



# STARLIGHT

## PROJECT

JOIN US ON A HISTORIC JOURNEY: BE PART OF THE FIRST STUDENT METHALOX  
ROCKET TO REACH THE KÁRMÁN LINE 🚀

2023

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# ABOUT US

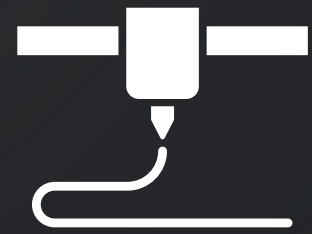
Munich University Students  
TUM/HM/MBS

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Winners of the Not-a-Boring Competition 2023





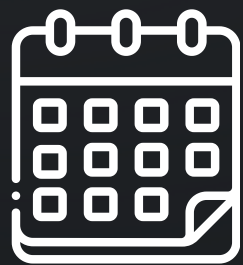
## Additive Manufacturing

Create a easily Modifiable Design that takes advantage of additive Manufacturing



## Generative Design

Create complex parts, lighter and cheaper



## High Launch Cadence

1 launch per month



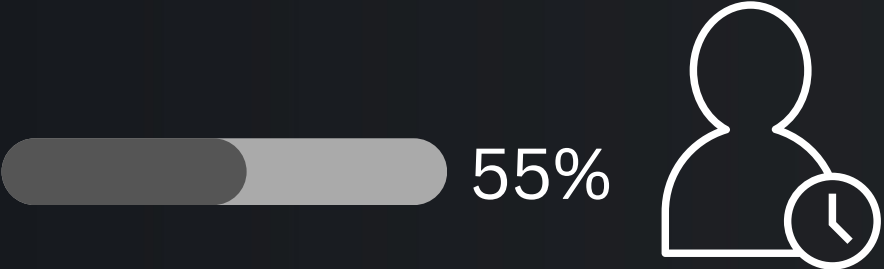
## Cost effective

Reduce the cost per Launch, by making the parts reusable



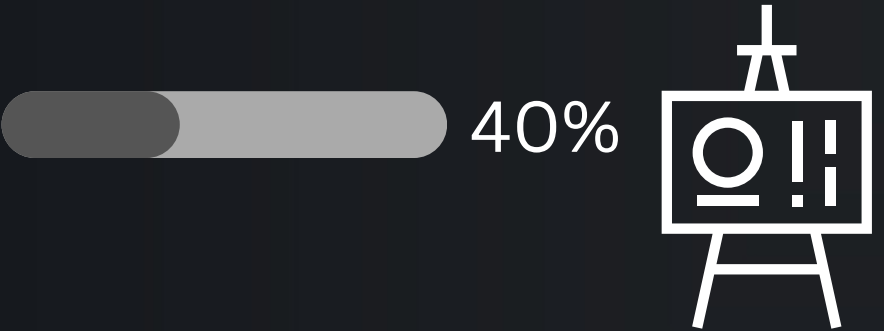


# TiMELiNE



## BRAiNSTORM

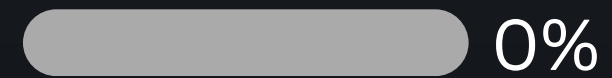
Establishing Objectives and a Mission Statement



## PLANNiNG

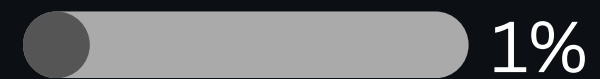
Generating Initial Drafts and Concepts





## PROTOTYPE

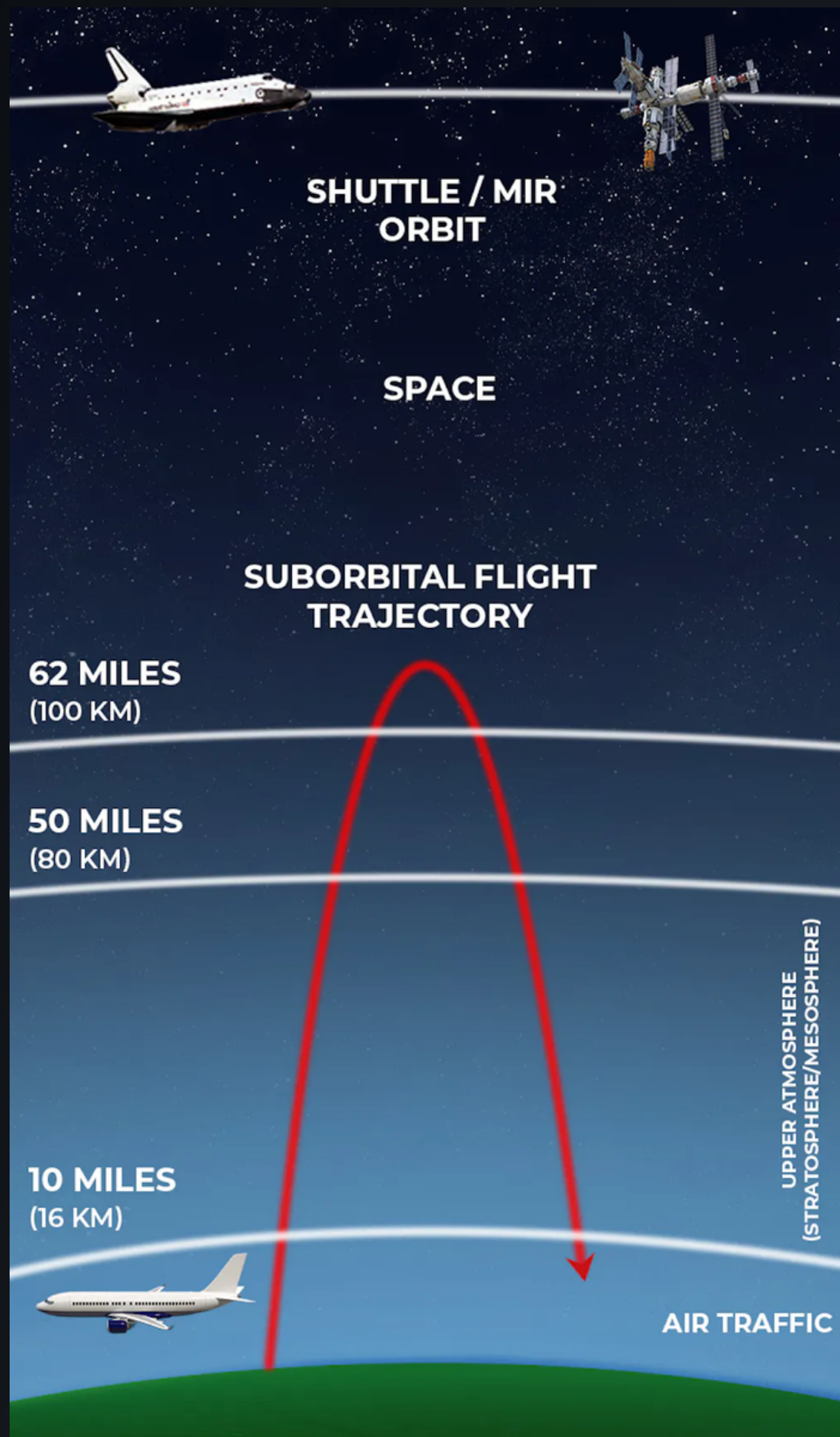
Manufacture and test each subsystem



## LAUNCH

Launching the rocket 14.11.2024



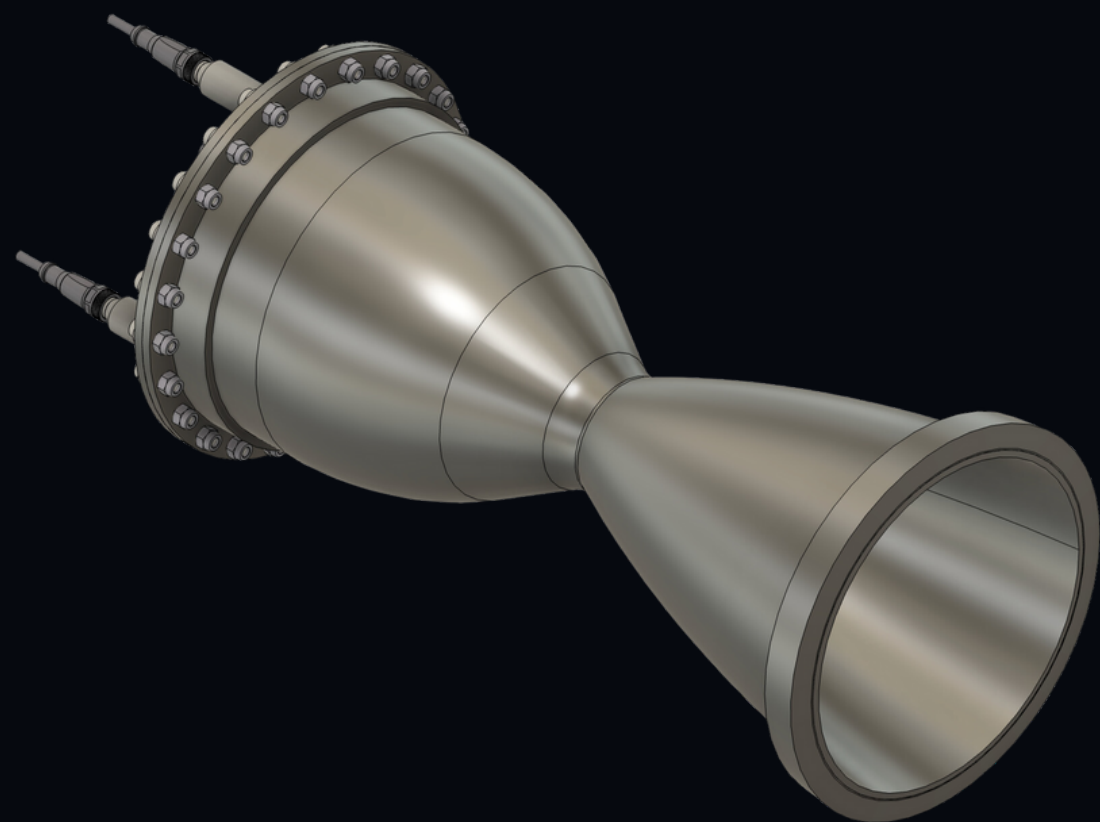


# FLIGHT TRAJECTORY

Suborbital

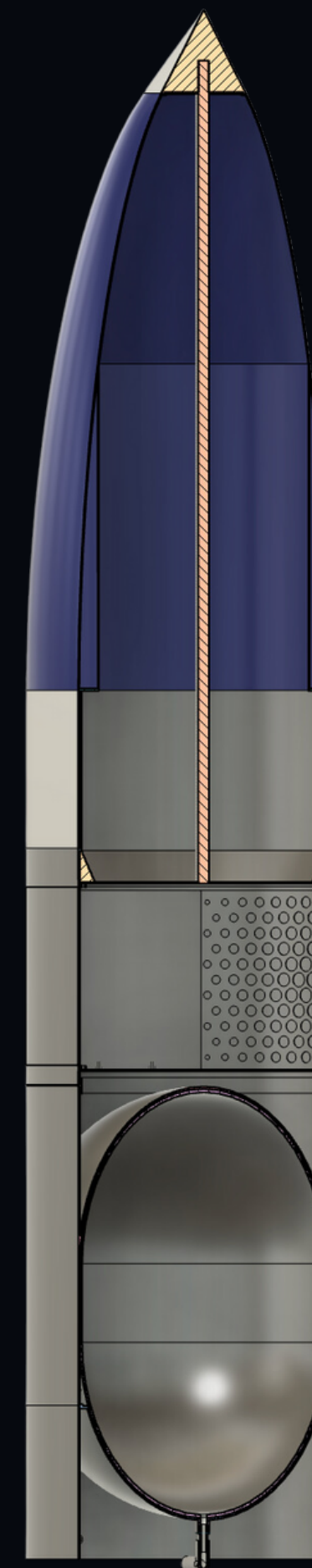
Apogee: 116km



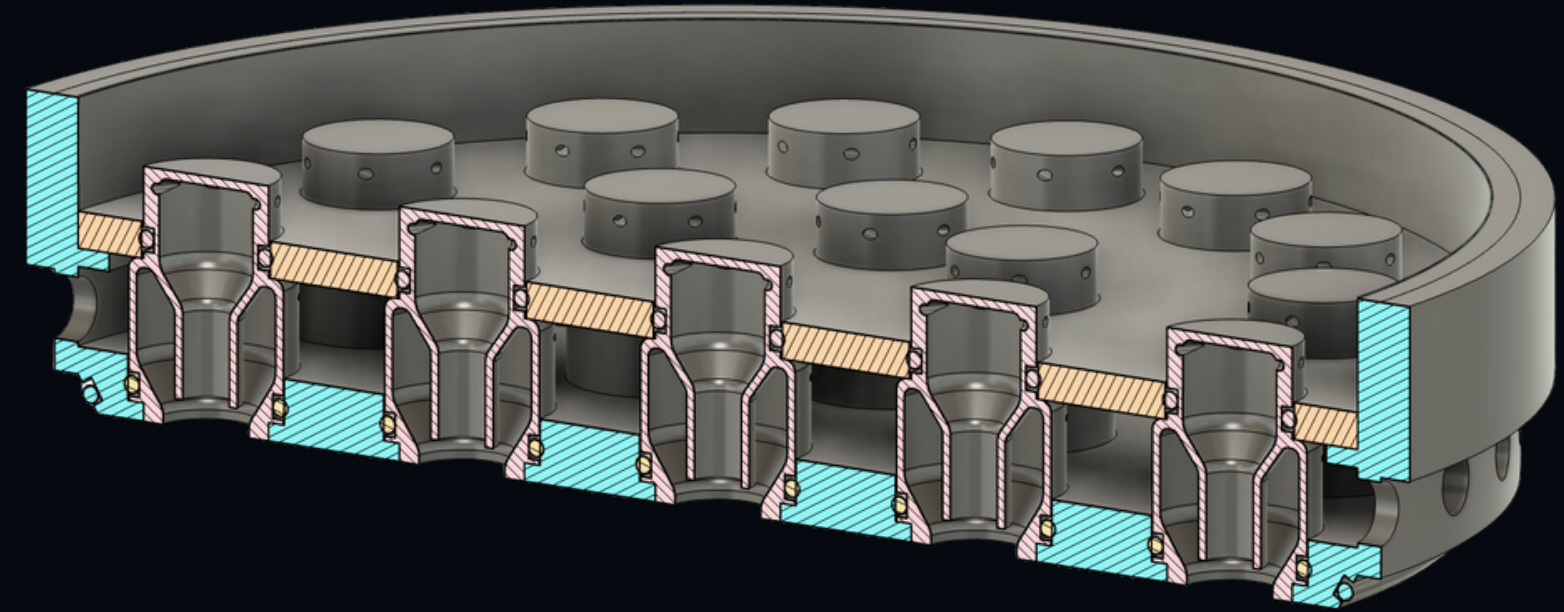
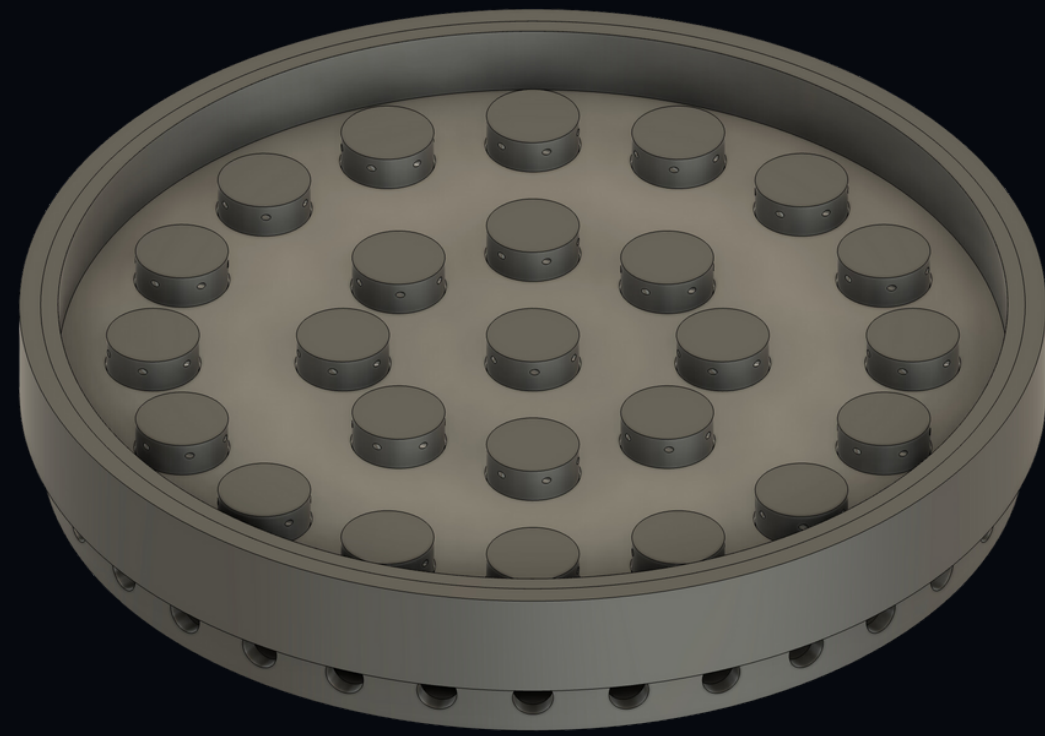


# DESIGN

Incorporate as much Additive Manufacturing as possible (Metals, Composites, Plastics)



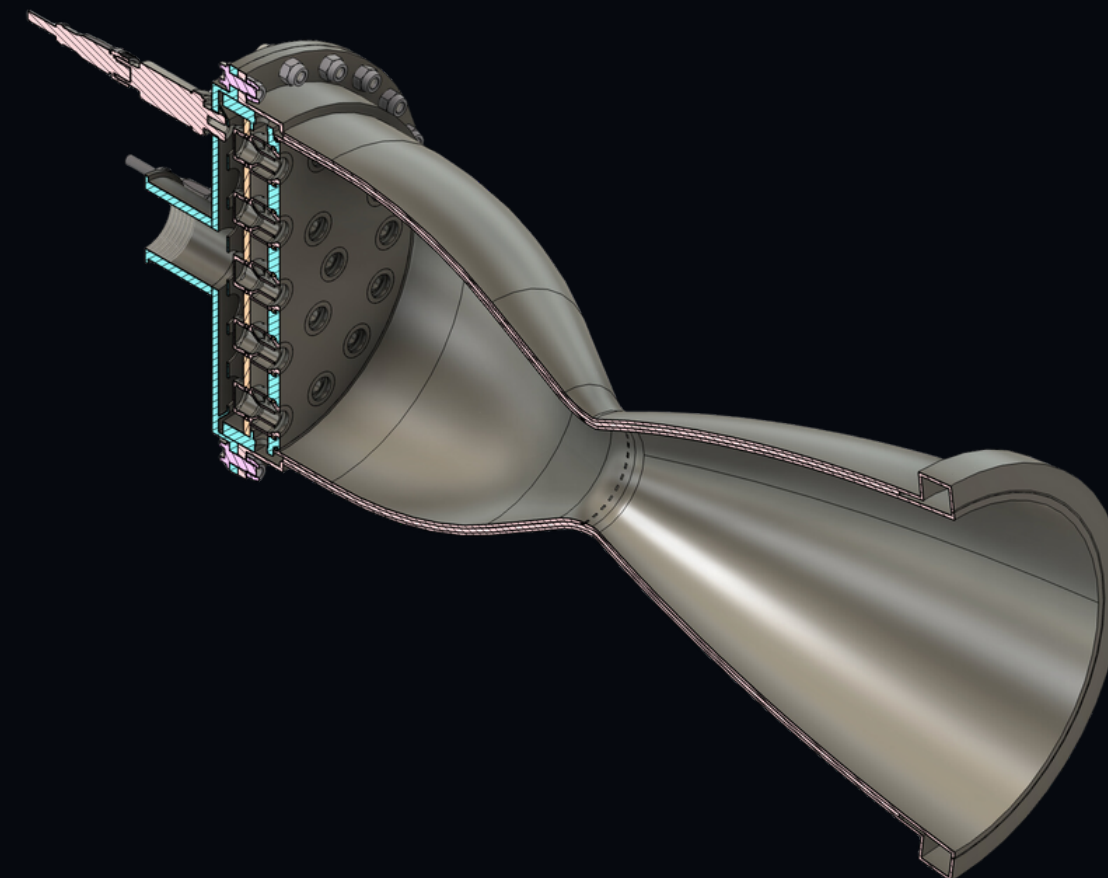
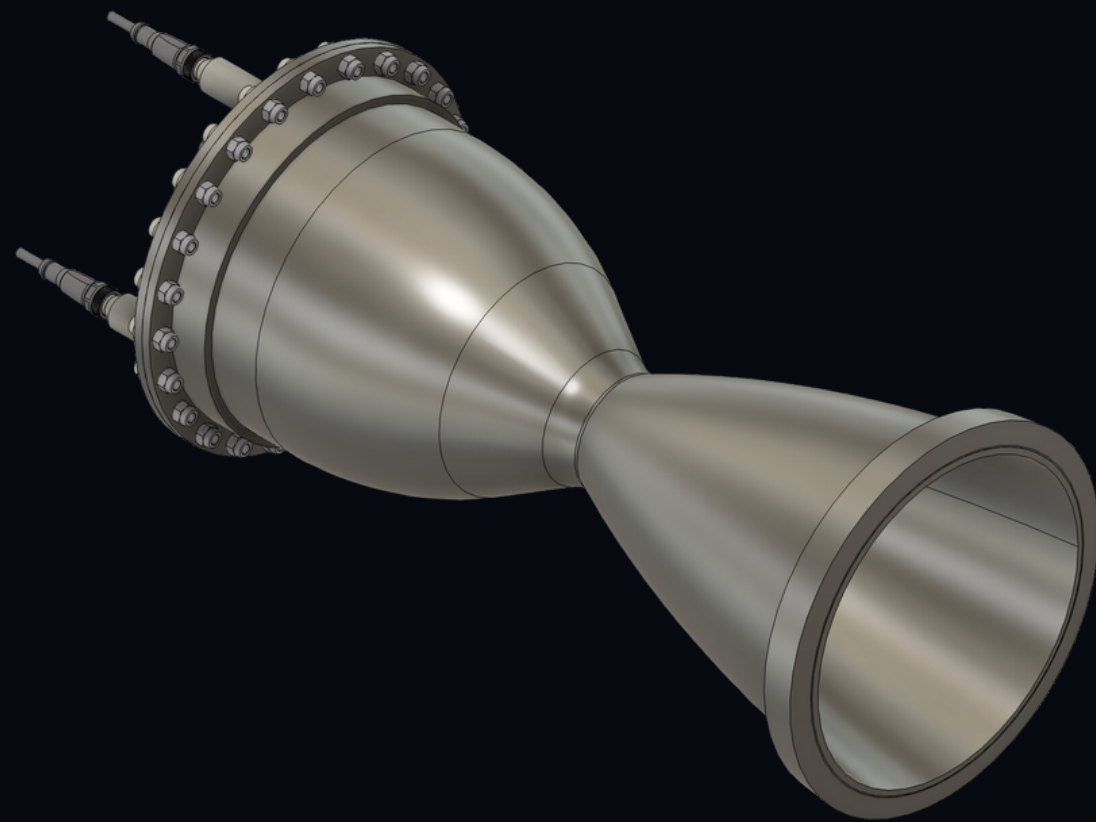




# INJECTOR

25 Swirl Injectors  
~6kg/s Mass Flow rate  
3d Printed Ceramic Swirl Injectors

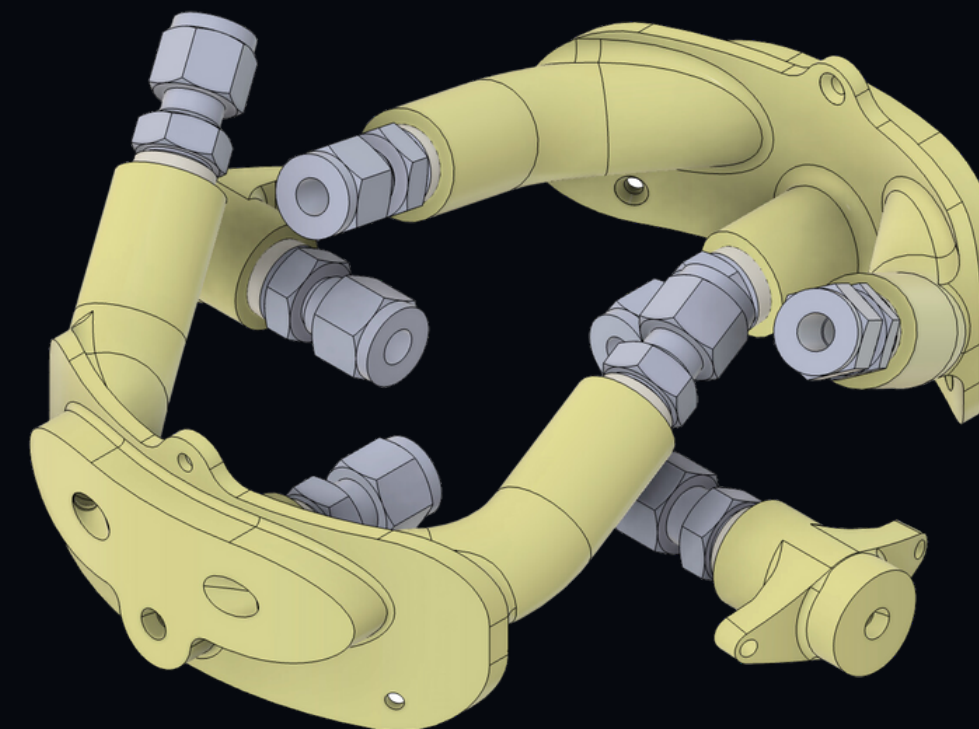
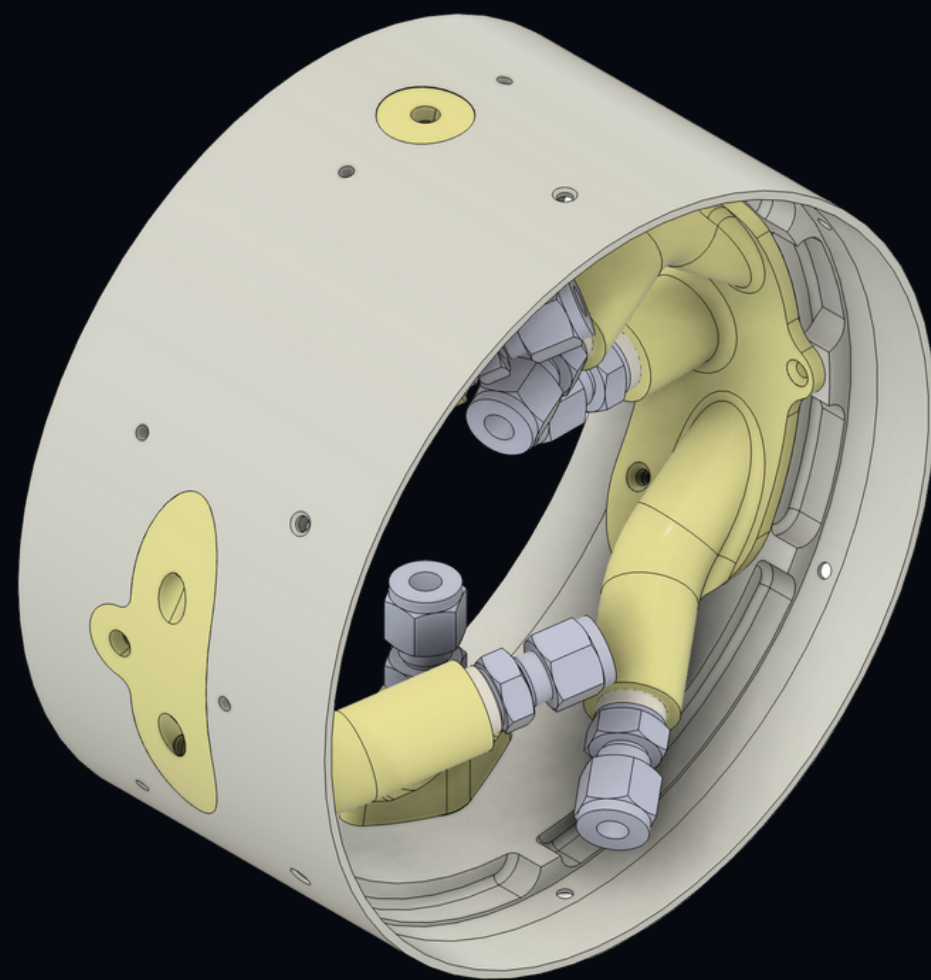




# ENGINE

16kN at Sea Level  
Methalox(Liquid Methane + Liquid Oxygen)  
Regenerative- and Film cooling  
Operating Temperature: ~3500K  
Operating Pressure: 50bar  
3d printed Inconel Nozzle/Chamber  
TVC(Thrust Vector Control)





# REACTION CONTROL SYSTEM

6 cold gas thruster(Ceramic 3d print)  
roll control





# BODY

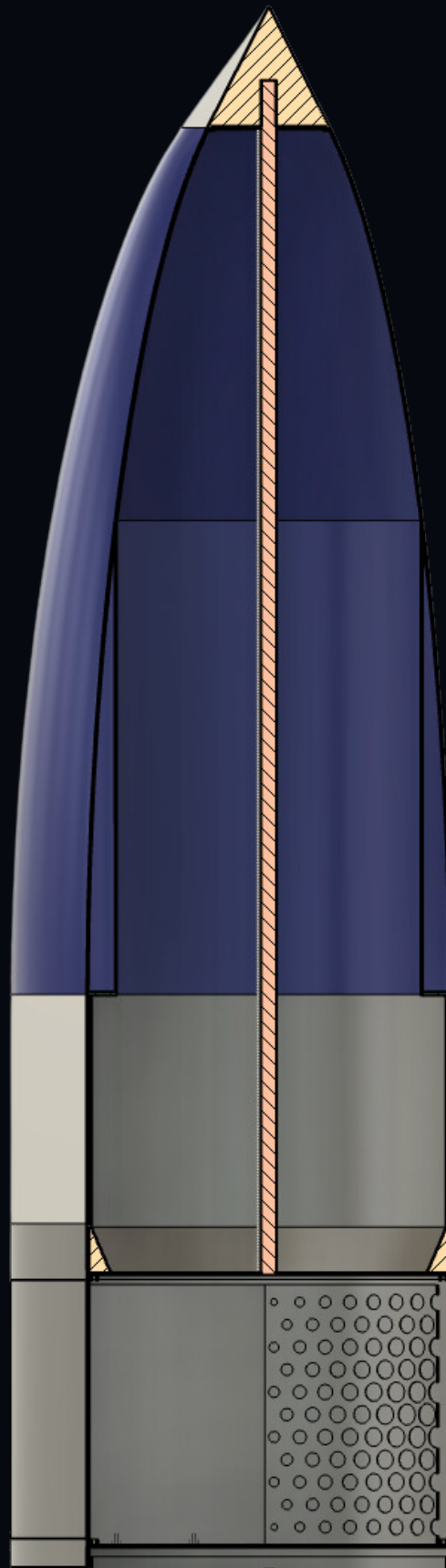
Length: 9500mm (9m)  
Diameter: 450mm  
Mass: 1000kg (1T)  
Payload: 20kg



CHUTE  
BAY

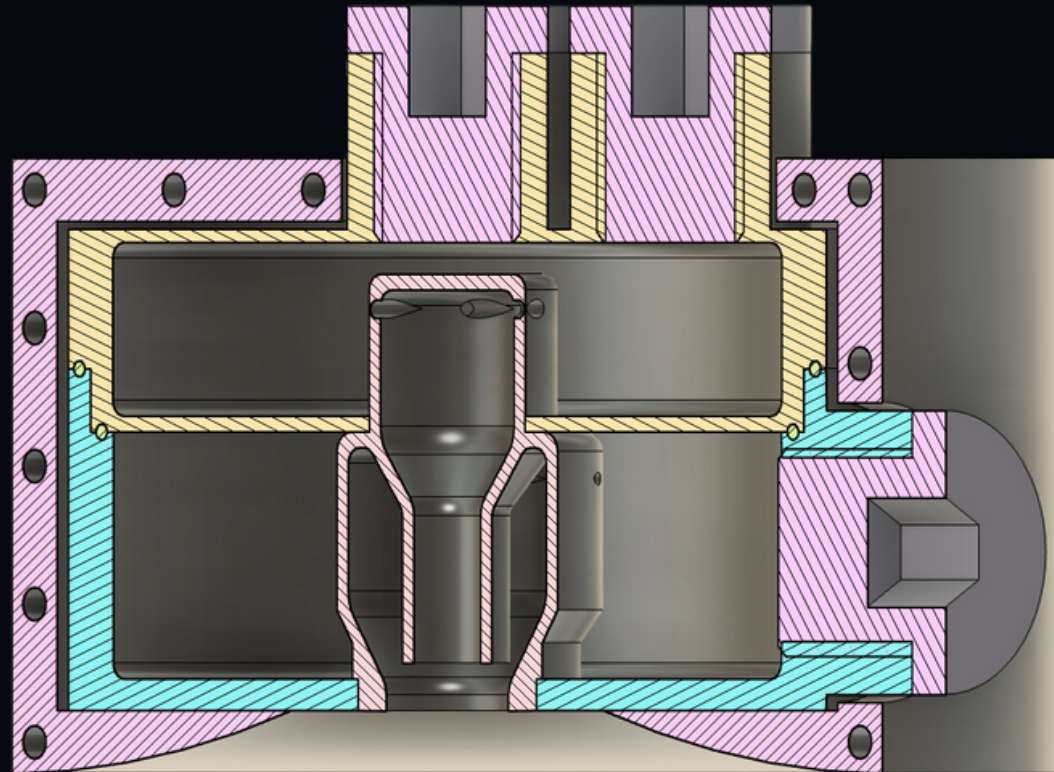
300mmx170mmx400mm





# AVIONICS/ PAYLOAD BAY

Volume:~0.12m<sup>3</sup>



# INJECTOR TESTS

Swirl Injector Test  
Mass flow rate  
Pressure rating  
Atomisation  
Spray angle



# OUR SPONSORING PACKAGES

GOLD

50.000€

- Silver
- +LinkedIn Post
- +Presentation at Company
- 5 Entries for Component Naming

MAIN

100.000€

- Gold
- +Name the rocket
- +Interview
- +Nosecone Logo
- 10 Entries for Component Naming
- Define Payload for 1st flight

SILVER

25.000€

- Bronze
- +LinkedIn Post
- 2 Entries for Component Naming

BRONZE

10.000€

- F&S
- +Instagram Post
- +T-shirt Logo
- 1 Entry for Component Naming

FRIENDS AND  
SUPPOORTER

- Website Logo
- Instagram Story



IGNITION AEROSPACE

X

NEXA3D

nexa3d





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# THANK YOU!

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