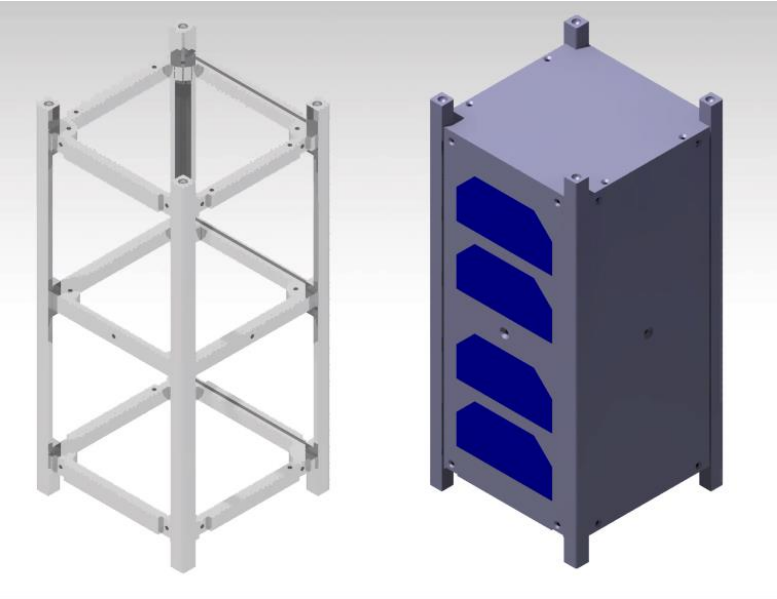
Team Antariksh

About the Team

Team Antariksh, an interdisciplinary project undertaken by the undergraduate students of R.V. College of Engineering. The team has been in constant research for the past 2 years in the aspects of building a Nanosatellite — RVSAT-1. Working in close terms with the Indian Space Research Organization (ISRO), the team is working to build a fully-functional Nanosatellite, which is to be launched by 2019.

About the Project

The Project involves students from multiple disciplines to take part. The Project, being a very vast one, involves intense research in the fields of Astrophysics, Astrodynamics and Electronics. The Project demands high-grade equipment and Workspaces such as laboratories and clean rooms. Keeping in mind the cost constraints and the latest fields of research, the Project aims at building a cost-effective Nanosatellite.



How it was started

The Project, Team Antariksh was started in 2015 by three students from the Aerospace Department, the current Project Manager, Chief Engineer and Mission Manager of the Team, all belonging to the newly formed (2015) branch of Aerospace Engineering. With a firm passion and unrivalled belief, the Team intends to successfully launch the satellite by 2019.



Pramod Kashyap Maitreya Hegde Anirudh Keshavan

The Founders

The Vision

To inspire young minds to have confidence in taking up challenging tasks, by giving room for interdisciplinary research, sharing of knowledge to enhance engineering skills and collectively work to design, build, launch and operate micro satellite systems.

The Mission

1. To design, fabricate, test and launch a nanosatellite that demonstrates all salient features of a conventional satellite.
2. To design and build a ground station to collect data from the satellite.
3. To interpret the data received from the satellite by giving students an opportunity to learn the basics of space technology.
4. To increase the participation of the students of R V College of Engineering in space research and technology development in India.

Faculty Advisors – The Backbone of the Team

- **Dr. K. N. Subramanya**, Principal, R.V. College of Engineering
- **Mr. P Nagaraju**, Associate Professor, Telecommunication Engineering, R.V. College of Engineering
- **Dr. R. S. Kulkarni**, Head of Department, Aerospace Engineering, R.V. College of Engineering
- **Mr. Benjamin Rohit**, Assistant Professor, Aerospace Engineering, R.V. College of Engineering
- **Mr. Nagendra. N**, Assistant Professor, Telecommunication Engineering, R.V. College of Engineering
- **Dr. A. H. Manjunath Reddy**, Associate Professor, Biotechnology Engineering, R.V. College of Engineering
- **Mr. Govind Raju**, Assistant Professor, Electronics and Communication Engineering, R.V. College of Engineering

The faculty advisors of the Team provide us assistance in terms in technical aid, recommendations for Workshops and technical visits to places like ISRO (ISAC), IIAP, Manipal institute of Technology, etc. Without their advice and invaluable inputs our team would not have made any substantial progress in the past 2 years.

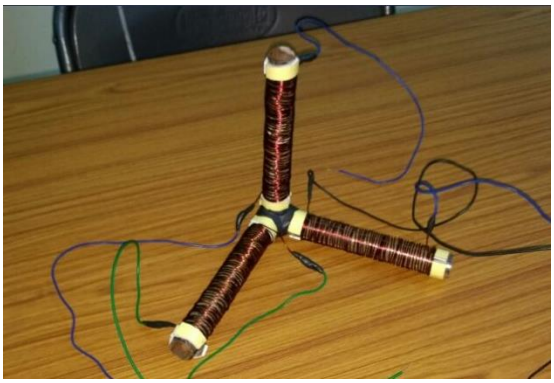
Opportunities for Students

As the project is an interdisciplinary one, students of all streams can gain knowledge and experience from being a part of the Project. Students from every stream have their respective Subsystems which present problems pertaining to the subjects they study in their streams. Circuit streams gain invaluable hardware and programming experience in the Team. Industrial streams such as Mechanical and Aerospace become experts at software such as Catia, Ansys and SolidWorks and become adept at design and assembly.

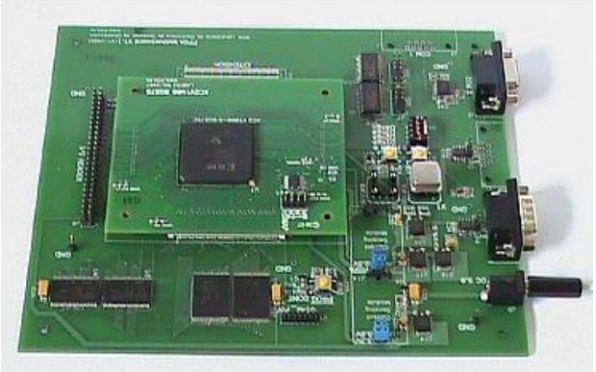
The Subsystems of the Team

The team comprises of 7 subgroups within the Team called Subsystems. Each of these performs various functions to sustain the satellite during its 2-3 month Mission. The Subsystems are listed below,

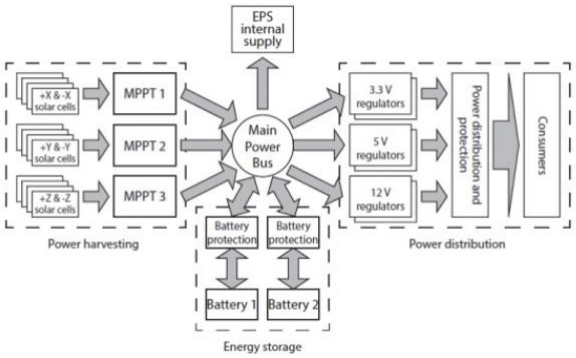
1. **Attitude Determination and Control Systems (ADCS):** The purpose of the Attitude Determination and Control Systems is to determine the attitude of the satellite in reference to the Earth and correct any deviation from the expected attitude.



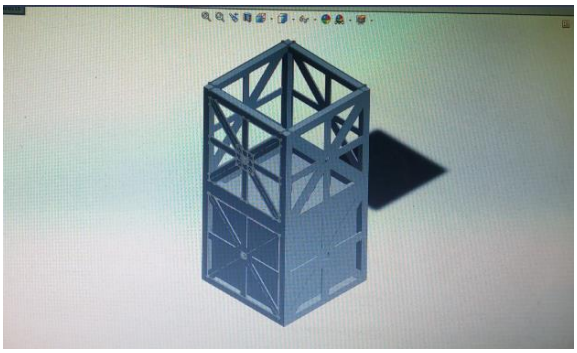
2. **Electronics and Control Logic (ECL):** As the brain of the satellite, this Subsystem controls the functioning of all the other subsystems. Based on ground instructions and on-board microcontroller commands the subsystems.



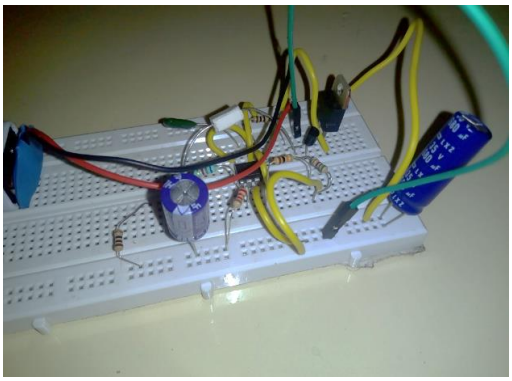
3. **Electrical Power Systems (EPS):** This is the heart of the satellite. This subsystem provides power to all the other Subsystems for their functioning by means of Batteries and Solar Panels.



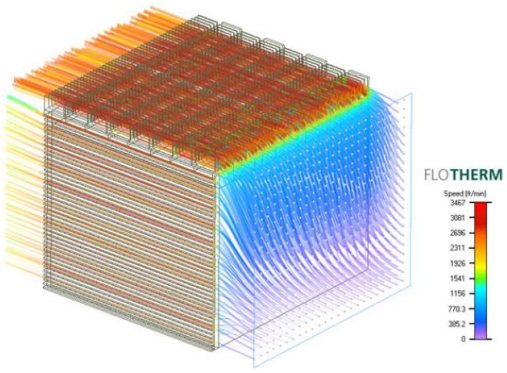
4. **Structure and Material Design (SMD):** This Subsystem deals with the materials and design of the satellite build. The structure and framework of the satellite to be functional is solely dependent on this Subsystem.



5. **Telemetry, Tracking and Command (TT&C):** This Subsystem is responsible for wirelessly connecting the Ground Station to the Satellite. The satellite is tracked with the help of this Subsystem and all necessary data is communicated to both ends.



6. **Thermal Systems (TS):** This Subsystem controls the temperature of all the components of the Satellite during the mission. An optimum temperature is necessary for all the components for good performance.



7. **Payload:** The Payload of the Mission is the main purpose of the Mission. The Payload we have chosen is a Micro-biological one. We intend to design an on-board laboratory for the testing of micro-organism growth in space conditions.

The Non-Technical Teams (Auxiliary Subsystems)

The team has many Non-technical teams within it, for the purpose of Sponsorship and Publicity. These are

1. Sponsorship, Marketing and Publicity (SMP)
2. Creativity and Design (C & D)
3. Finance
4. Spacelab Inventory and Logistics(SIL)
5. Public Relations (PR)

Purpose and Uniqueness of the Payload:

The Payload of the Satellite is a unique one that has not been ventured into before. There is a big probability of a Patent in this field if the Payload is successful. The Payload aims at research and study of the microbial growth in space conditions. The Payload has been approved by ISRO and the mechanism of the Payload is undergoing deep research and testing.

Budget of the Project

The project demands very high quality equipment. Workspaces such as clean rooms and labs have to be built within the vicinity of the College. Equipment for the testing of components is a necessity at later stages. Good quality, space grade equipment is a requirement for the components that go on board. The funding from the college may be unable to meet the expectation. Hence, the goal of the Sponsorship team is to make up the amount by hunting for Sponsors. The estimated budget is roughly around 80 Lakh.

Industry Connections

The Team has visited various industries and Laboratories for technical assistance and knowledge. Some industries have also visited us on campus. These visits have also played a huge role in the growth of the Sponsorship opportunities. Following are some of the places we visited

A visit to FICCI, New Delhi for a meet with Mr. Nirankar Saxena, Assistant Secretary General and his team of directors at FICCI to present about the Team.

A visit by Dr. Bidushi bhattacharya, CEO and co-Founder, Astropreneurs HUB Pte Ltd, at our very own Spacelab in College

A meeting with Dr. S A Kannan, Small, Science and Student Satellites Program Director, at ISRO

Visit to INTEX Industrial Exhibition, Bangalore for seeking contacts from various industries in India and abroad for sponsorship

Visit to the Indian Institute of Astrophysics (IIAP) to present our Project to Mr. P K Mahesh, Head of Mechanical Engineering division at IIAP

The Recruitment Procedure

There are certain guidelines for the Recruitment procedure that the Team strictly adheres to. New applicants are required to write an Aptitude + Technical Test. On qualification, a personal interview will be taken by our Public Relations team on a HR Basis before one is successfully recruited into the Team. New recruits must write another test based on Study material recommended by the Team of Chief Engineer and Deputy Chief Engineers for allocation into their respective Subsystems.