



# STARLiGHT

PROJECT

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

2023

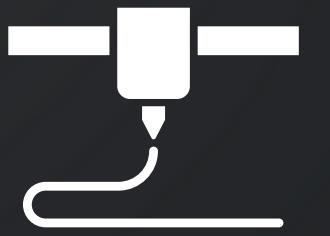
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# ABOUT US

Munich University Students  
TUM/HM/MBS



Winners of the Not-a-Boring Competition 2023



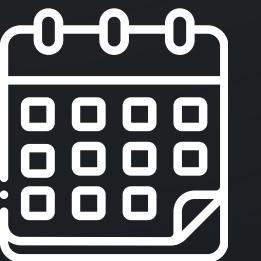
## Additive Manufacturing

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

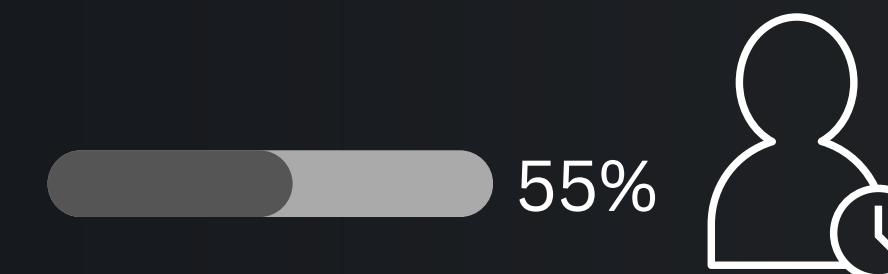


## Cost effective

Reduce the cost per Launch, by making the parts reusable

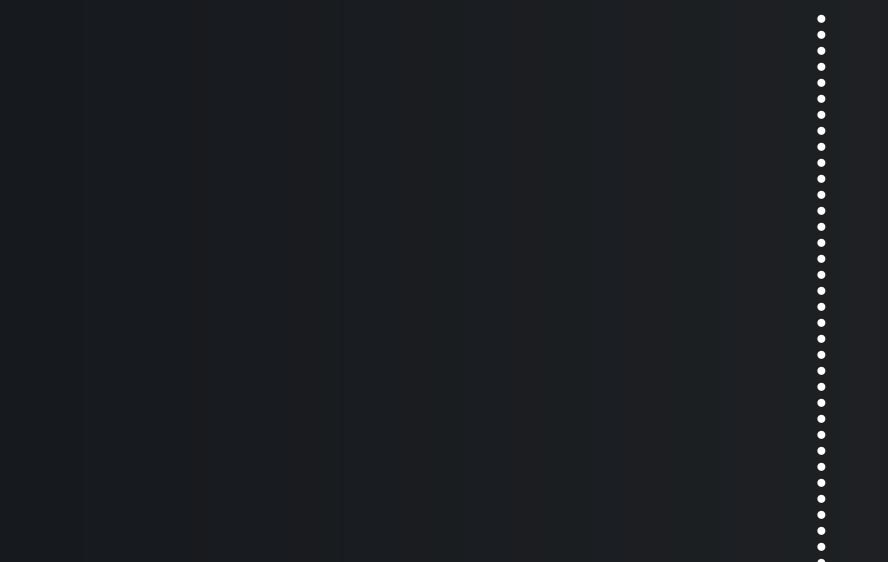


# TiMELiNE



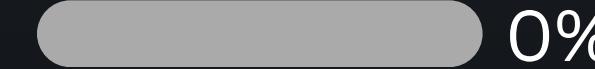
## BRAINSTORM

Establishing Objectives and a Mission Statement



## PLANNING

Generating Initial Drafts and Concepts



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## PROTOTYPE

Manufacture and test each subsystem

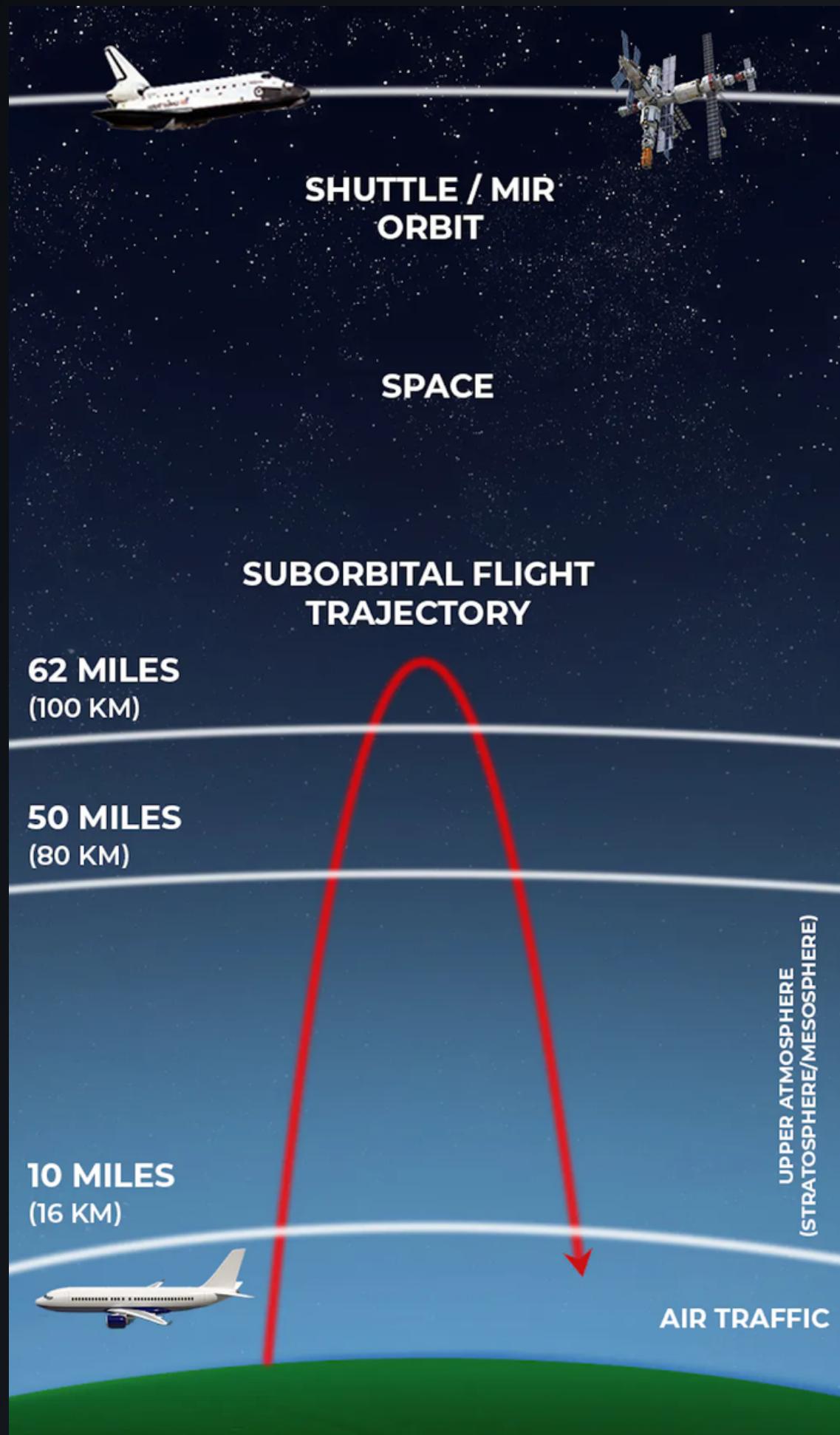


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## LAUNCH

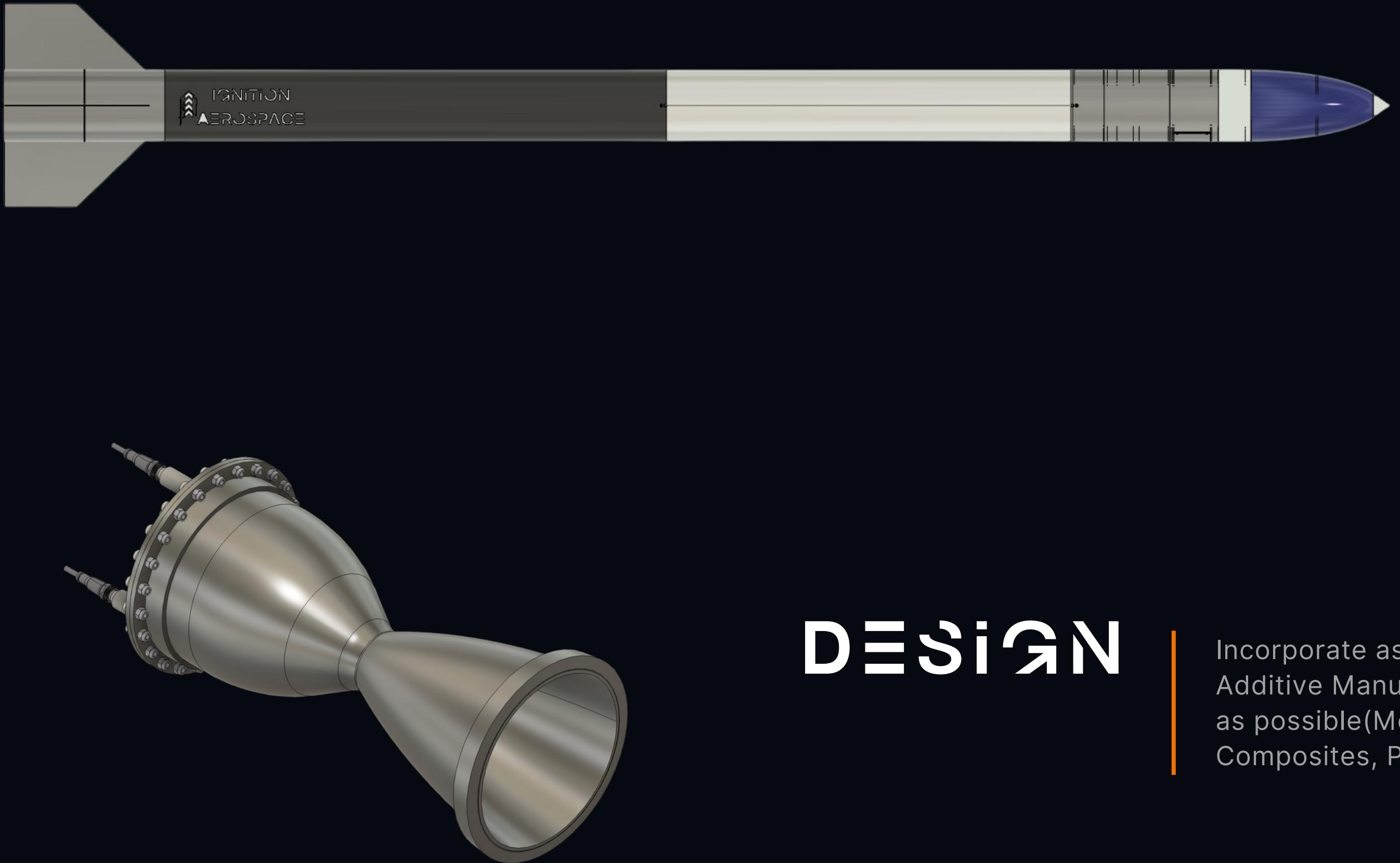
Launching the rocket 14.11.2024



# FLIGHT TRAJECTORY

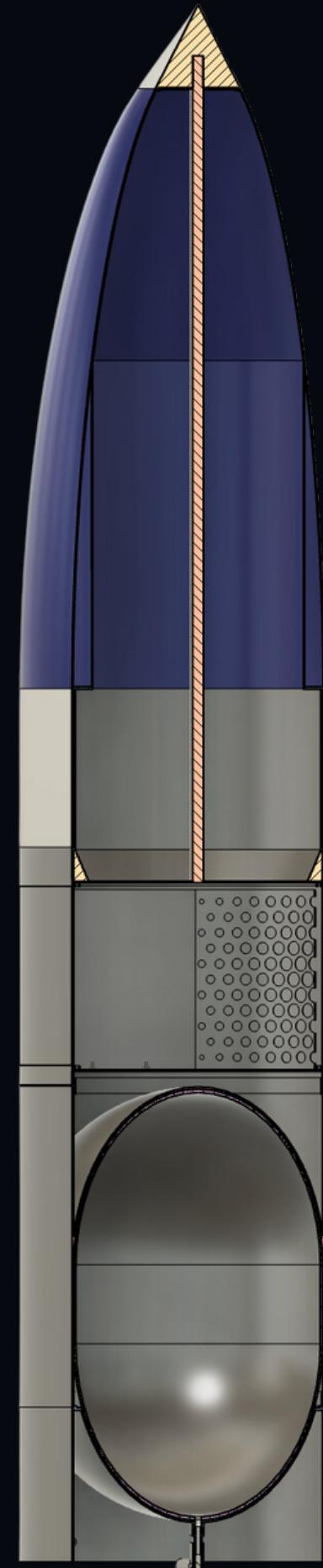
Suborbital

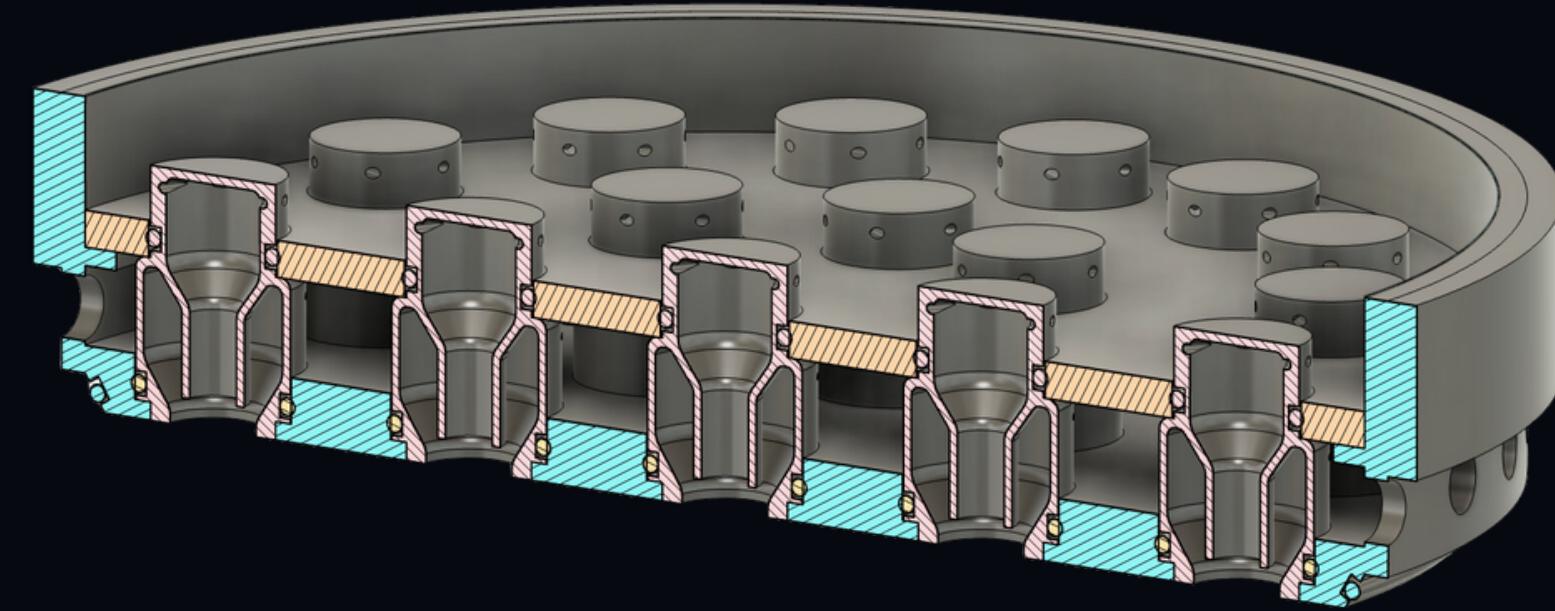
Apogee: 116km



# DESIGN

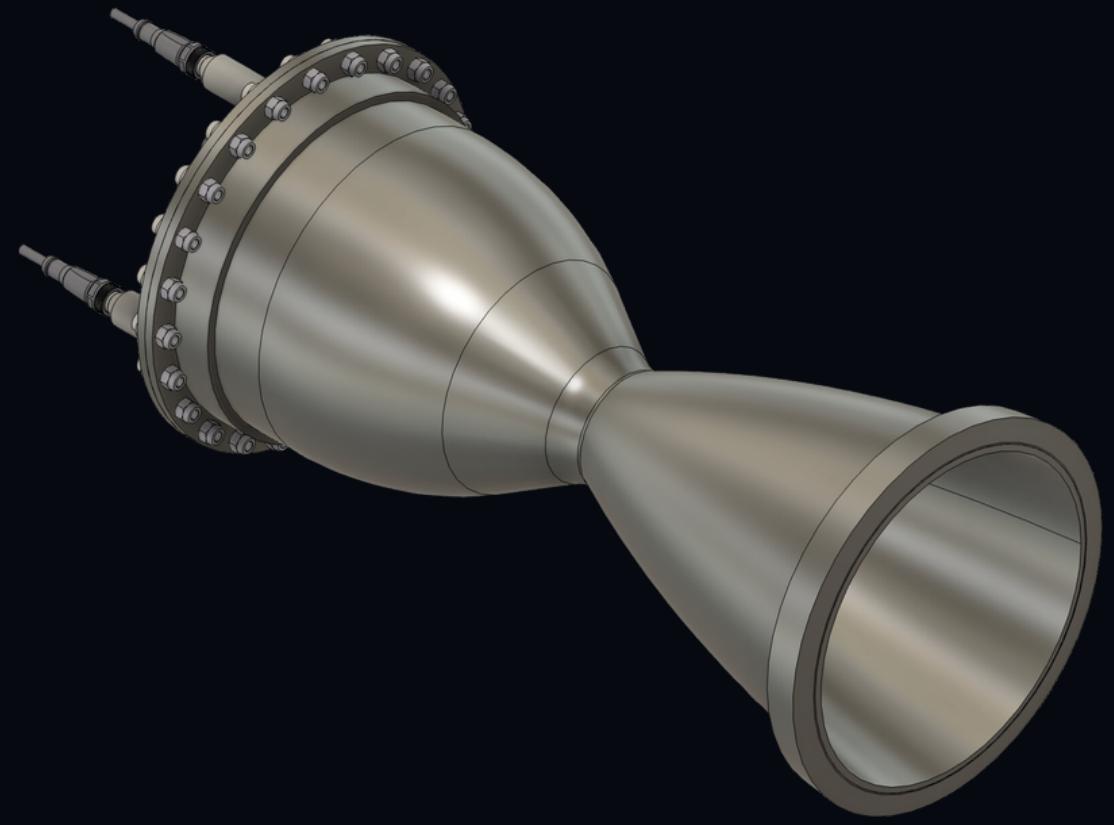
Incorporate as much  
Additive Manufacturing  
as possible(Metals,  
Composites, Plastics)



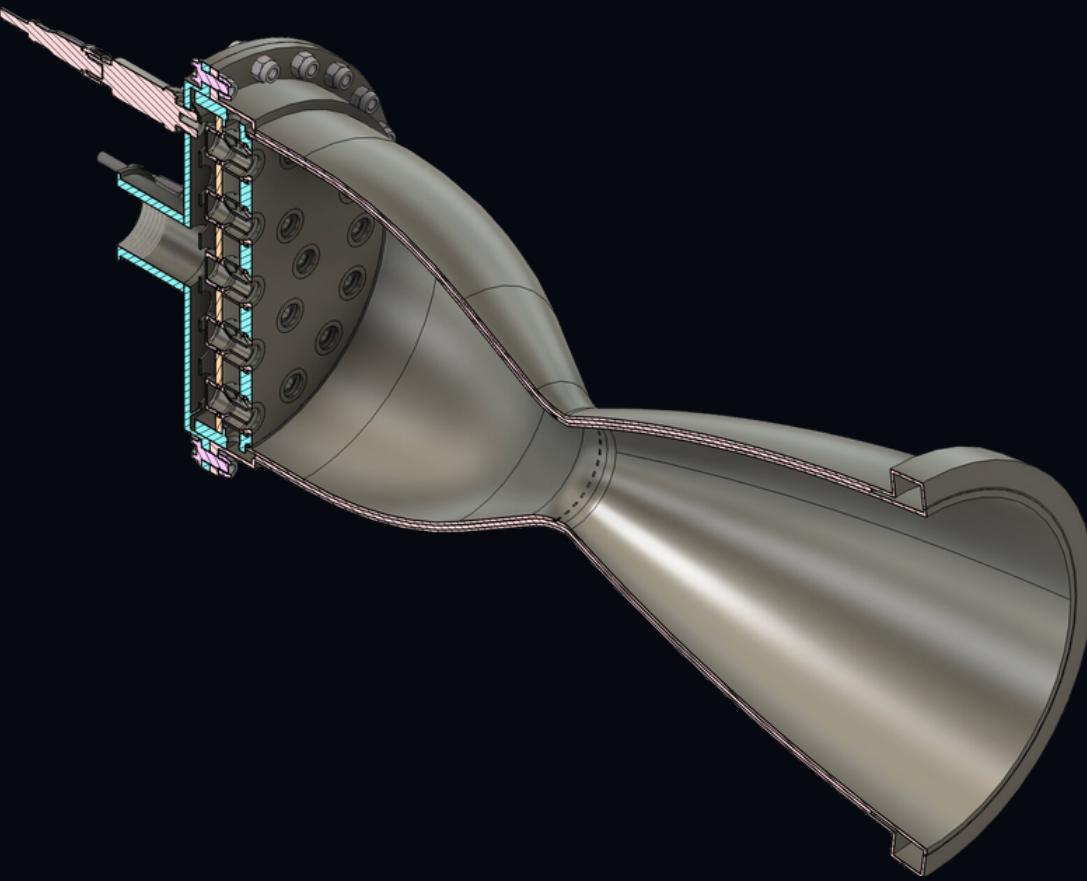


# INJECTOR

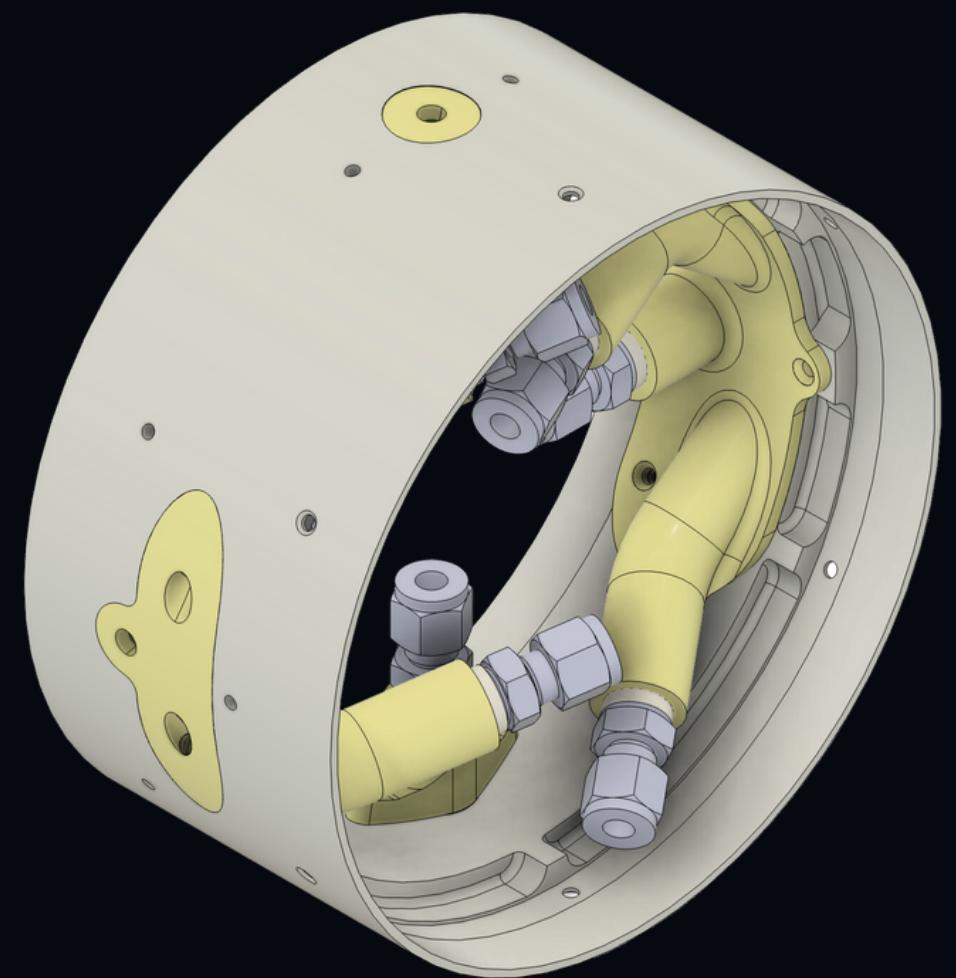
25 Swirl Injectors  
~6kg/s Mass Flow rate  
3d Printed Ceramic Swirl Injectors



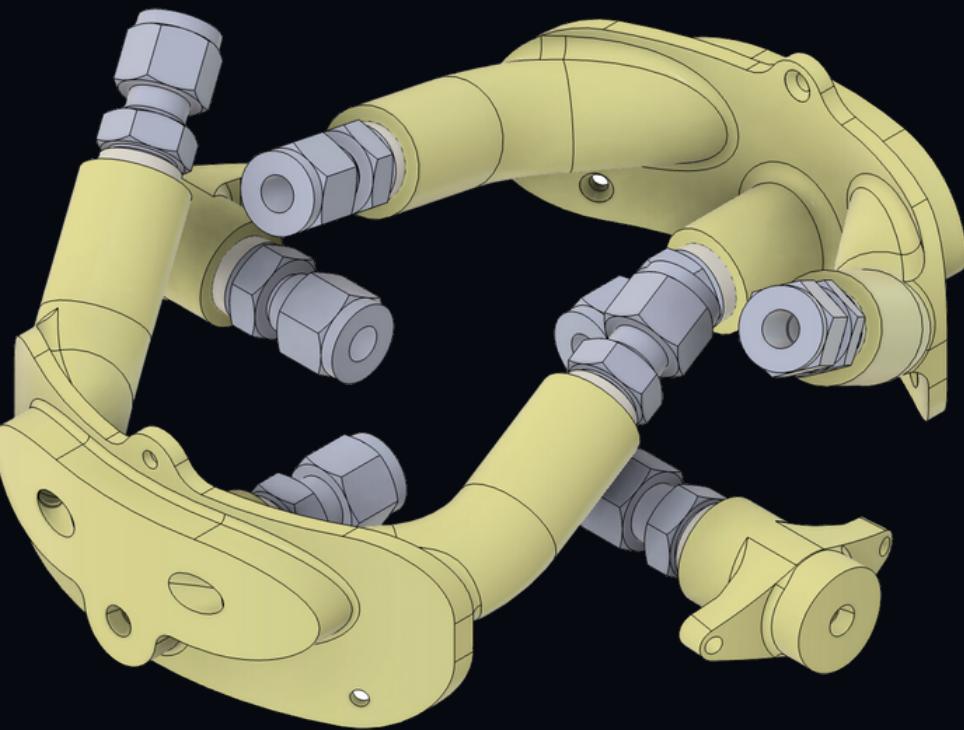
# ENGINE



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



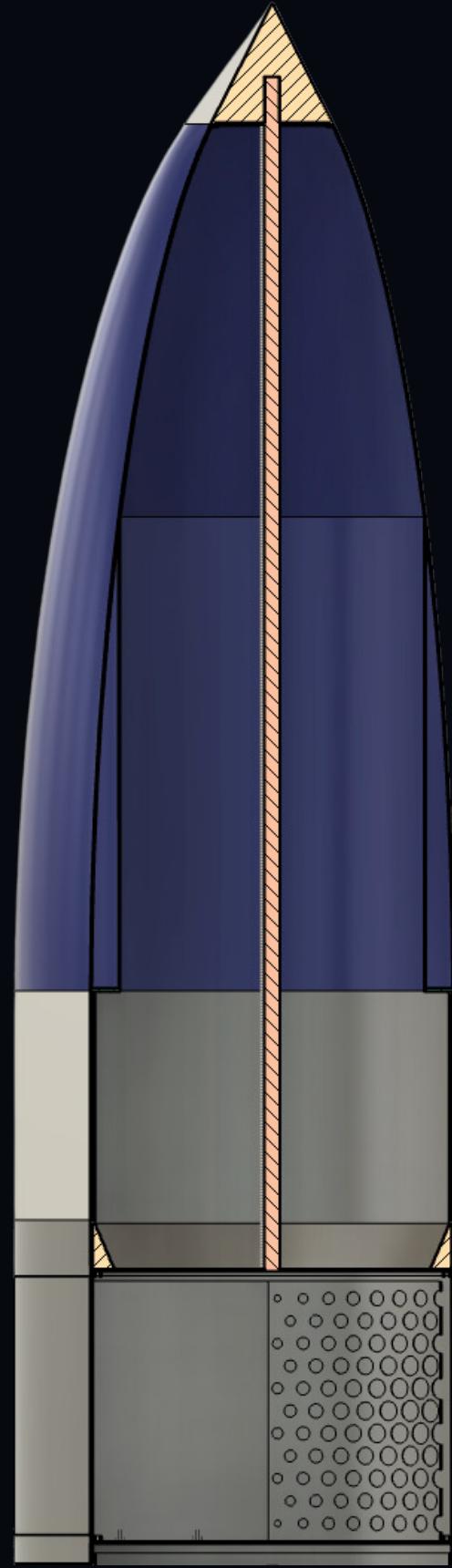
# BODY

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



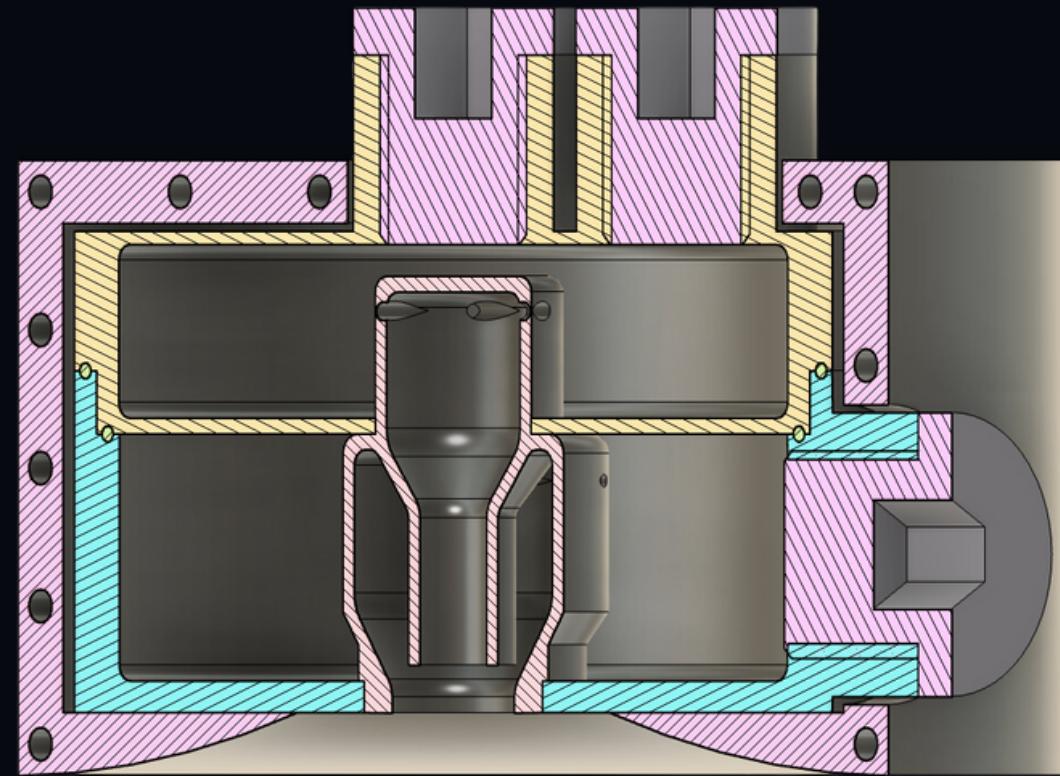
# CHUTE BAY

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

MAIN

GOLD

50.000€

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

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 SUPPORTER

- Website Logo
- Instagram Story



IGNITION AEROSPACE

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NEXΛ3D

nexa3d



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# THANK YOU

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