

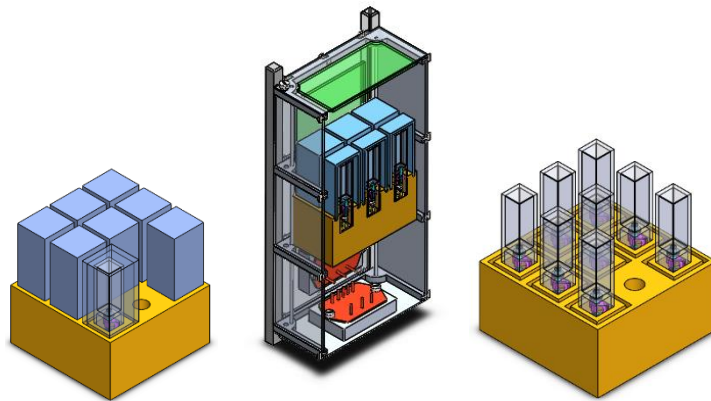
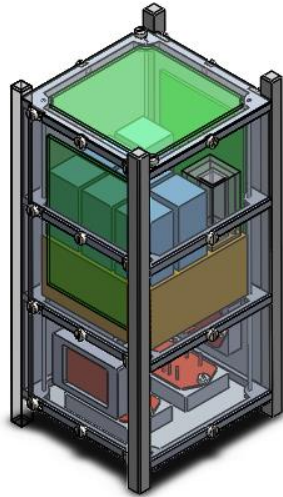


TEAM

antariksh

SPACE TECHNOLOGY CLUB

**2019 – 2020**  
**Sponsorship Proposal**



**RVSAT-1: A Microbiological Payload**



**ReSOLV-1: The first of the ReSOLV series of Sounding Rockets by Team Antariksh**

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## ABOUT US

Team Antariksh is a space technology student club whose goal is to understand, disseminate and apply the engineering skills for innovation in the field of aerospace technology. The **hundred-member** strong team belonging from various engineering backgrounds is involved in designing nanosatellite, payloads for ISRO's PS4 and self-landing rockets. The sounding rocket is a project wherein members develop a sounding rocket with a solid rocket motor which will carry an electronic based scientific payload of atleast 4 kg to an altitude of **10,000 ft**. After attaining the said altitude, the rocket and payload will be safely recovered using dual-deployment parachute. This project is aimed at winning the *Spaceport America Cup 2020* (Las Cruces, New Mexico, USA), the worlds' largest inter collegiate rocket conference and competition. This competition hosts teams from American and International Colleges and Universities. The technologies developed for the sounding rocket will be extended to realize a self-landing rocket as a long term goal of Team Antariksh and develop a community of rocketeers in India.

### RV COLLEGE OF ENGINEERING®

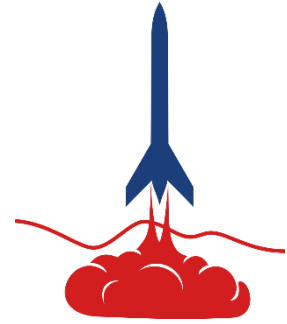
*Reach out to one of the most diverse universities in the country*

- One of the leading college in India and top college of Karnataka.
- One of the earliest self-financing colleges of Karnataka.
- The institution is run by Rashtreeya Sikshana Samithi Trust (RSST). The trust runs over 25 institutions and RVCE is the flagship institute under the trust.

### Team awarded with 'Best Project by QuEST Employees' and "Runners Up" at QuEST Ingenium 2018



# SPACEPORT AMERICA CUP COMPETITION



The Spaceport America Cup is designed around IREC – the Intercollegiate Rocket Engineering Competition for student rocketry teams from all around the world. With over **150** teams from various colleges and universities in **eleven** countries, it is biggest rocketry competition. Students launched solid, liquid, and hybrid rockets to target altitudes of 10,000 and 30,000 feet.

**Team Antariksh has been selected for this eminent competition in its maiden attempt. From India only 4 teams have been selected, including us. It is a very rare feat and Team Antariksh looks forward to represent India on a global platform for the first time.** The design and ideation phase for the rocket has been completed by the team and the process of manufacturing has already begun. The competition for this year will begin on **12<sup>th</sup> June'2020** and we are well ahead of the timeline as we intent to complete the project by **31<sup>st</sup> March'2020** positively.

## ANNOUNCEMENT OF OPPORTUNITY FOR PS4 ORBITAL PLATFORM – RVSAT-1



PS4-Orbital Platform refers to a novel idea formulated by ISRO to use the spent PS4 stage (fourth stage of PSLV) to carry out in-orbit scientific experiments for an extended duration of 1-6 months. ISRO has solicited proposals for the same.

Team Antariksh is on a mission to design a **microbiological** payload for analysing the effects of microgravity on the growth of bacteria. The experiment will be the first of its kind to be performed by undergraduate students in India.

The team has completed the design and ideation phase and will begin the development of the payload after the acceptance and due verification by ISRO. The flight model is scheduled to be delivered by **31<sup>st</sup> December, 2020**.

The overall mission lifetime is **2 months** in-orbit time and during the course of time real time data will be sent to ISRO's ground station for further analysis and to deduce concrete results. These results may help ISRO and any other space agency in planning future manned missions.

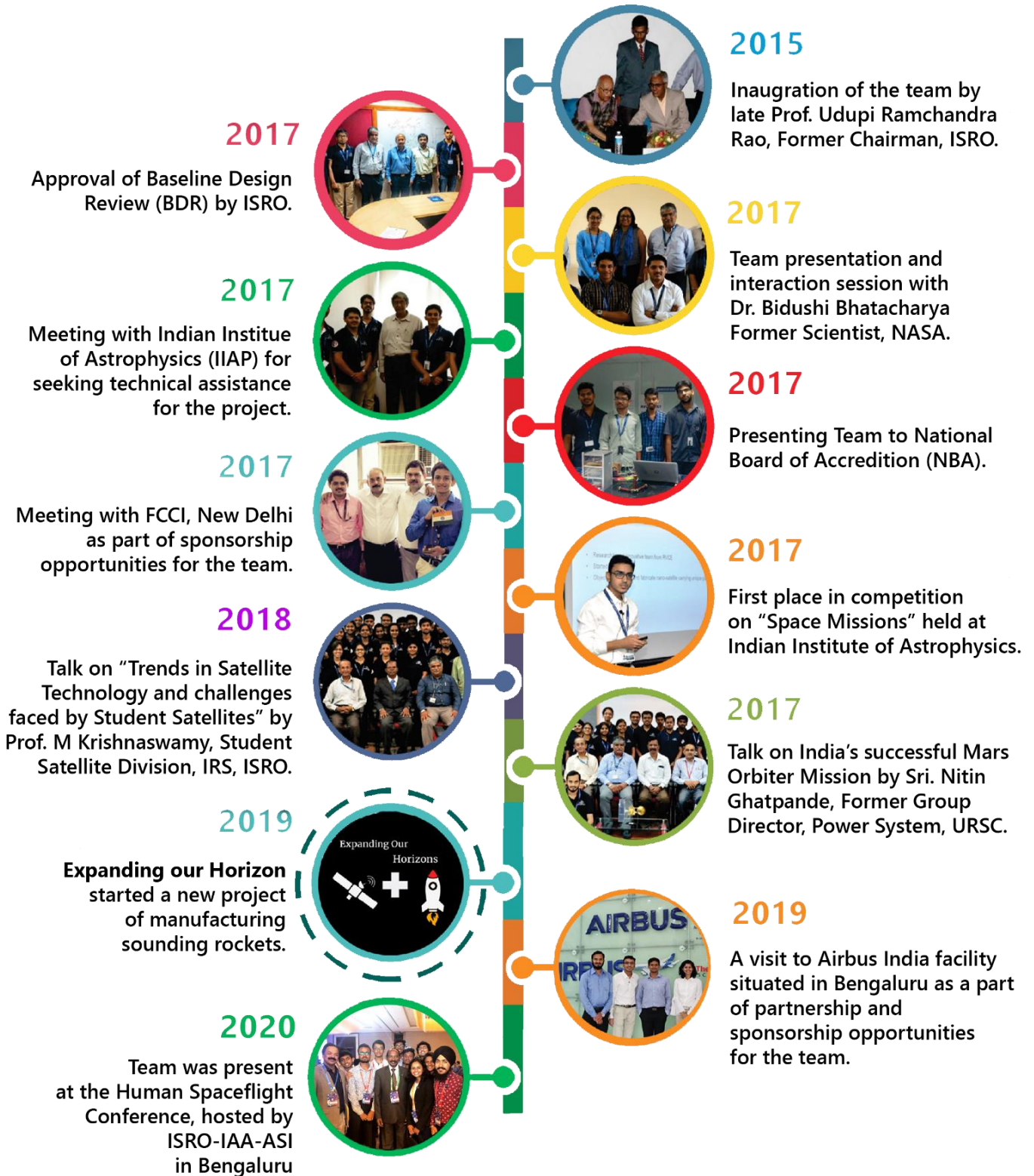
## OUR DEVELOPMENT PROCESS

The development of rocket spans a period of a year. The first stage of development begins during the summer semester where preliminary research is conducted to develop feasible concepts and design the mission timeline. Beginning in the June-July we hold several design meetings that encompass the finalizing of the design through analysis and validation. Small prototypes are built during the course of the semester to test and analyze the designs. Once the design has been properly validated, manufacturing files are created and sent off to the local manufacturers. By the end of March, manufacturing is concluded. We immediately conduct pre-assembly tests. Near the end of the academic year, the rocket is ready for competition. Then finally it is made ready to be shipped in the first week of June.

To keep on track with the proposed timeline, the team requires adequate funds and industrial support. Initially the seed money of **Rs. 2, 00,000** is provided by college to realize the prototype at the start of financial year. The budget of the entire project is around **Rs. 7, 00,000**. To meet the deficit, the team always looks for support and industrial collaboration.

PROJECT BUDGET				
Project Title: <b>ReSoLV-1</b>		Estimated Total Cost: ₹ 6, 67, 950. 86		
Subsystem	Description	Cost (₹)		Total (₹)
		EM	FM	
<b>Aerodynamics &amp; Airframe</b>	Rocket stability and Drag reduction	54,549.00	1,04,549.00	1,59,098.00
	Design of a robust structure			
<b>CDAP</b>	Telemetry and Onboard Data Acquisition	-	27,546.00	27,546.00
<b>INav</b>	Powering and guidance of Rocket	-	42,016.00	42,016.00
<b>Propulsion</b>	Provides thrust to reach the apogee	6,830.00	67,895.18	74,725.18
<b>Recovery</b>	Safe retrieval of Rocket	16,300.00	50,600.00	66,900.00
<b>Payload</b>	Objective of the rocket	14,840.00	19,990.00	34,830.00
<b>Miscellaneous</b>	20% of the total	18,503.80	62,519.23	81,023.03
<b>SA Cup Fee</b>	Rocket fee and Team registration fee	-	-	1,21,812.65
<b>Logistics</b>	Shipping and customs charges	-	-	60,000.00
<b>Total</b>		1,11,022.80	3,75,088.41	6,67,950.86

# MILESTONES





# RESEARCH ACCOLADES

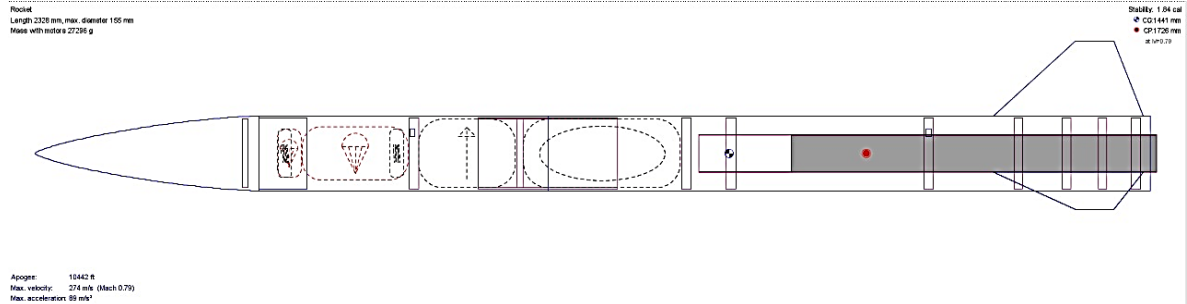
<b>10</b> PAPERS  <p>Ten paper publications at 70th International Astronautical Congress, 2019, Washington DC, USA</p>	<b>02</b> PAPERS  <p>Two paper publications Satellite Technology Day 2018, URSC-ISRO, Bengaluru, India</p>	<b>02</b> PAPERS  <p>Two paper publications at AIDAA, 2019 International Congress, Rome, Italy</p>	<b>01</b> PAPER  <p>Paper publication at (IEEE) International conference for convergence in technology, Mangalore, India</p>
<b>01</b> PAPER  <p>Paper publication at IEEE Aerospace conference, 2019, Washington DC, USA</p>	<b>03</b> PAPERS  <p>Three paper publications at 69th International Astronautical Congress, 2018, Bremen, Germany</p>	<b>01</b> PAPER  <p>Paper publication at International conference on small satellites 2019, Hyderabad, India</p>	<b>02</b> PAPERS  <p>Two paper publications at Alchemist Belagavi</p>
<b>01</b> POSTER  <p>Poster publication at International conference on small satellites 2019, Hyderabad, India</p>	<b>03</b> PAPERS  <p>One conference paper and two journal publications at IJNTSE, 2018, India</p>	<b>03</b> PAPERS  <p>Three paper publications at 2nd ICMAE, 2018, Indore, India</p>	<b>01</b> PAPER  <p>Paper publication at IEEE Aerospace and Electronica AeroConf, 2020 BigSky, Montana</p>

TOTAL COUNT **28**

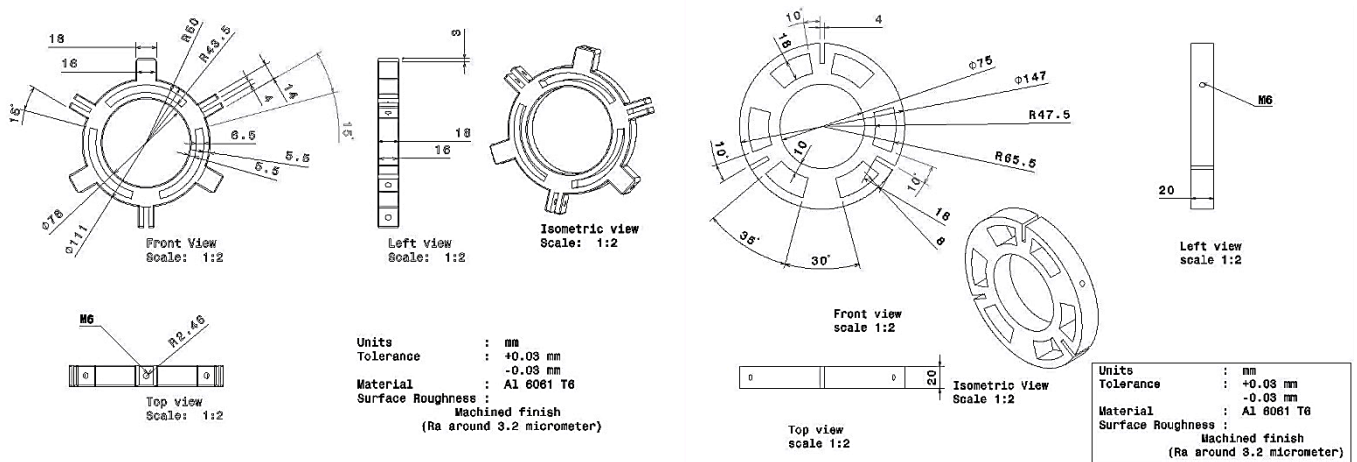


## OUR WORK

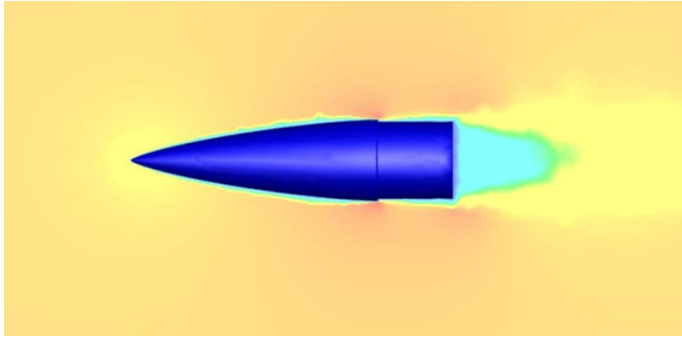
### Technical Drawings



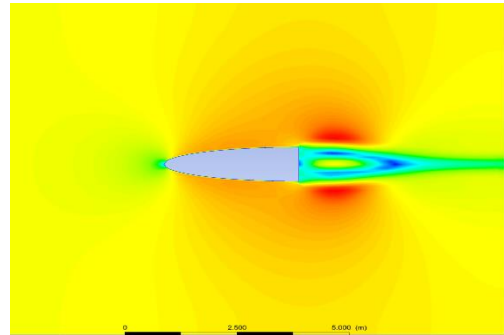
### 3D CAD Model



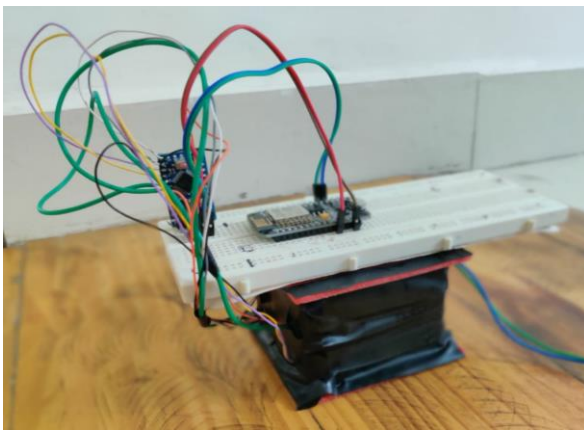
## CFD Analysis



## Manufacturing



## Prototypes



## Production



## OUR TOOLS



# SPONSORSHIP LEVELS

With your help this year, we will be able to continue to succeed and compete in multiple projects such as Spaceport America cup 2020 and develop the prototype for RVSAT-1. Below is a chart showing the sponsorship level, corresponding to the monetary value of your donation. We will gladly work out any other way you would like to have your company collaborated with us.

- ✦ Platinum ₹5,00,000 & Above
- ✦ Gold ₹3,00,000 & Above
- ✦ Silver ₹1,00,000 & Above
- ✦ Bronze ₹1,00,000 & Below

DELIVERABLES	BRONZE	SILVER	GOLD	PLATINUM
Benefits	Below ₹ 1 Lakh	₹ 1 Lakh	₹ 3 Lakh	₹ 5 Lakh
Availability of Team for Presentation		•	•	•
Exclusive Video	•	•	•	•
Website Presence	•	•	•	•
Database			•	•
Industry-based Innovation Labs				•
Campus Ambassadors			•	•
Assistance in Workshops			•	•
Social Media Shout out	•	•	•	•
Access to capable Maturity Model of Team		•	•	•
CSR Tax Incentives (Section 80G)	•	•	•	•
Conduct Placement & Internships				•
Acknowledgement in Team Publications/Events		•	•	•
Media Presence		•	•	•
<b>Logo Placement (Team Apparels &amp; Rocket)</b>				
40 × 40 cm Prominent Logo on Front Body Tube			1 Logo	2 Logos
30 × 30 cm on Front body tube		1 Logo		
20 × 20 cm on Aft Body Tube	1 Logo			

# CONTACT US

**Abeer Vaishnav**

*Project Manager*

+91 79996 80919

projectmanager@teamantariksh.in

**Sanmukh Khadtare**

*Deputy Project Manager*

+91 82713 98913

**Mohammad Hanan Bhat**

*Head of Sponsorship, Marketing & Publicity*

+91 70062 32465

partnerwithus@teamantariksh.in

**Raj Kedia**

*Head of Finance*

+91 97417 76622

finance@teamantariksh.in

**Faculty Advisor**

Dr. Ravindra S Kulkarni

Professor & Head

Department of Aerospace Engineering

RV College of Engineering®

+91 99456 02861

ravindraskulkarni@rvce.edu.in

**Mailing Address**

**Team Antariksh** – Room 407, IDRC block, RV College of Engineering®, RV  
Vidyanikethan Post, Mysuru Road, Bengaluru Karnataka - 560059



contactus@teamantariksh.in



www.teamantariksh.in



@teamantarikshofficial



/teamantariksh

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## FOUNDING MEMBERS

PRAMOD Kashyap, MAITREYA Hegde, ANIRUDH K

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## 2019-2020 EXECUTIVE BOARD