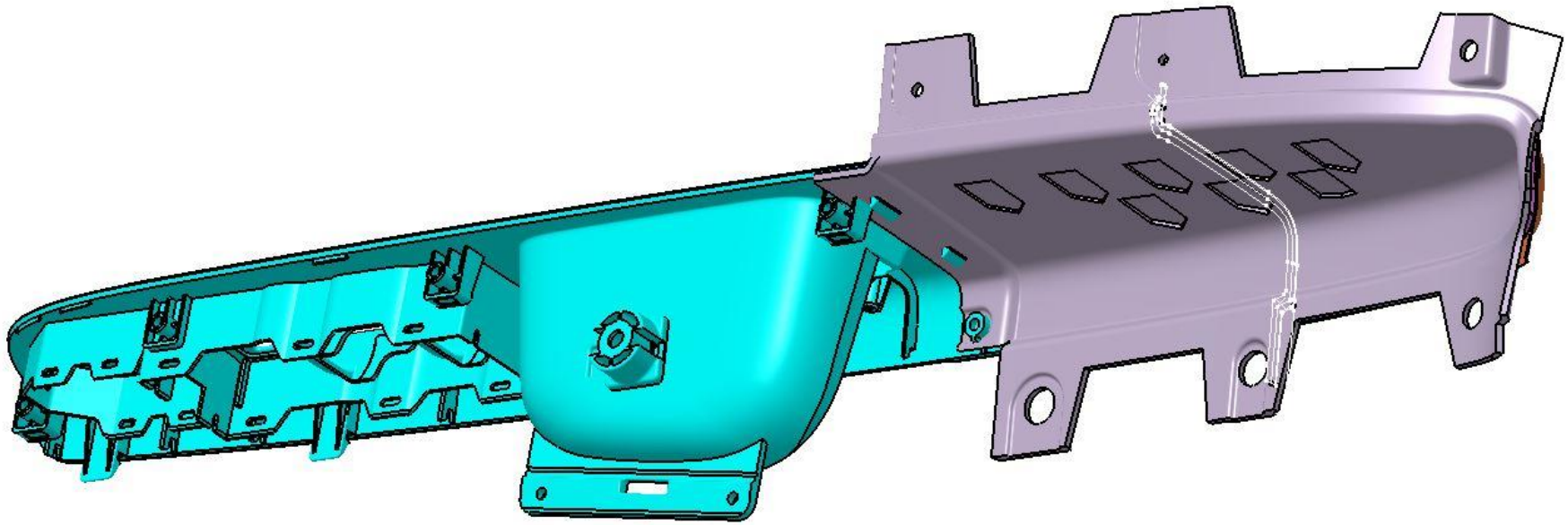




CATIA V5 - [Product1.CATProduct]

Start | ENOVIA V5 VPM | File | Edit | View | Insert | Tools | Analyze | Window | Help

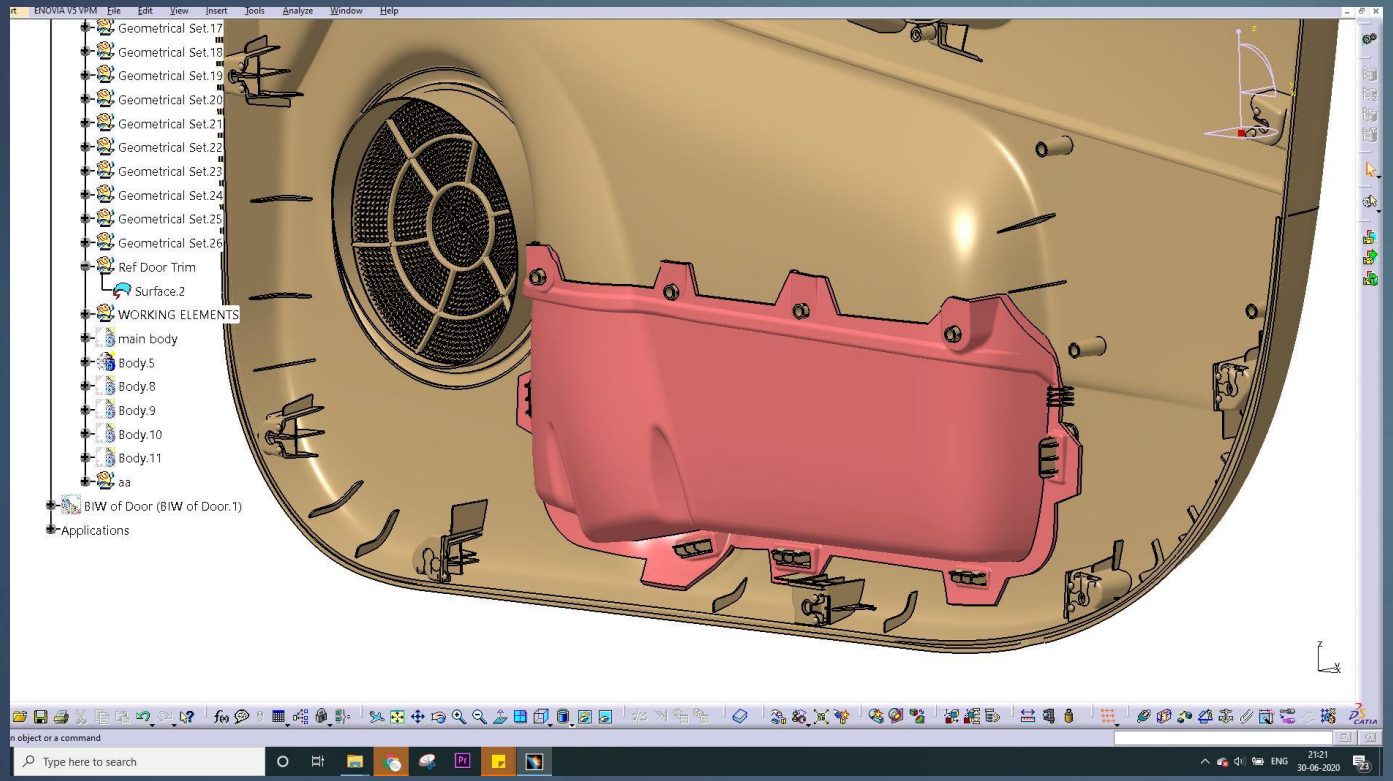
- 1 (1.1 BOLSTER)
  - 1
    - xy plane
    - yz plane
    - zx plane
    - PowerCopy
    - PartBody
    - Geometrical Set.1
    - Geometrical Set.2
    - upper trim
    - main body
    - c surface
    - bsurf
    - A surface
    - B surface
    - C surface
    - JOIN
    - TOOLING DIR
    - point axis
    - Free Form Analysis.1
    - p copy
    - Body.72
    - dha
    - Body.26
    - main body
    - Measure
- 22 (SUBSTRATE)
  - 22

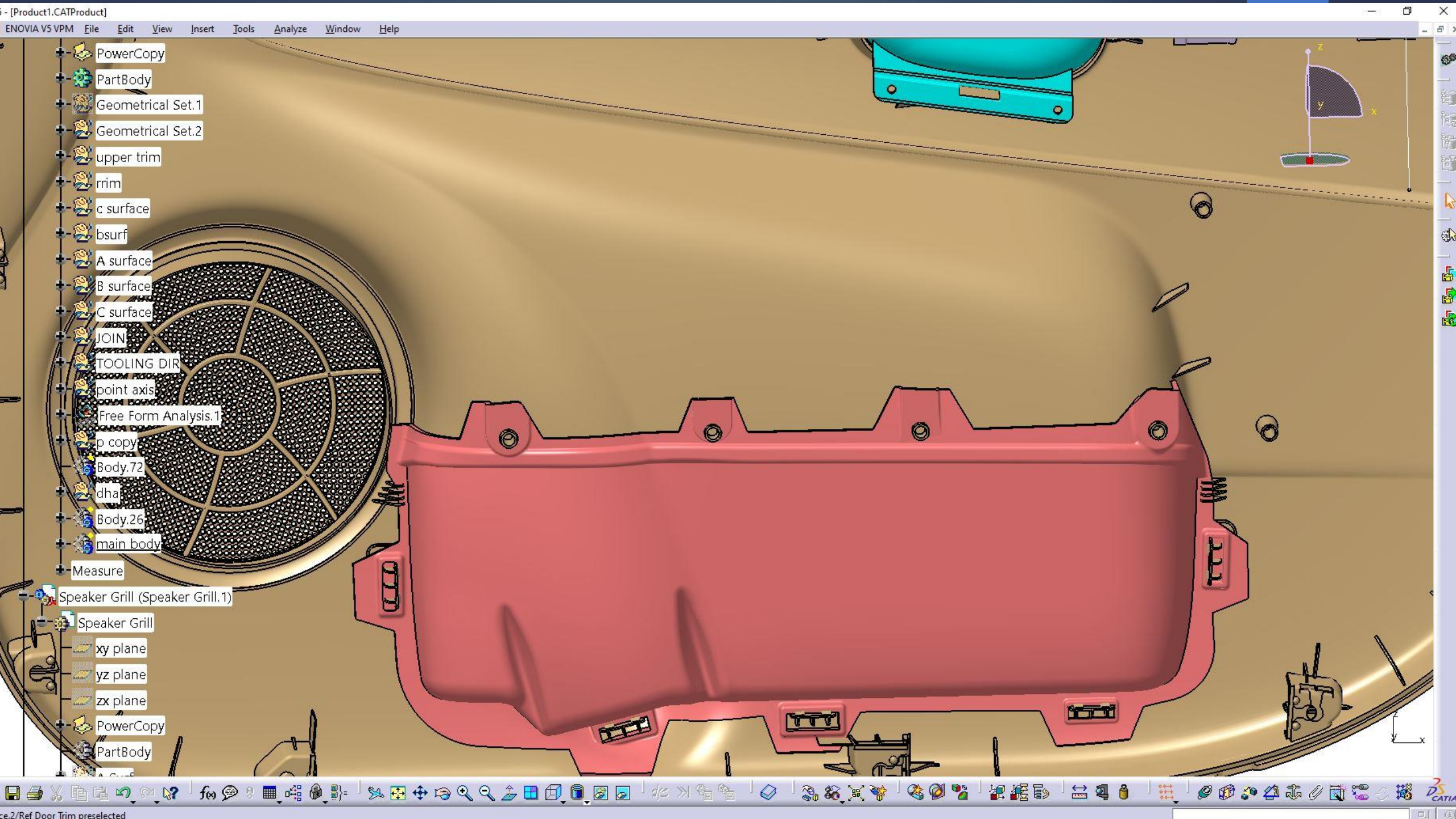


bottle/Pocket/MAP Pocket.1 selected

Projects on which you will work

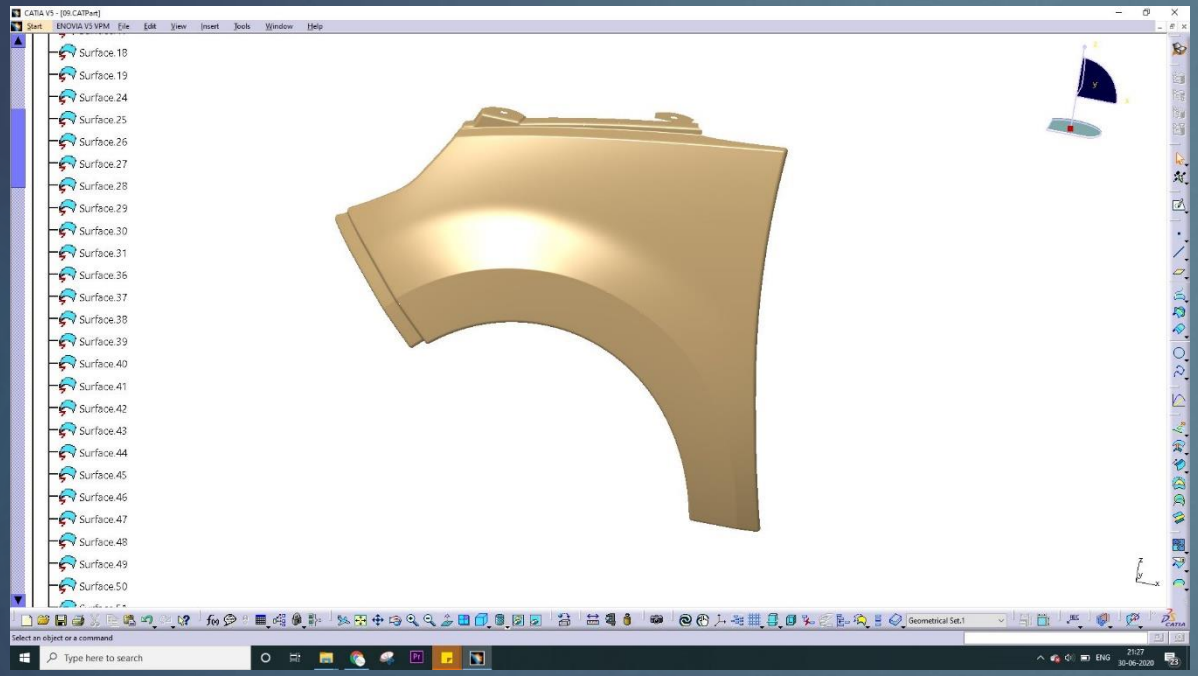
3. Map Pocket




- [Product1.CATProduct]
ENOVIA V5 VPM
File
Edit
View
Insert
Tools
Analyze
Window
Help
PowerCopy
PartBody
Geometrical Set.1
Geometrical Set.2
upper trim
rrim
c surface
bsurf
A surface
B surface
C surface
JOIN
TOOLING DIR
point axis
Free Form Analysis.1
p copy
Body.72
dha
Body.26
main body
Measure
Speaker Grill (Speaker Grill.1)
Speaker Grill
xy plane
yz plane
zx plane
PowerCopy
PartBody
z
y
x

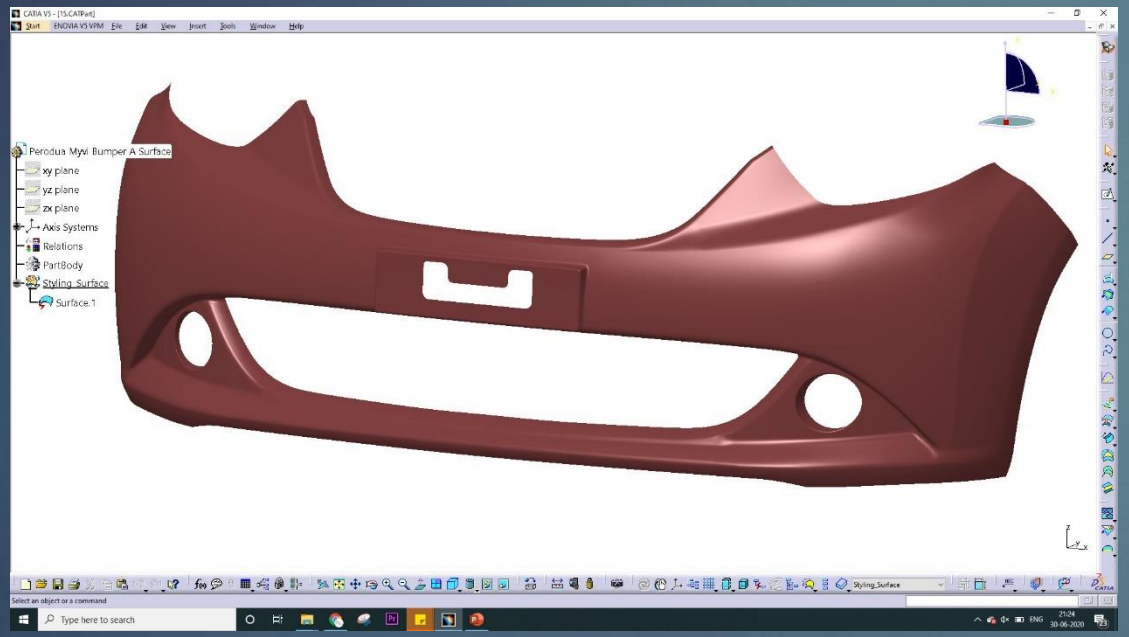
Projects on which you will work

4. Front Side Fender

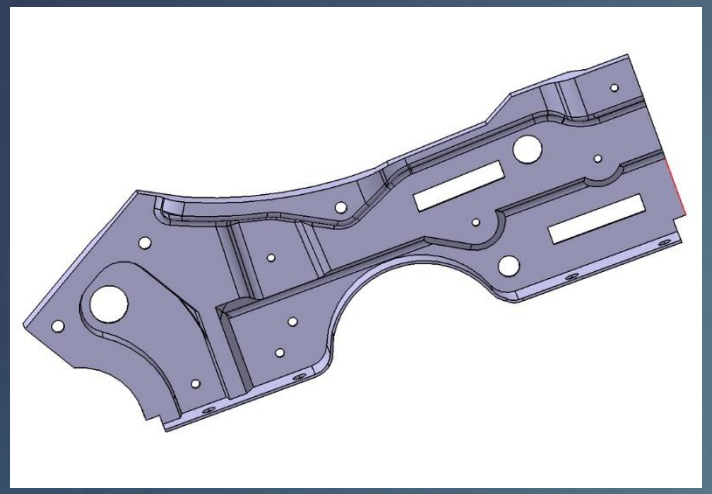


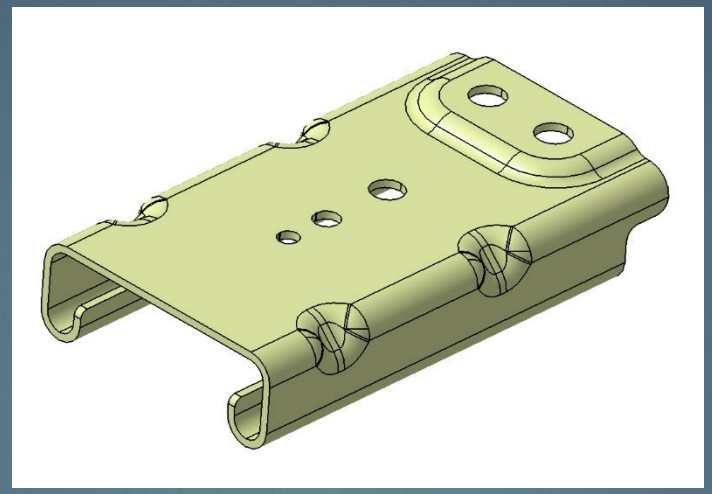
Projects on which you will work

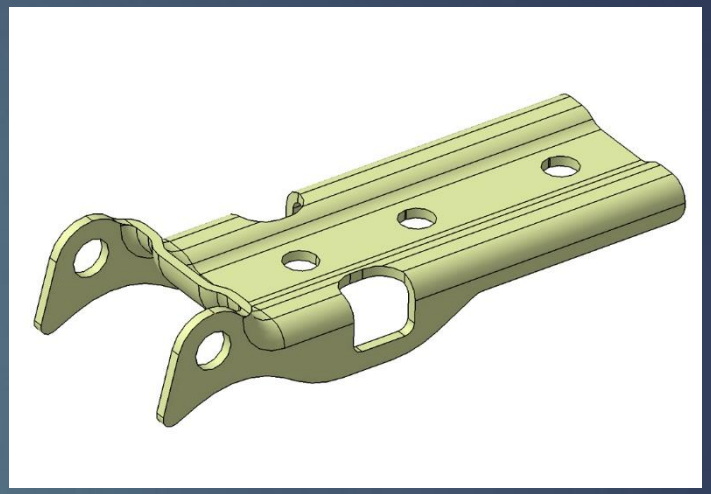
5. Front Bumper

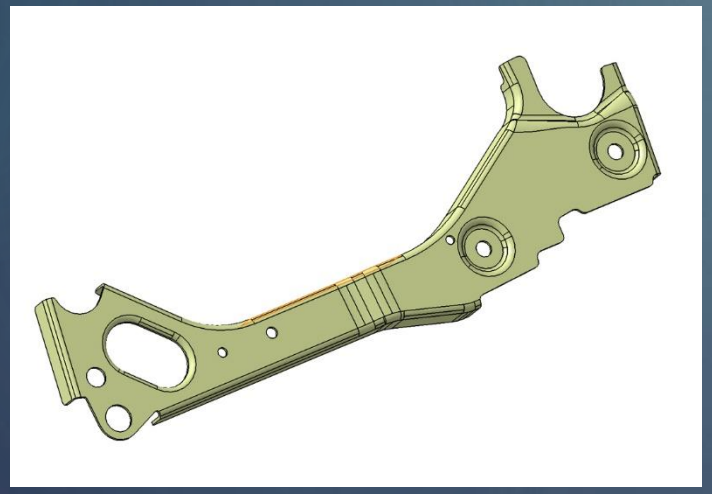


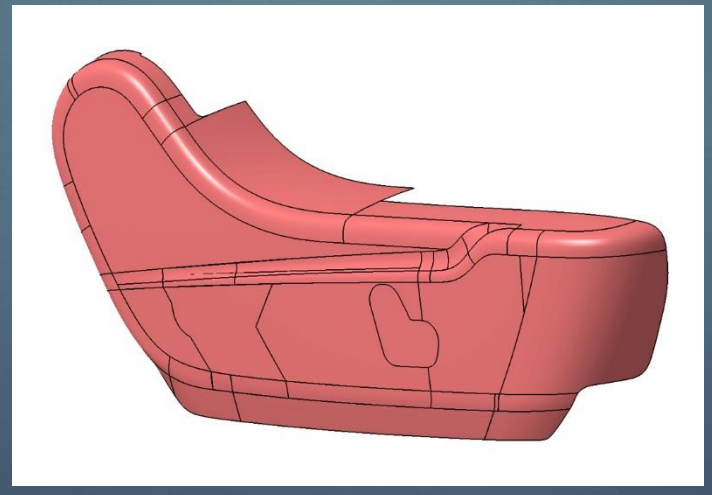
Projects & Exercises

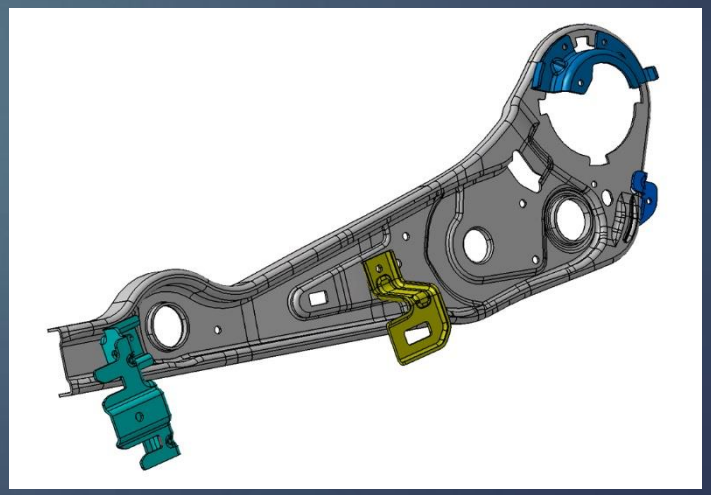




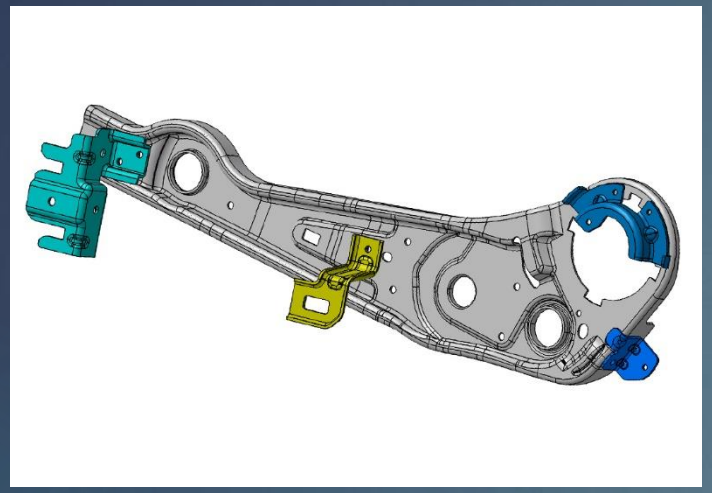


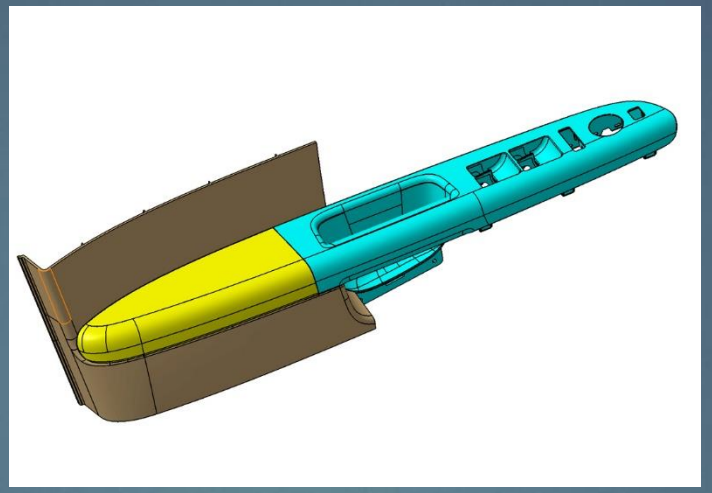


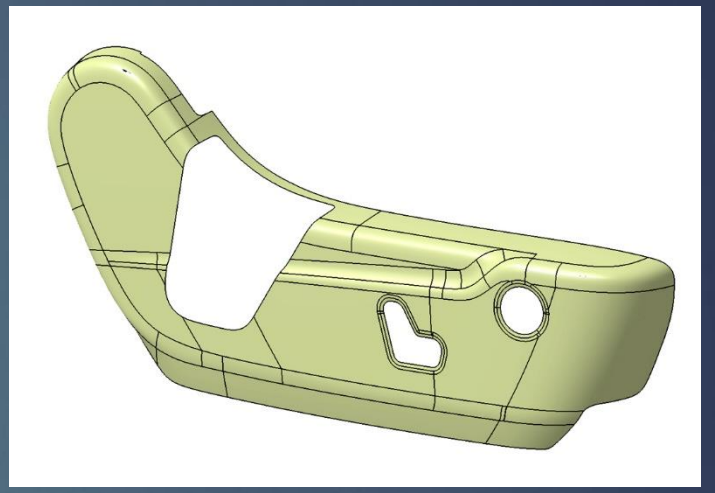


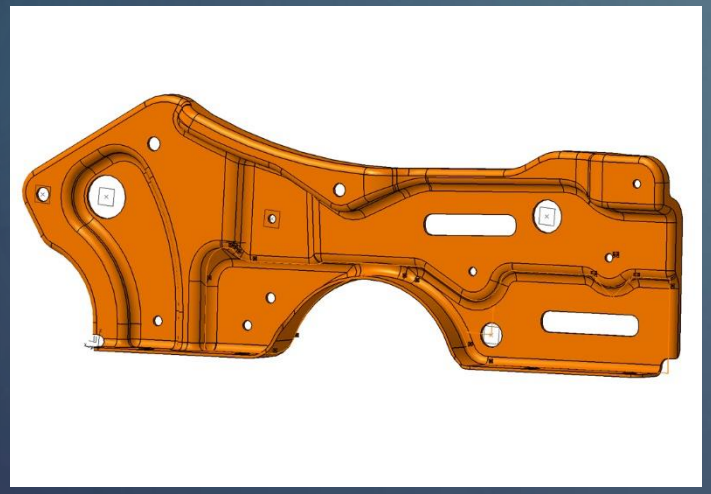


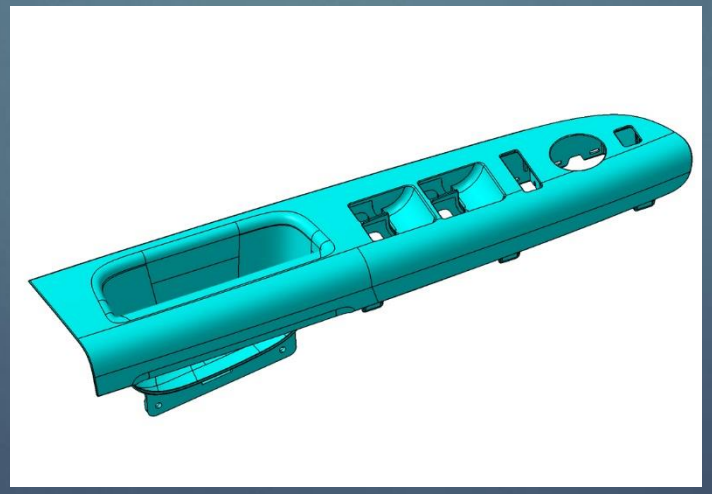
Projects & Exercises

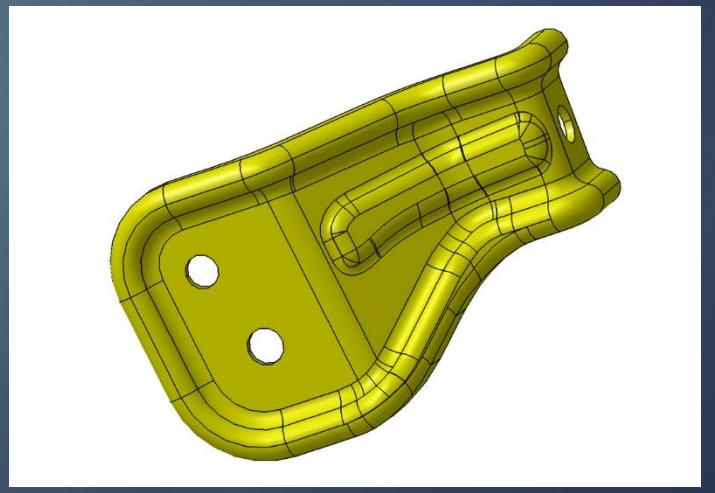




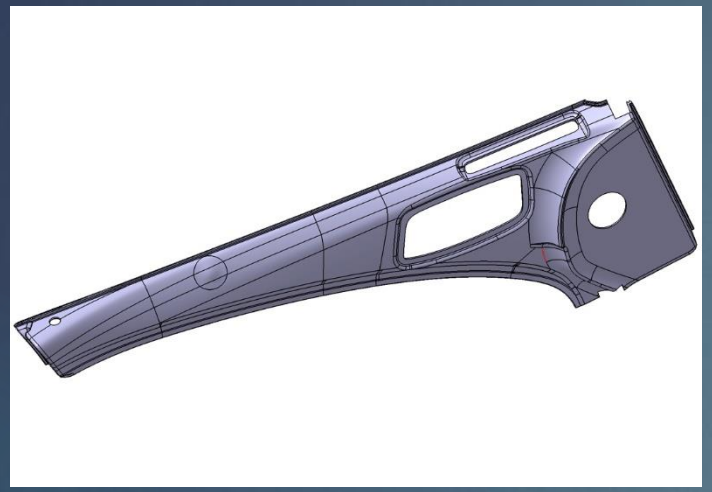


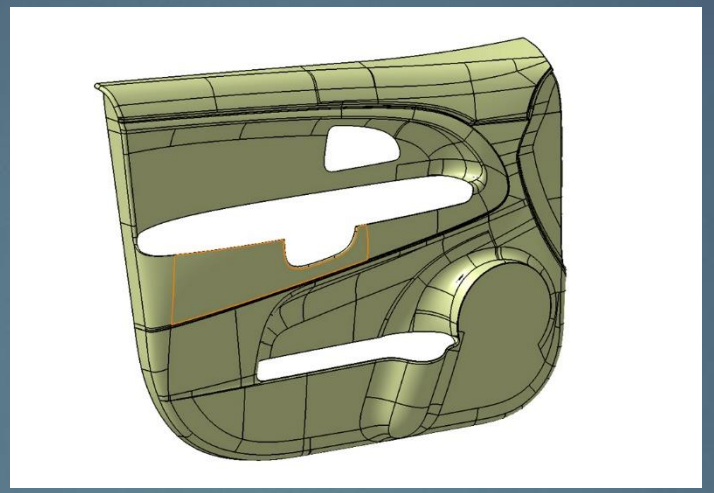


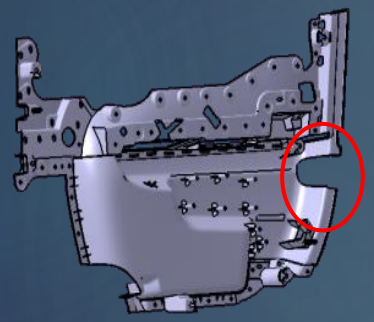
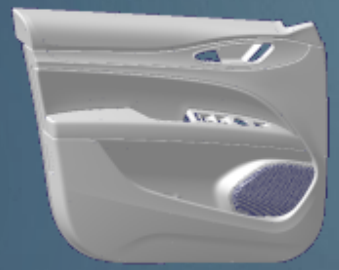
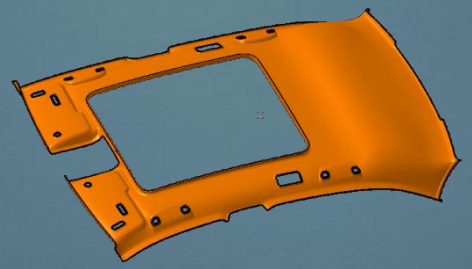
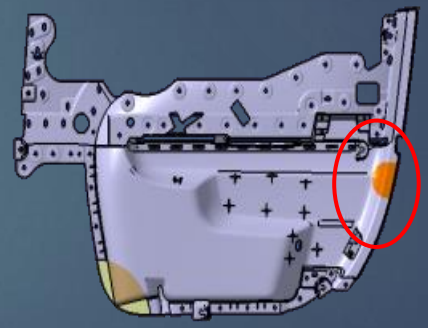
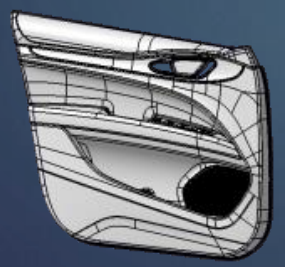
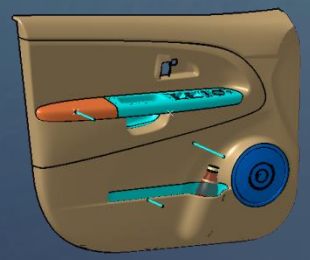
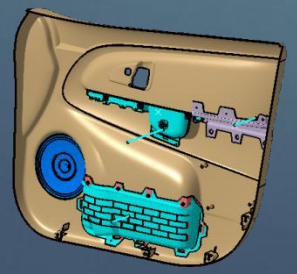
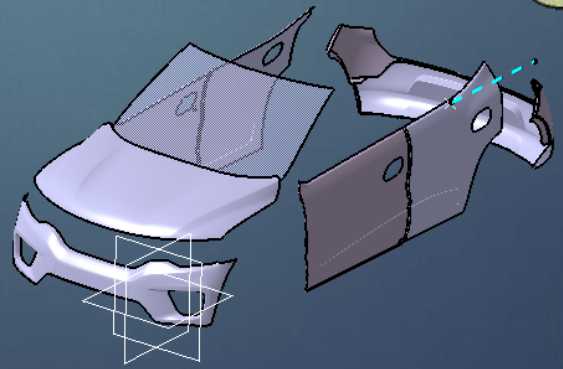




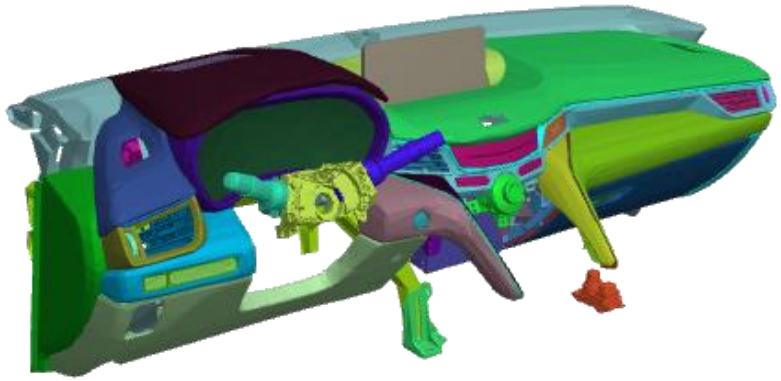
Projects & Exercises

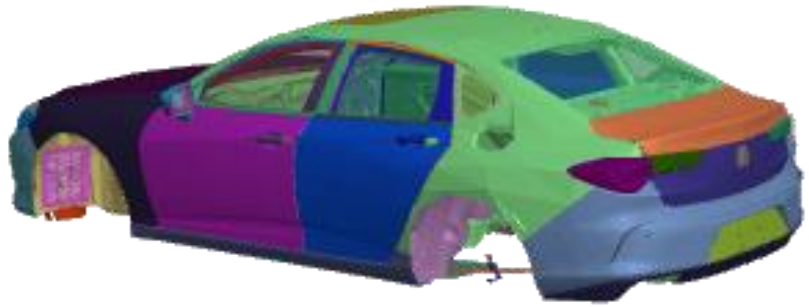


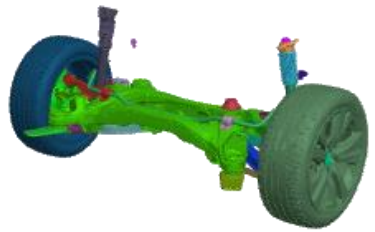


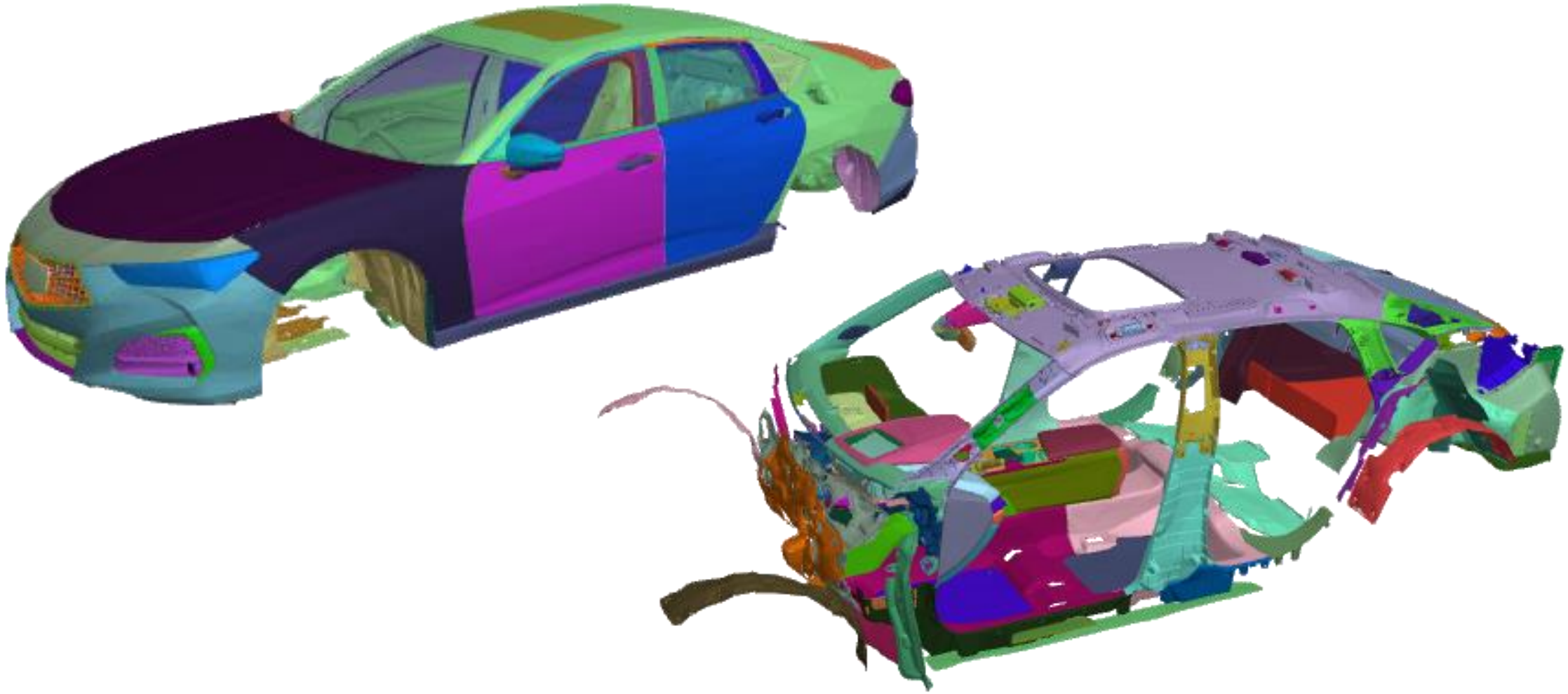
Projects & Exercises



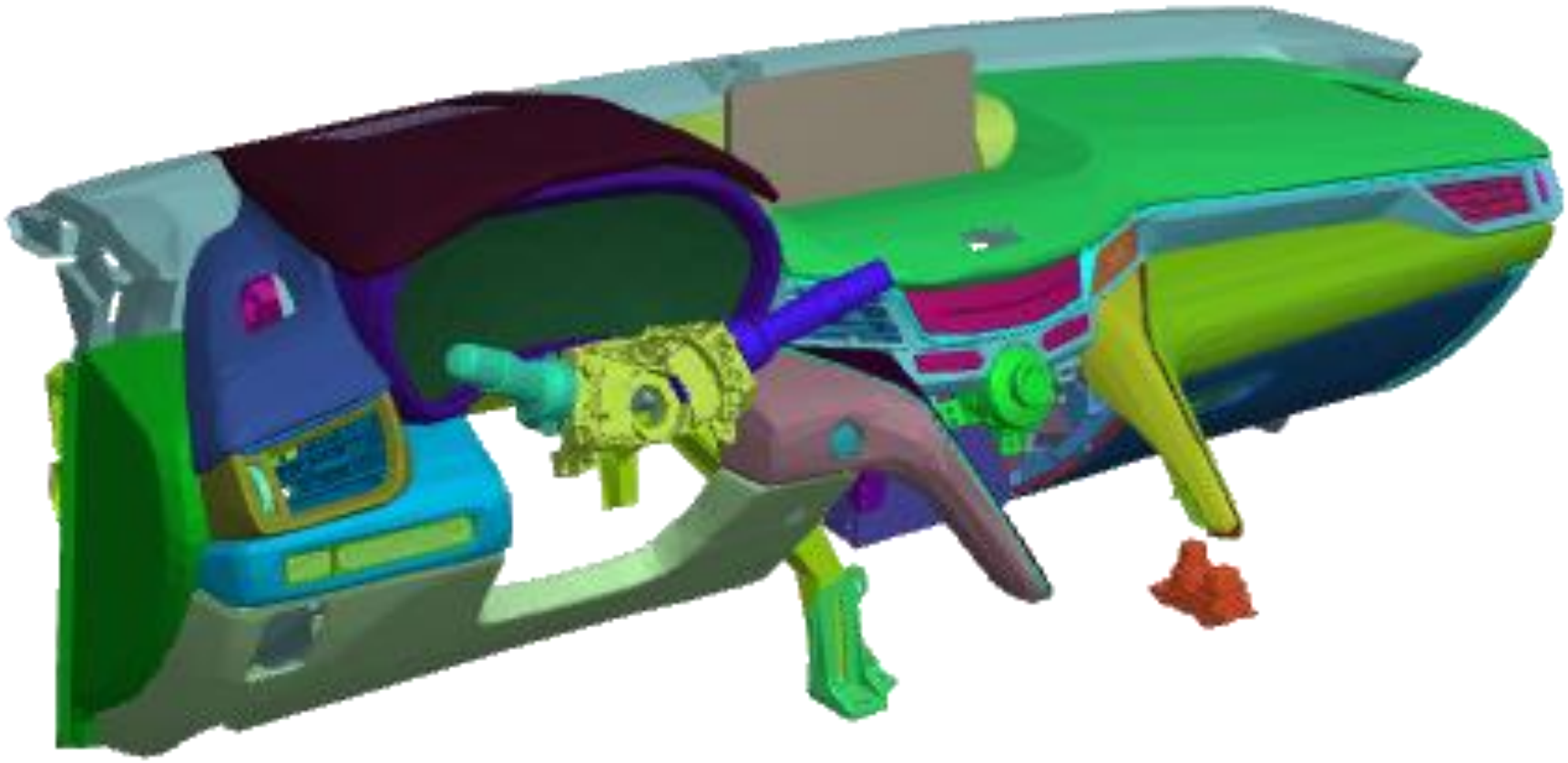




Projects & Exercises



Projects & Exercises



Projects & Exercises

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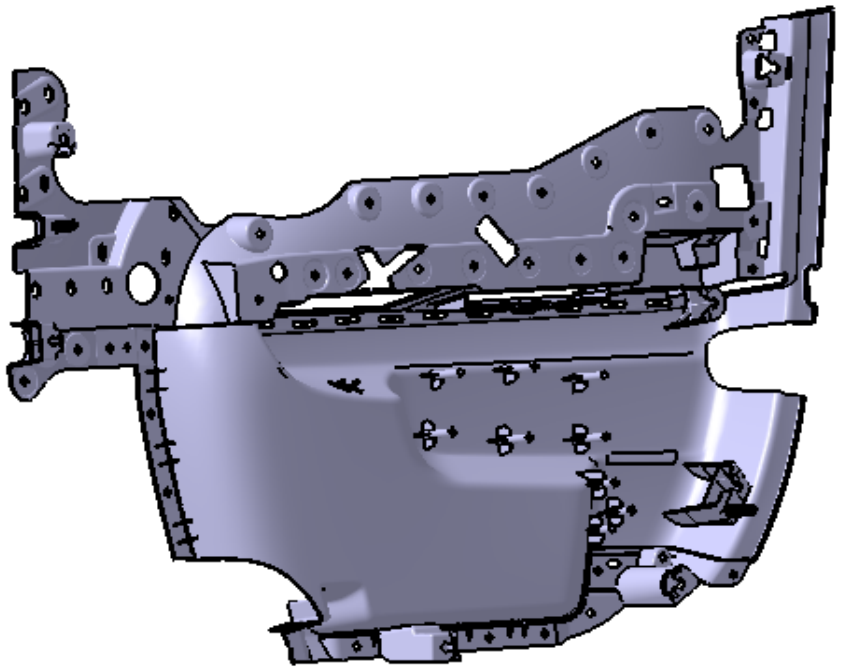
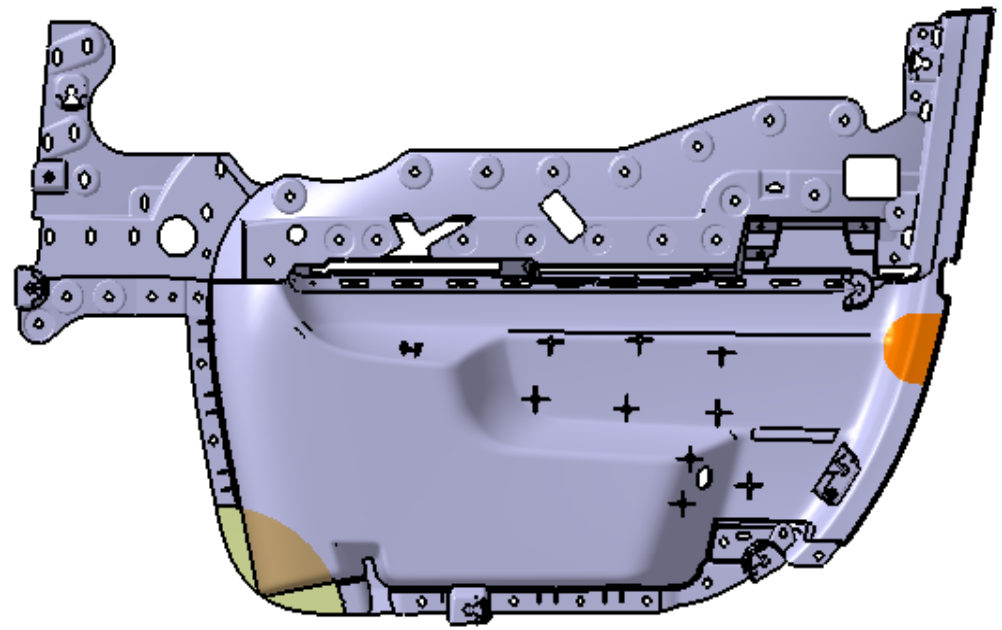
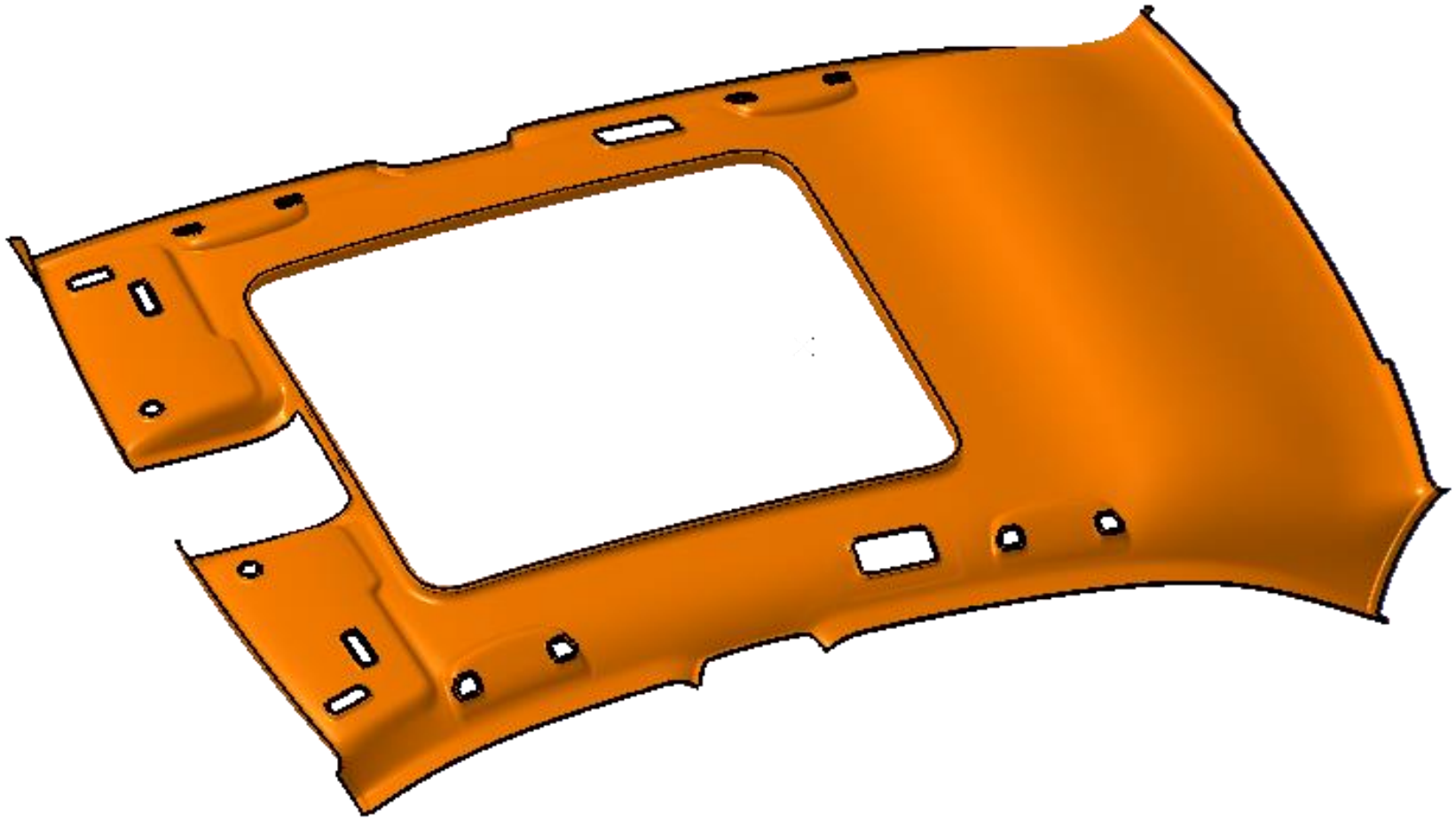


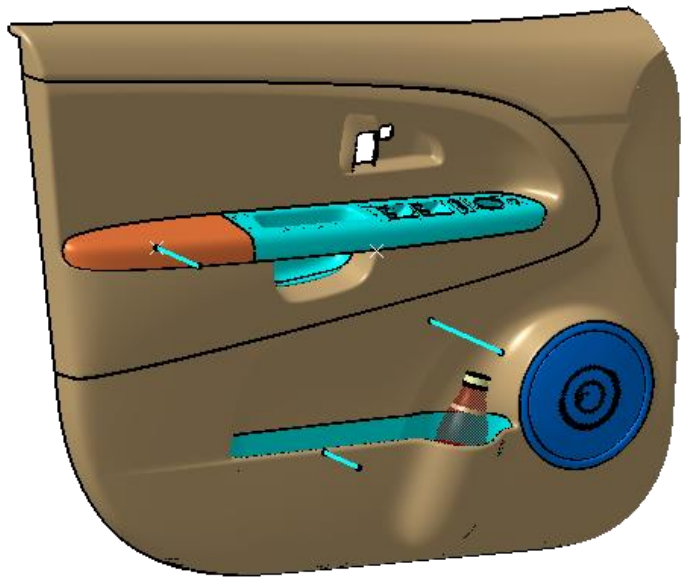


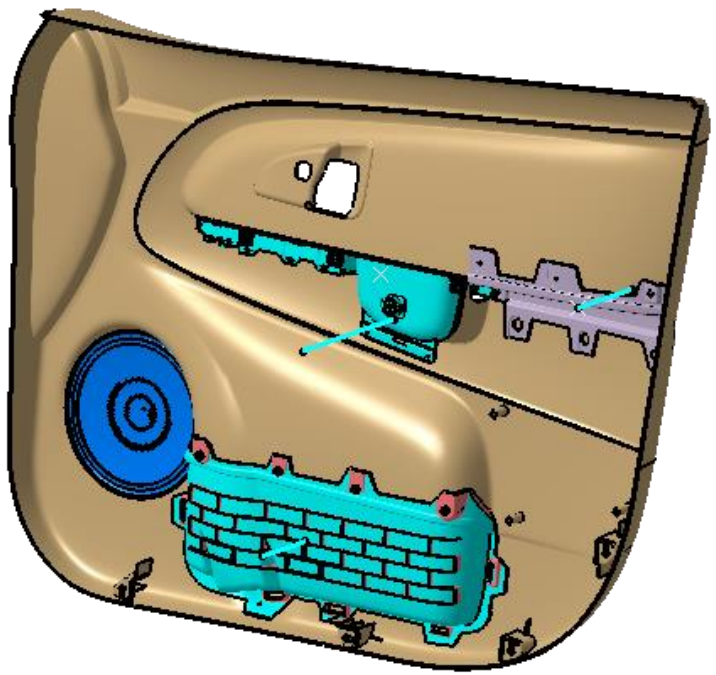
Projects & Exercises



Headliner project

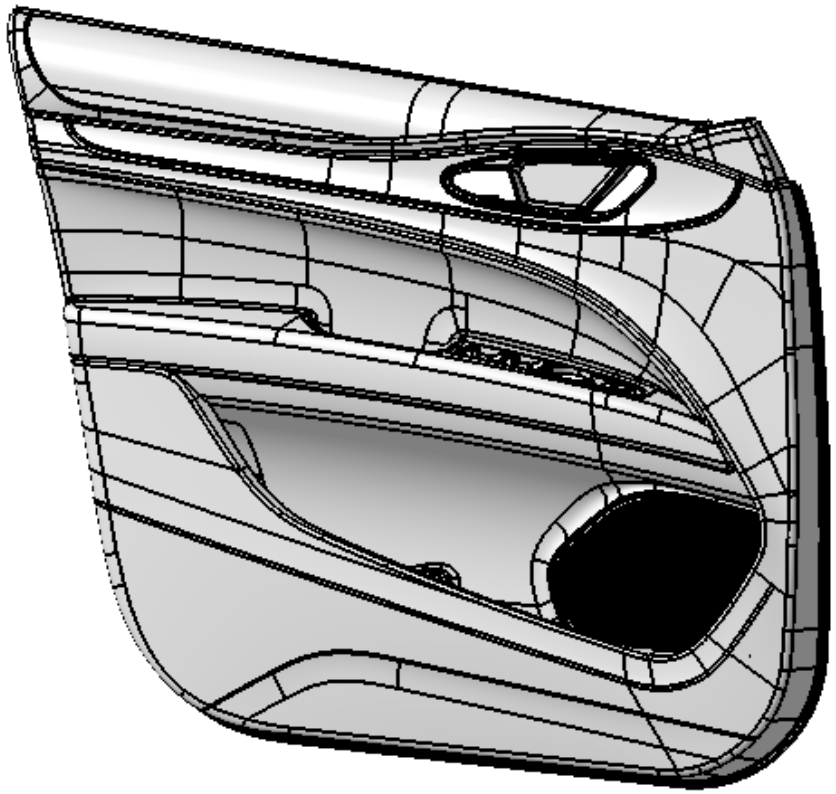
Projects & Exercises

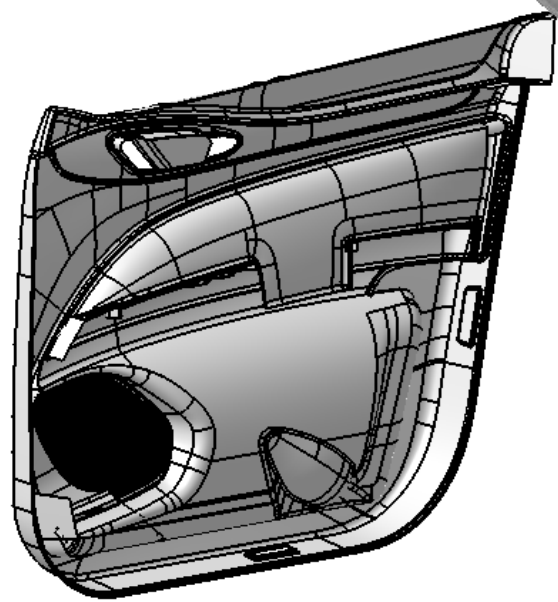


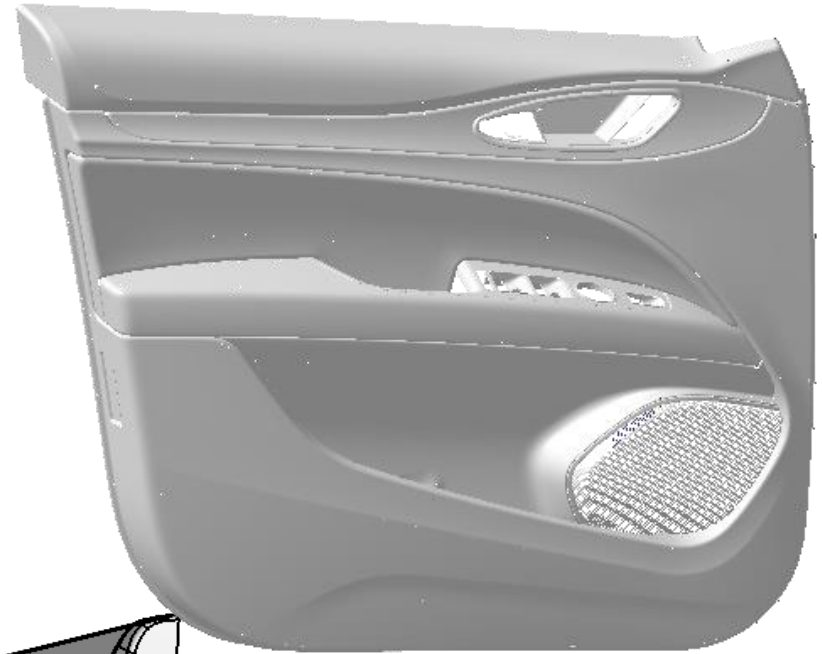


Door trim

Projects & Exercises

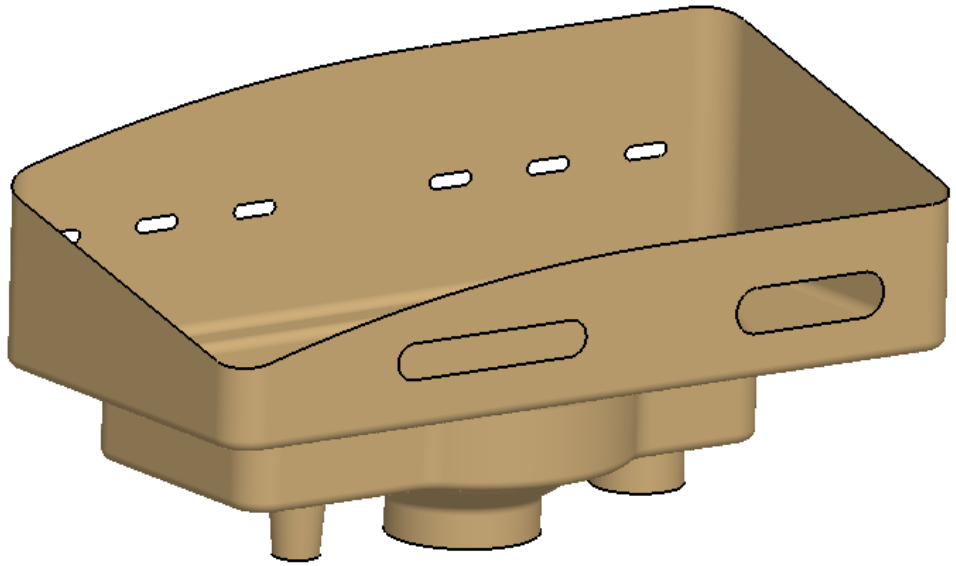


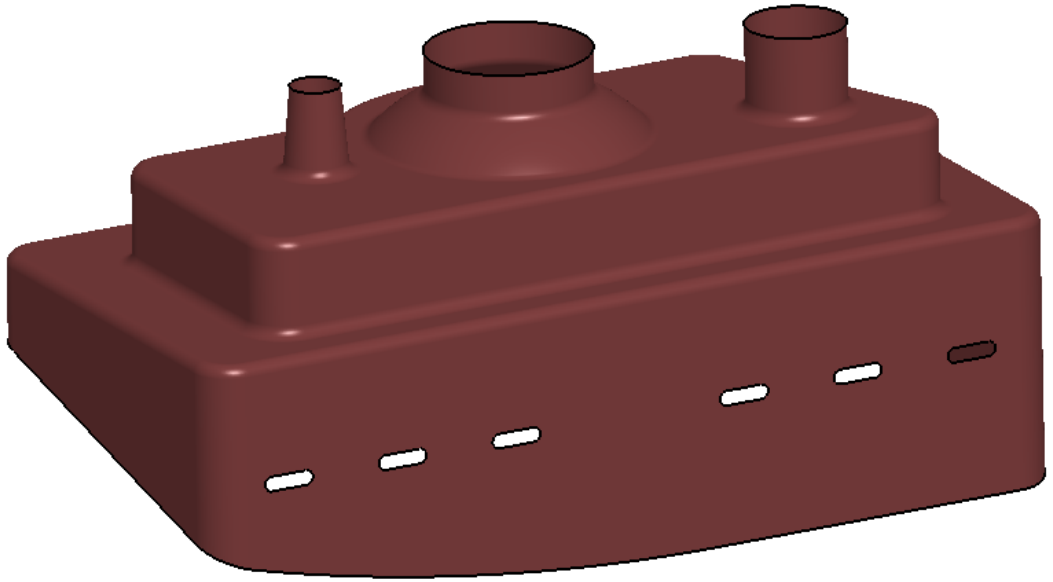




02

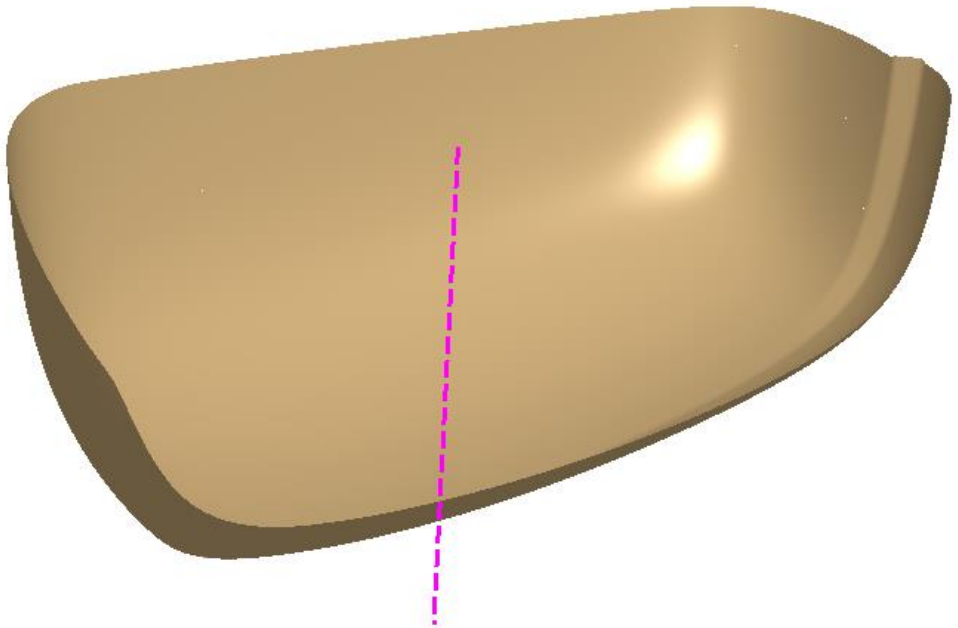
1.Create tooling direction
2.Solve A surface issues
3.Direction for slider and lifter if needed
4.Create solid body with 2.5mm thickness inside (arrow side)
5.Create parting line





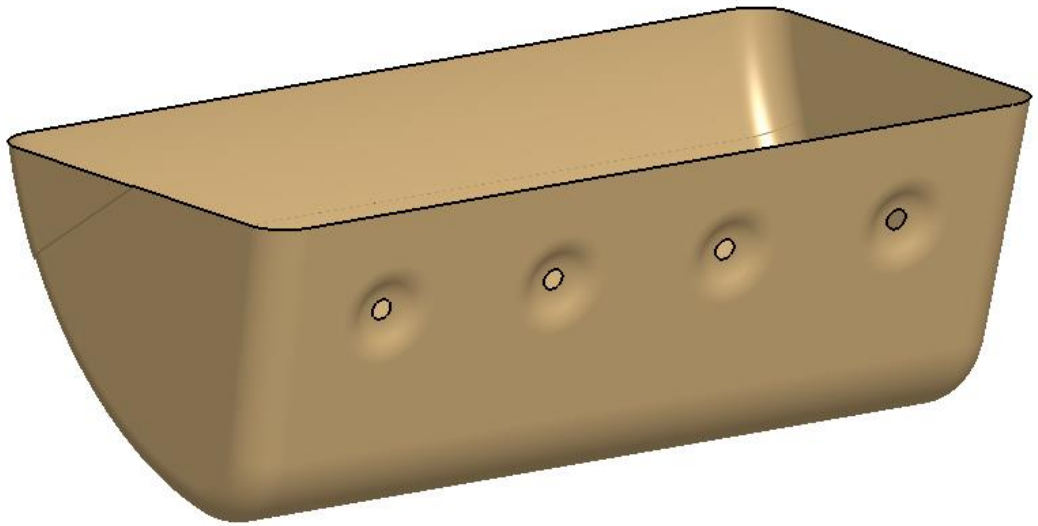
03

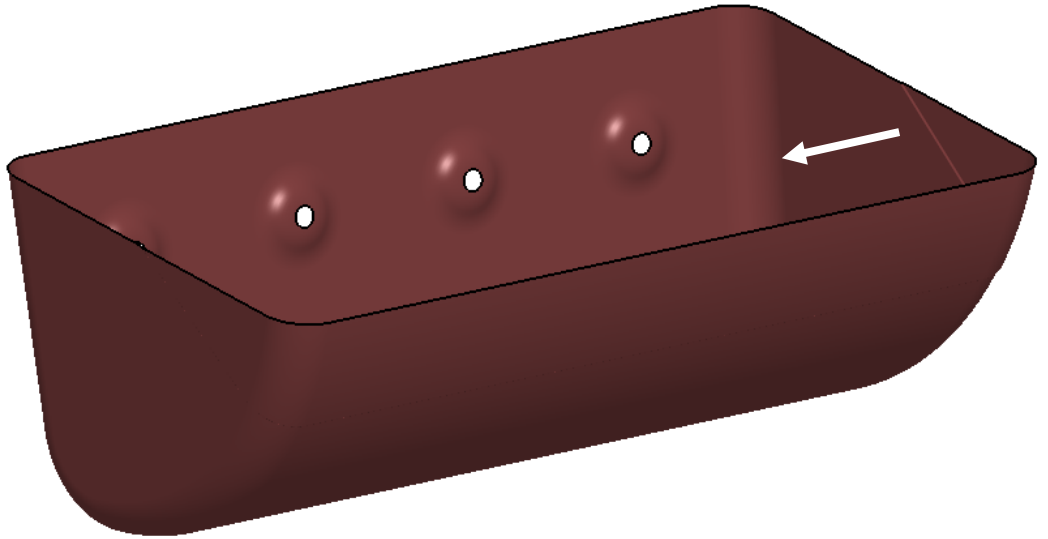
1.Create tooling direction
2.Solve A surface issues
3.Direction for slider and lifter if needed
4.Create solid body with 2.5mm thickness inside (arrow side)
5.Create parting line



04

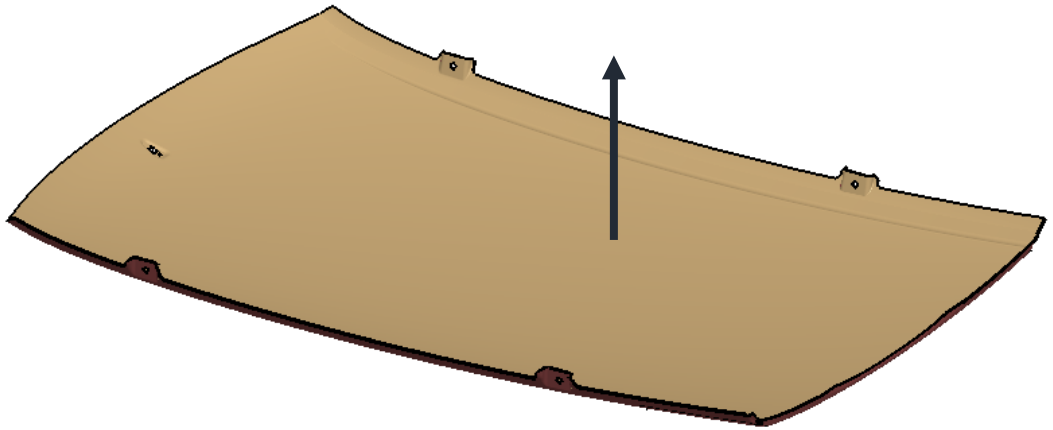
1.Create tooling direction
2.Solve A surface issues
3.Direction for slider and lifter if needed
4.Create solid body with 2.5mm thickness inside (arrow side)
5.Create parting line

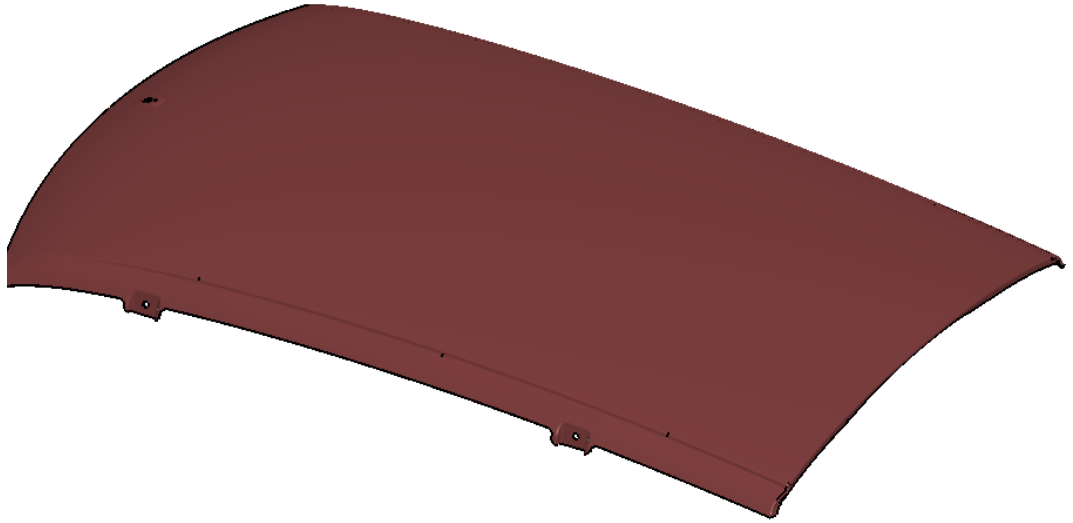




05

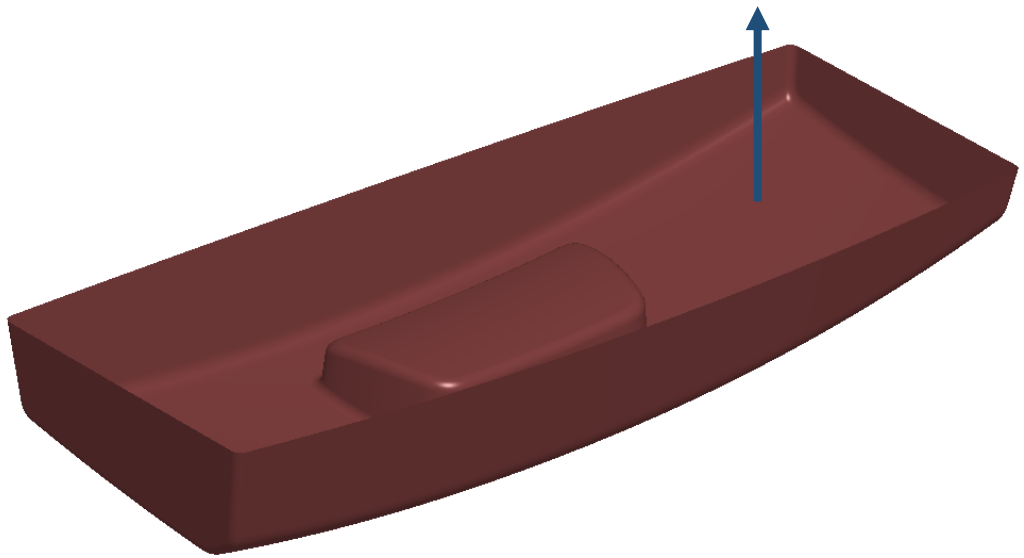
1.Create tooling direction
2.Solve A surface issues
3.Direction for slider and lifter if needed
4.Create solid body with 2.5mm thickness inside (arrow side)
5.Create parting line

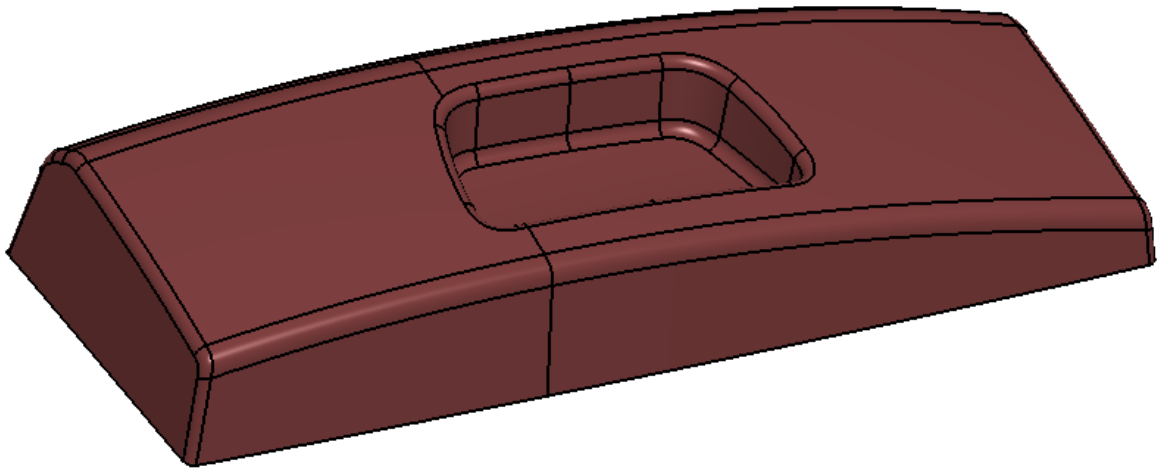




06

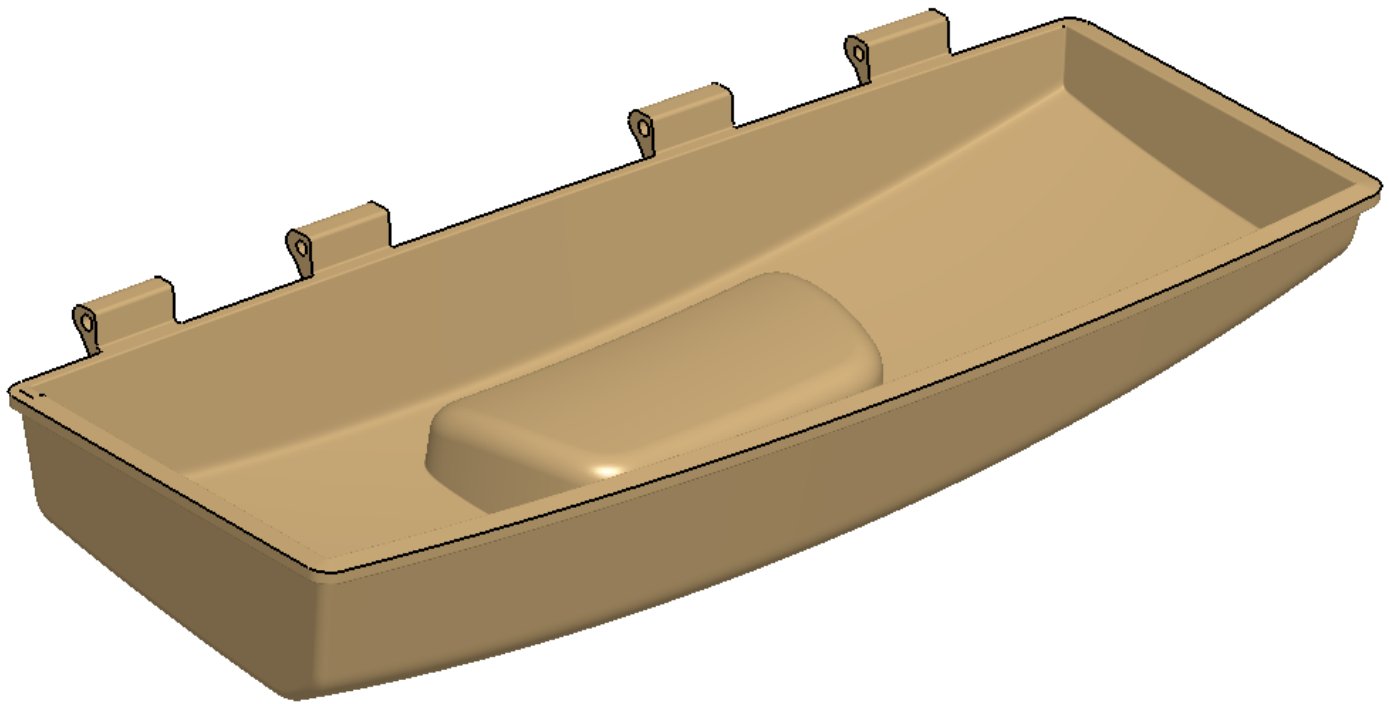
1.Create tooling direction
2.Solve A surface issues
3.Direction for slider and lifter if needed
4.Create solid body with 2.5mm thickness inside (arrow side)
5.Create parting line





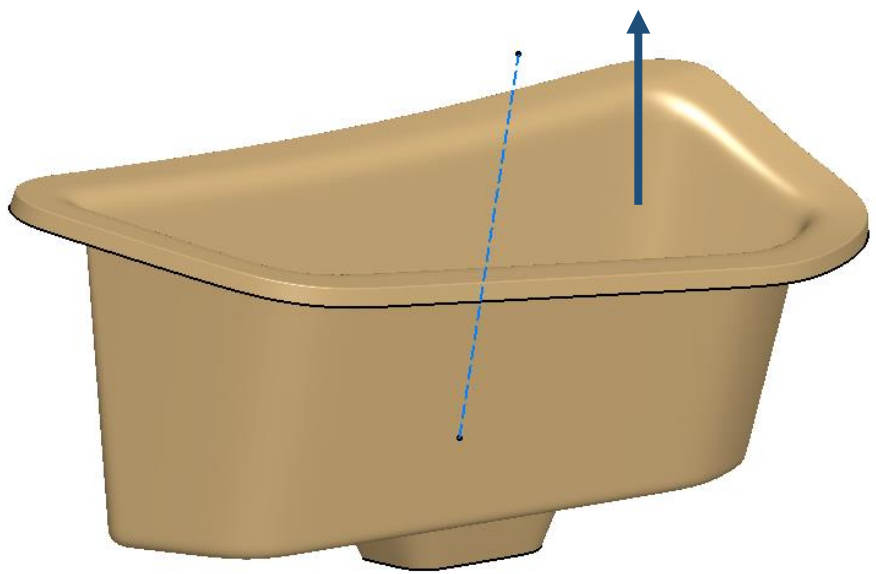
07

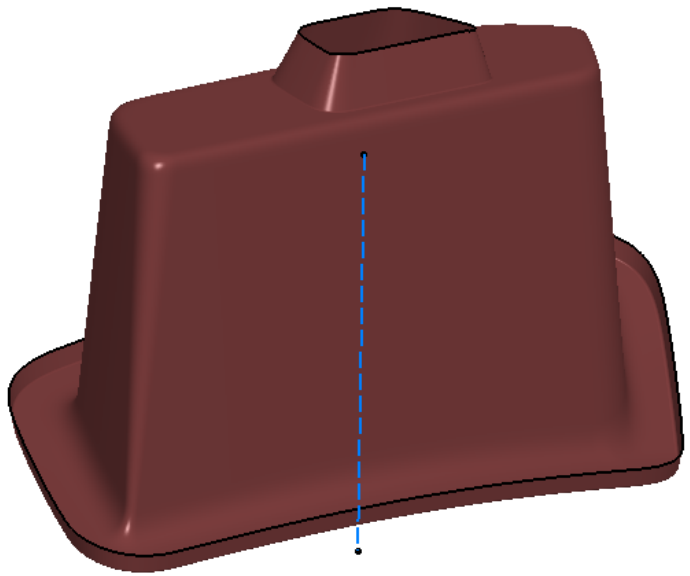
1.Make changes in part 6 and make it as part 7
2.Create parting line



08

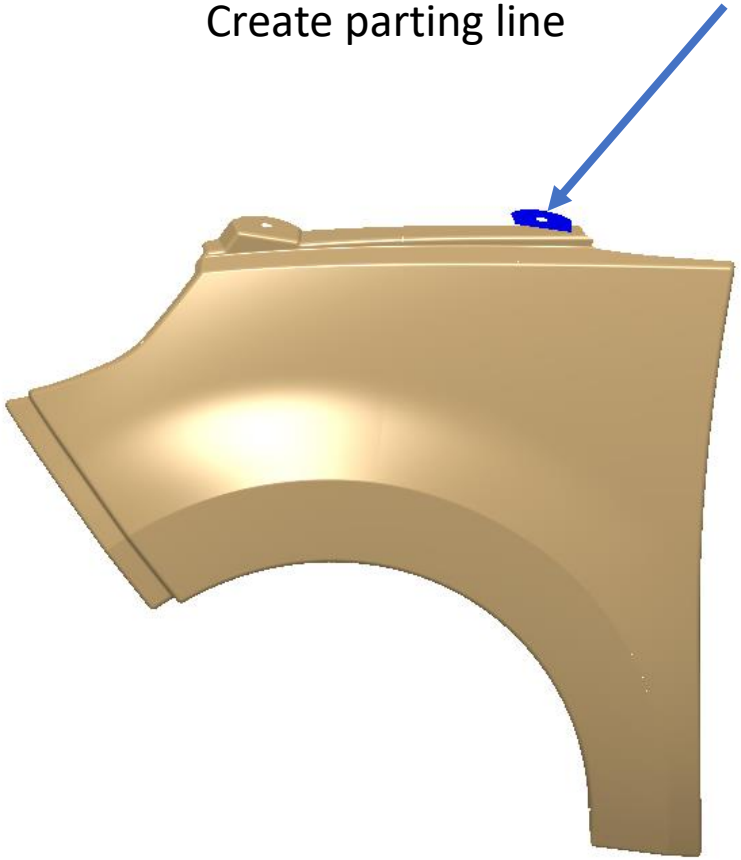
1.Create tooling direction
2.Solve A surface issues
3.Direction for slider and lifter if needed
4.Create solid body with 2.5mm thickness inside (arrow side)
5.Create parting line

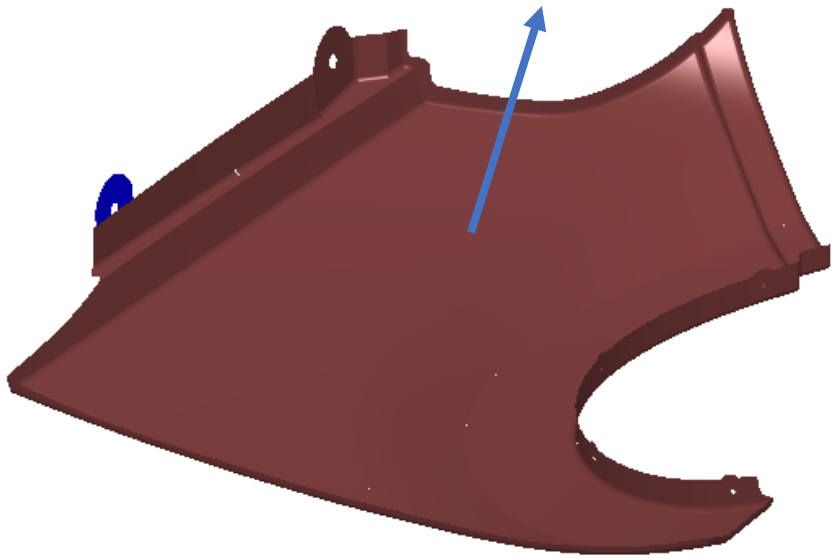




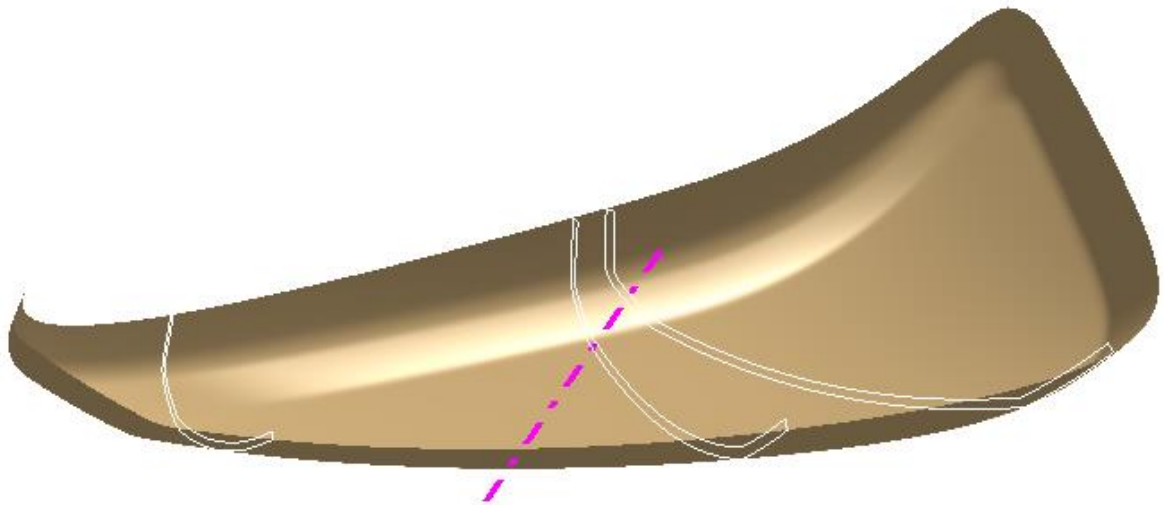
09

Modify A surface issues,
Create tooling direction, draft angle 1.5deg
Create 3mm A to B inside mounting thickness should be 4.2mm
Create 2nd mounting (blue color) one mouting has been created for ref
Create parting line

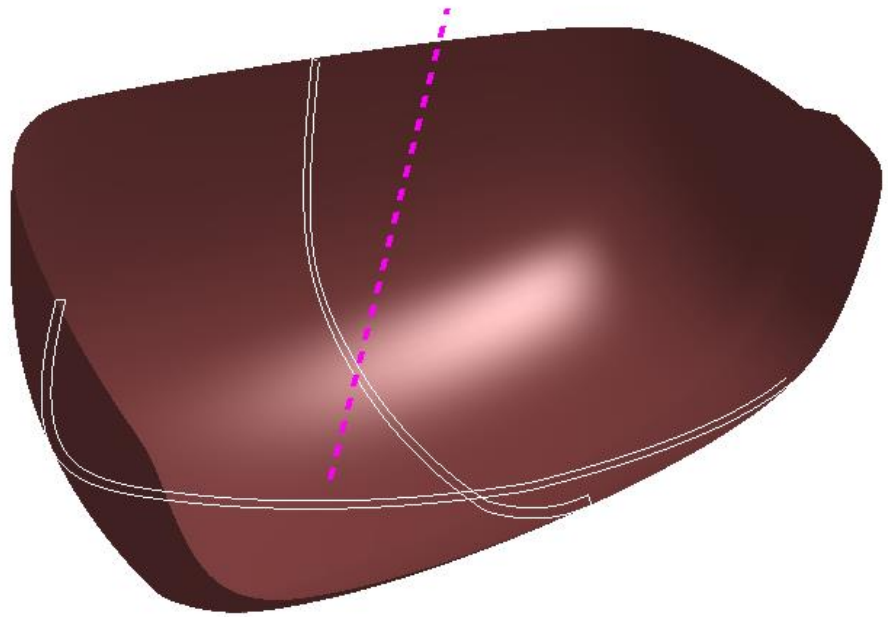




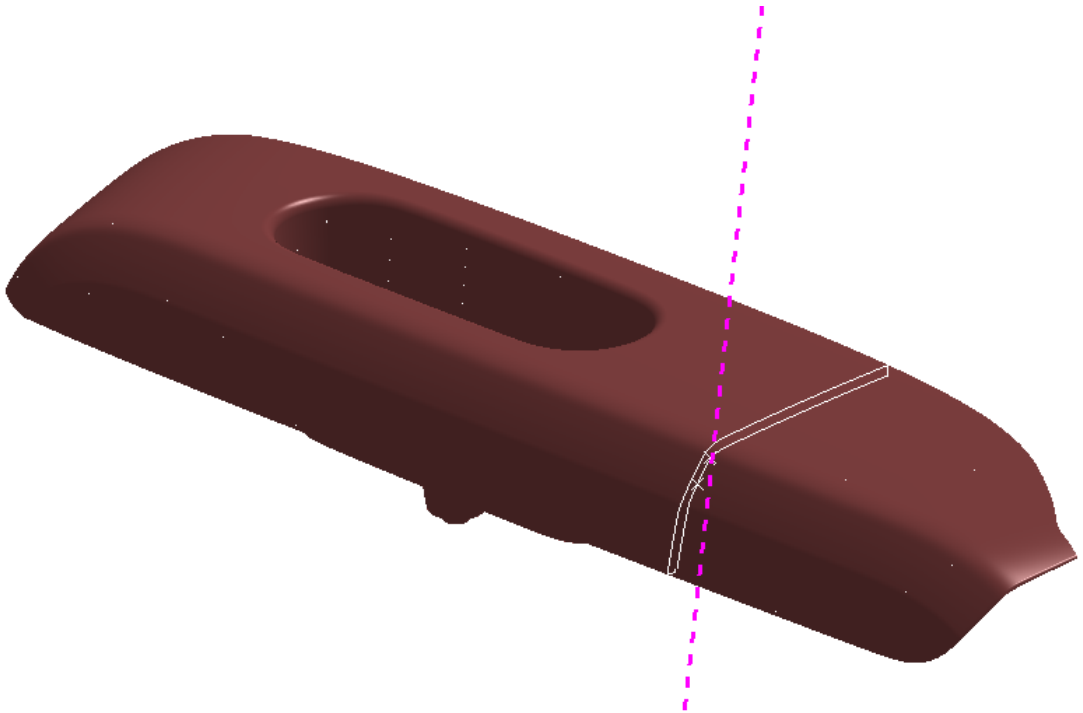
Modify A surface issues,
Create tooling direction, draft angle 3deg
Create thickness according to master-section
Create parting line



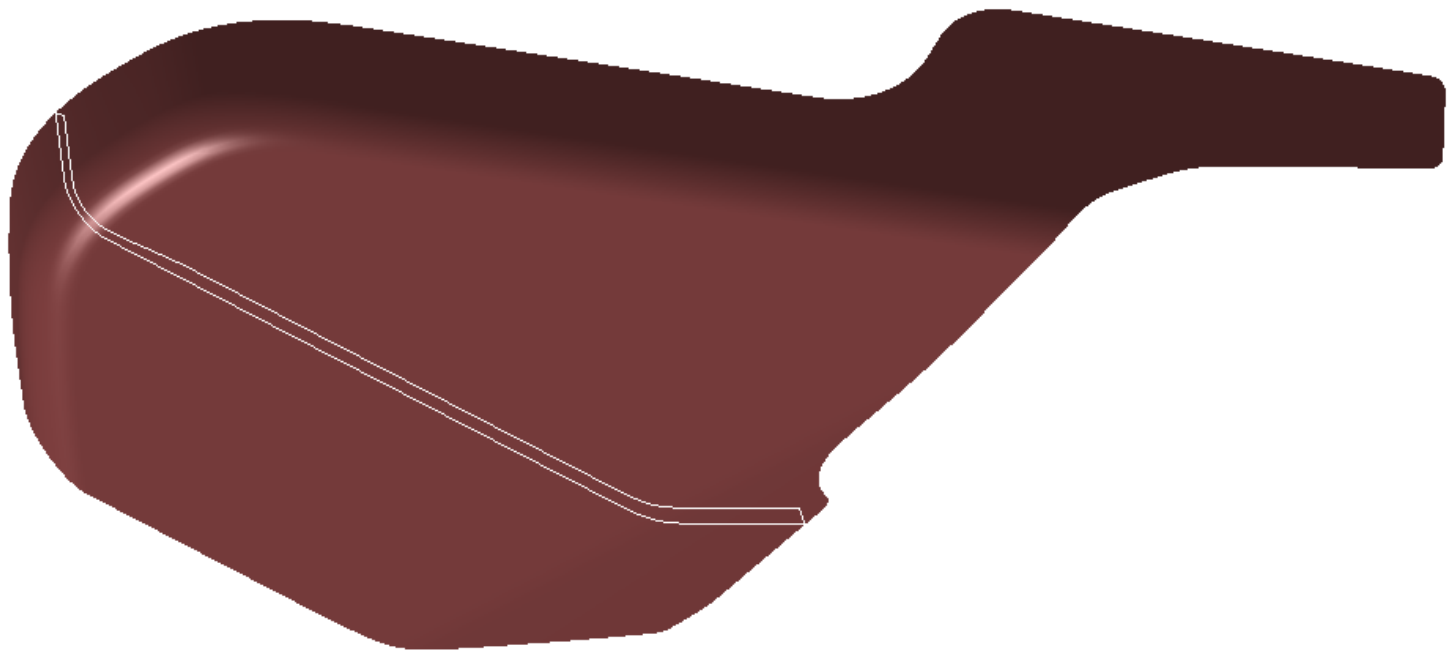
Modify A surface issues,
Create thickness according to master-section
Create parting line



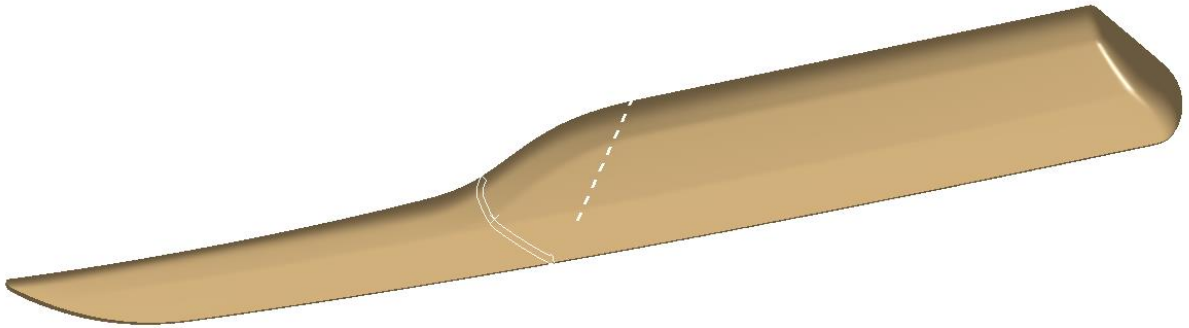
Modify tooling direction
Solve A surface issues
Create thickness according to master-section
Create parting line

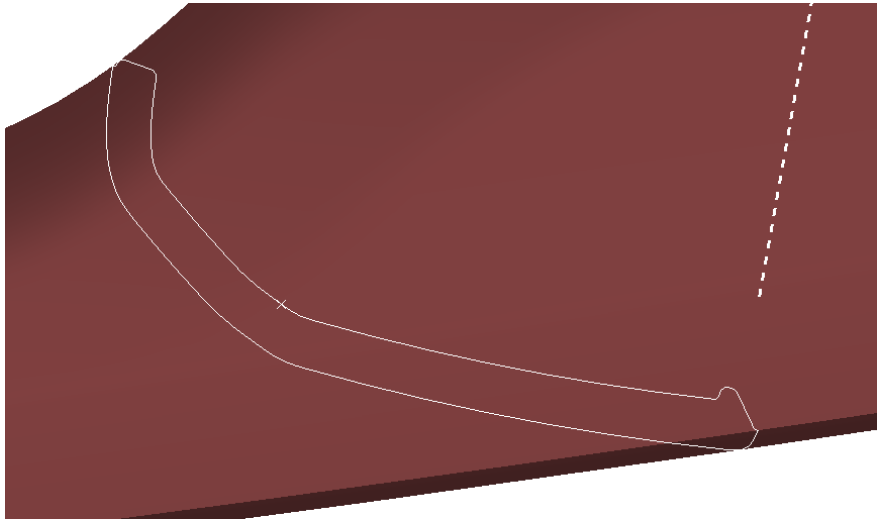


Master section Practice

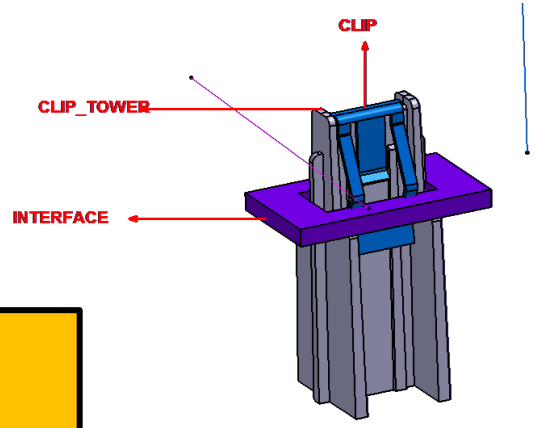


Master section Practice



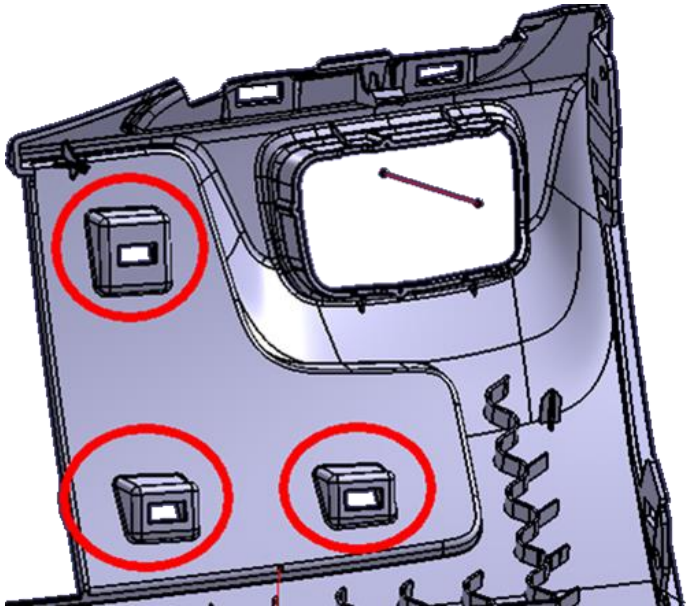


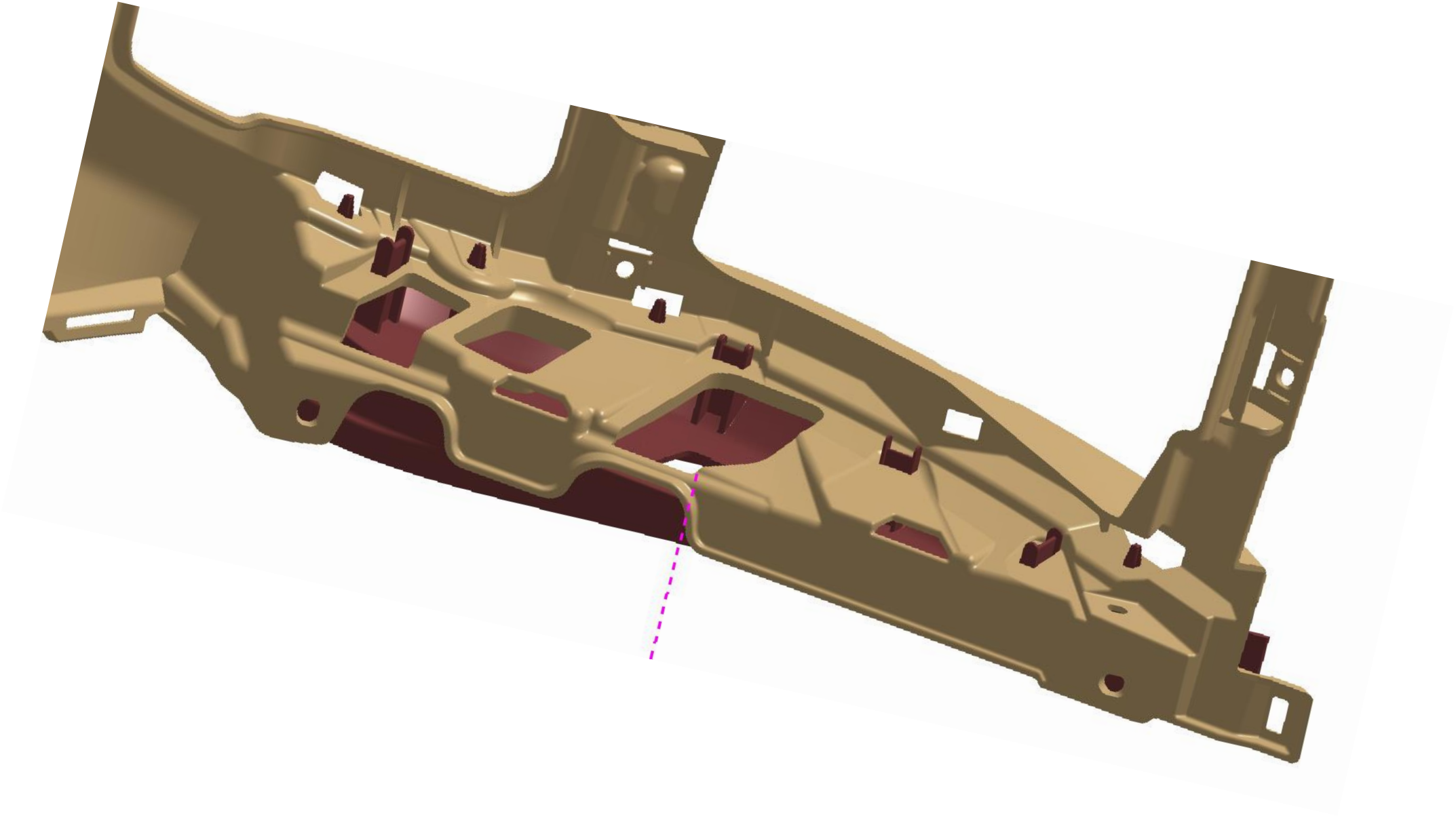
Create tooling direction
Solve A surface issues, draft issues
Create thickness 2.5mm , parting line
Create parting line

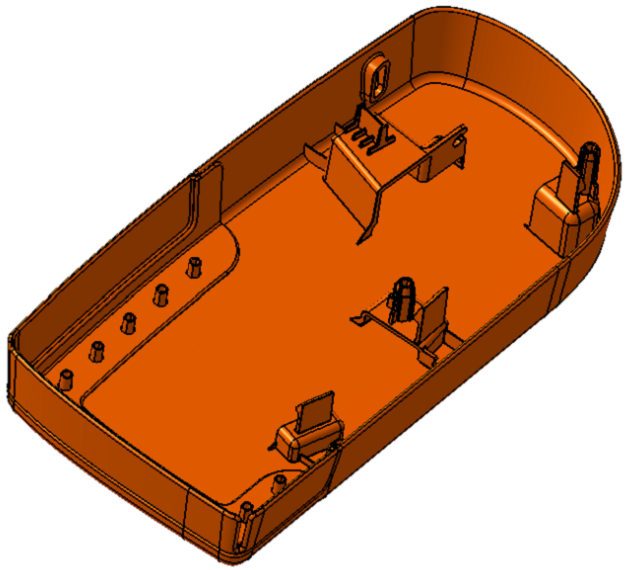


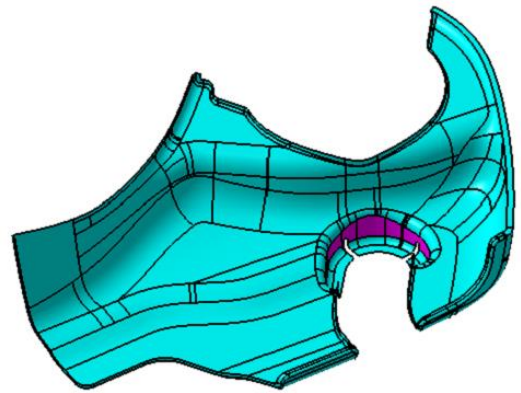
NEW CLIP TOWER WITH INTERFACE.

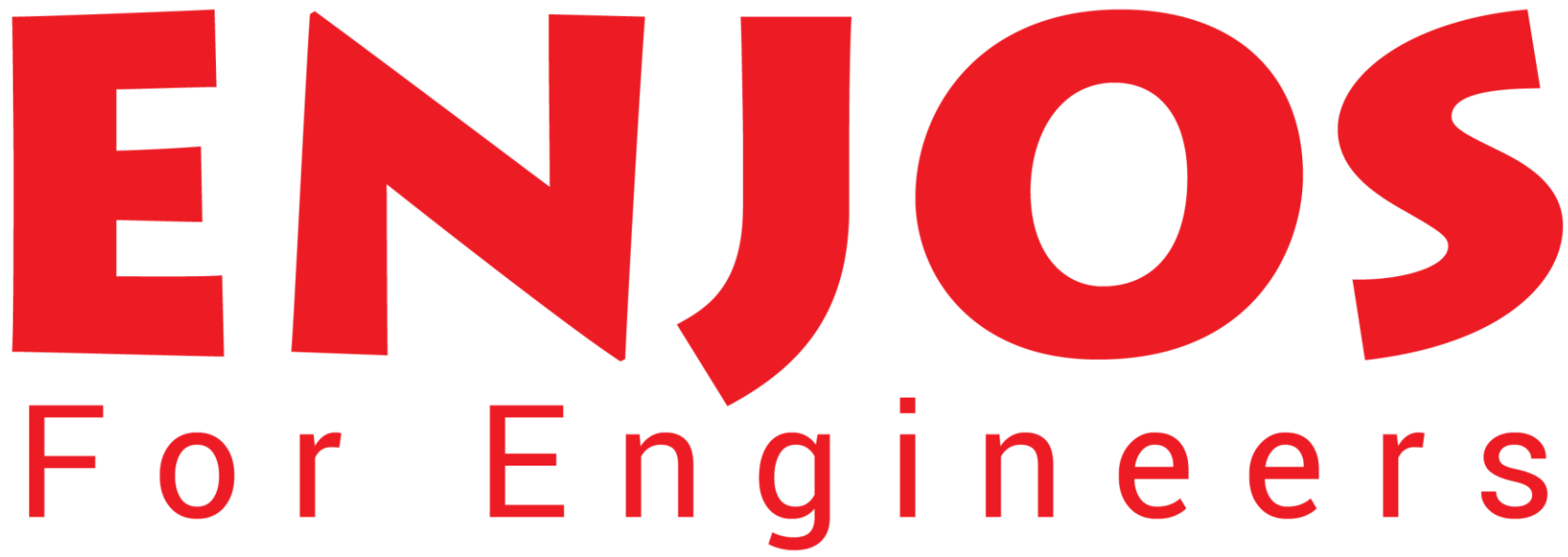
REMOVE THE EXISTING INTERFACE AND REPLACE WITH NEW.







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