Indian Technology Congress Association

Evolution of Indian Technology Congress Association (ITCA)'s
75 Students' Satellites Consortium: Mission 2022

Road Map for
Design, Development, Fabrication, Integration, Launching and Operation of
75 NANO-SATELLITES

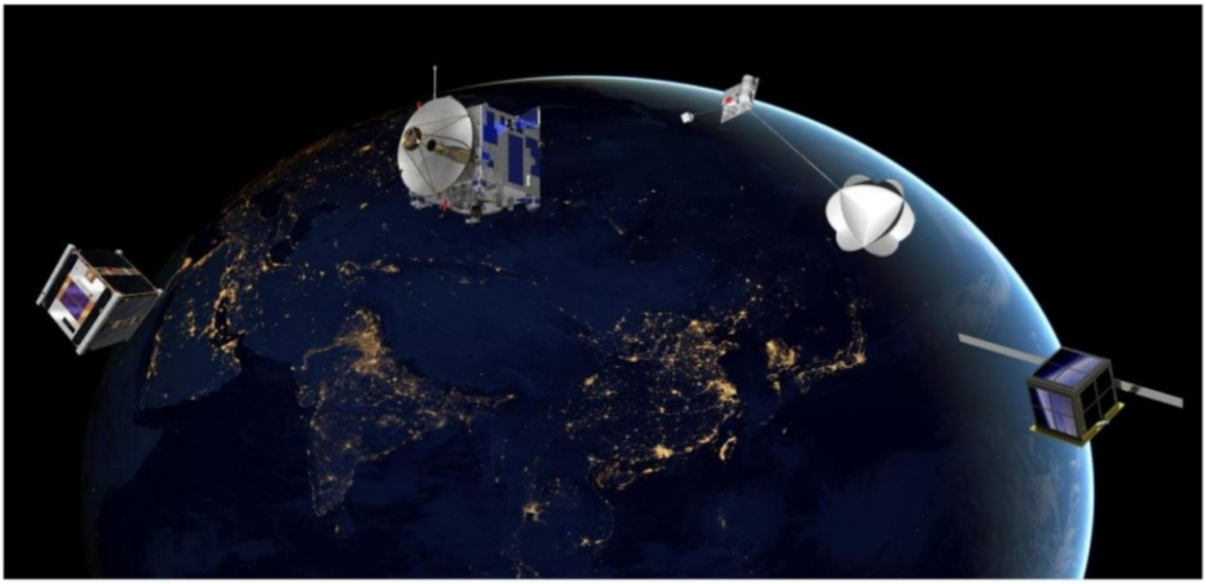
To be built by

75+ Academic Institutions (Colleges & Schools) /Universities of India

with the help of ITCA Consortium

With the Support/Mentorship of

ISRO-NSIL-IN-SPACe



Proposed and Executed by

75 Students' Satellites Consortium: Mission 2022

Indian Technology Congress Association, Bengaluru

75 Satellites: Proposed Facilities Identified for Fabrication/Testing

The Following ISRO Approved/Certified Facilities/Research Labs/Clean Rooms in India are Identifiedfor Design/Validation/Fabrication/Assembly/Integration/Testing of the 75 Students' Satellites Consortium: Mission 2022

Space Qualification Tests: Shock, Random Vibration and Sinusoidal Vibration	ALPHA DESIGN TECHNOLOGIES
OBC/EPS/CS: Telemetry/Mother & Daughter Boards Assembly and Integration	Ananth Technologies Limited; NEW TECH SOLUTIONS
Solar Cells/Panels Integration	KARNATAKA HYBRID MICRO DEVICES LTD.
Beacon *(Proof of Life Sensor)*	TSC; KEPLER AEROSPACE
Space Grade 4-16 Layer PCBs and 2 Layer PCBs for OBC/EPS/CS Solar Panels PCBs	Micropack Limited; PCB POWER MARKET
Space Grade Satellite Structure Machining and Anodising	DUCOM AEROSPACE; NTTF
1U/3U Deployer for 3-in-1 SlimSatellites	TSC; ISRO; VSSC DHRUVA SPACE
Design, Development, Validation, Integration, Testing, Fabrication, Launch Integration, Programming, Firmware Coding etc; Ground Station, Antennas, Receiver, Mobile App etc.	TSC *UNITYsat Students Team's Start-up*
Conceptual Support for UNITYsat and SATNOGS Global Network of Ground Stations, integration and overall project management	Indian Technology Congress Association
Registration of Satellite, Frequency Allocation, Thermovac Test and Launch Support with Deployer: NSIL; IN-SPACe; ISRO PSLV C 54/SSLVs	ISRO; URSC U R Rao Satellite Centre; NSIL

Note: Individual Negotiations will be done with Each Vendor for Mutual Consent as per requirements/shortly.

Supporting Organisations: 75 Students' Satellites Consortium: Mission 2022

Azadi Ka Amrit Mahotsav

INDIAN TECHNOLOGY CONGRESS

CHANDIGARH UNIVERSITY Discover. Learn. Empower.

TSC

The Maz Israel Satellite and Aerospace Technologies Ltd

SYMBA-MAZ Business Consortium

КРСП/CSPD Комитет за развој свемирског програма

Federation of Engineering Organisations

UNISEC INDIA

Road Map and Implementation Strategy of 75 Satellites

a) **Dr. Prakasha Rao P.J.V.K.S,** Outstanding Scientist, Director, Space Infrastructure Programme Office, ISRO-HQ will be the Single Point Contact from ISRO-HQ with 75 Satellites Consortium/ITCA

b) PDR-CDR of Prototype of 1U can be completed on or before 30 Dec 2021. Pilot Launch with Balloon and Testing of Satellite Communication at distance etc and if possible, Jan-Feb 2022 launch with PSLV/SSLV as per the availability. Then proceed with mid-course corrections, if any required and will go for manufacturing the 75 Satellites and integrating with payloads coming from 75+ Institutions!

c) SRC has been Planned to be held on 07 Dec 2021.

ITCA has initiated the ambitious **"75 Students' Satellites Mission 2022"** to commemorate the **"75 Years of Indian Independence" (1947-2022)** by launching 75 student-built satellites into orbit in conjunction with national and international tech-space organizations. The Mission is a partnership of institutions that will construct and launch their own student-built satellites by 2022. As everyone of us aware that this unique Indian initiative **"75 Students' Satellites Mission"** has been mentioned by Honourable Prime Minister of India **Shri Narendra Modi Ji** during his address to the global leaders at the 76th United Nations General Assembly on Saturday, 25 September 2021. Similarly, **Dr. C.N. Ashwath Narayan**, Hon'ble Minister of Higher Education, Government of Karnataka, has announced sanctioning grants for the Design, Development, Fabrication, Integration and Launching of 4 Nano Satellites by Karnataka Government Schools' Students.

On 08 Nov 2021 ITCA Team with Advisors has made Presentation before Hon'ble Minister for Higher Education, Science, Technology and IT & BT, **Dr. Ashwath Narayan C N** at his Chamber, Vikasa Soudha In the presence of ACS, DTE and CMD, KSTePS! **Padma Shri Prof. Vasagam**, Eminent Scientist, Project Director of India's 1st Communication Satellite "APPLE" and **Padma Shri Dr. Mylswamy Annadurai**, Project Director, Chandrayaan 1&2 and Program Director, Mangalyaan, **Dr. L.V. Muralikrishna Reddy,** President, ITCA, **Dr. Wooday P Krishna** President, IIPE and **Dr. K. Gopalakrishnan**, Project Director, 75 Students' Satellites Consortium: Mission 2022! & Mentor of TSC Technologies-a Space Tech Start-up Team were part of interactions held at Vikasa Soudha! Government of Karnataka has agreed to Sponsor 4 Students' Satellites to be built by Government Schools/Polytechnics/Engineering Colleges!

Advisory Board Consists of Eminent Scientists are Guiding ITCA

- **Padmashri Prof. R. M. Vasagam**, *Former Project Director, "APPLE" India's First Geo-stationary Communication Satellite, Former VC, Anna University and Dr. MGR University, Former EC Member, VTU, Karnataka*
- **Padmashri Dr. Y. S. Rajan**, *Vikram Sarabhai Distinguished Professor, ISRO HQ, Former VC, PTU, Punjab*
- **Padmashri. & Padma Bhushan Dr. B. N. Suresh**, *Former Director, VSSC, Former Director, Indian Institute of Space Science and Technology and Vikram Sarabhai Distinguished Professor, ISRO HQ.*
- **Padmashri. Dr. Mylswamy Annadurai,** *Project Director, Chandrayaan 1 & 2 and Programme Director, Mangalyaan, Former Director, ISRO Satellite Centre (ISAC)/URSC, Bangalore*
- **Padmashri Dr. Dataguru,** *Former Professor & HoD, Aerospace Department, Indian Institute of Science*
- **Dr. G.N. V. Prasad,** *Former Deputy Director, ISRO Satellite Centre (ISAC), URSC, Bangalore*
- **Mr. V. Mahadevan,** *MPAD, Scientist, ISRO Satellite Centre, URSC, Bangalore*
- **Mr. B N Jagannatha Rao,** *Scientist, ISRO Satellite Centre, URSC, Bangalore*

Timelines

1. **15th November:** Preliminary Design Review (PDR)
2. **26th November:** Comm System Ground Test & SRC (Standing Review Committee)
3. **15th December:** Balloon Test with Comm system and Proto Antenna
4. **30th December:** ADCS Ground Test with complete EM
5. **15th January:** Ground Test of all systems in Vibration and Thermovac

1. **30th Jan – 15th Feb:** Balloon Launch of QM
2. **15th Feb and Beyond:** Launch Preparation
3. **T-30 days:** Preparation for Test Launch of 1st Satellite
4. **TBD:** Test Launch of 1st Satellite

Deployers and Launching: VSSC & Private Industries and NSIL respectively. All the 75 Satellites based on their readiness will be launched together in dedicated Mission during July-Aug 2022 or in stages as per the availabilities of Launch Vehicle SSLV on or before Dec 2022!

Mission Control

GCS will be established at all 75+ Institutions which are part of 75 Satellites' Consortium and also Centralized Mission Control of 75 Satellites have been planned as well.

Inaugurated Satellite Ground Station and Nano Satellite Centre at Chandigarh University by Padma Shri. Prof. R. M. Vasagam* on 28 Oct 2021

Proud Alumnus of IIT Madras and Project Director of India's First Geo Stationary Communication Satellite "APPLE"

Evolution of Indian Technology Congress Association (ITCA)'s 75 Students' Satellites Consortium: Mission 2022

Preamble:

Technology, as a product of the art of science, nurtured by engineering tools and techniques, has played a stellar role in powering growth; shaping the culture and transforming society. Indian Technology Congress (ITC) over the last 15 years attained international prominence as a unique platform fostering Industry-Academia-Research Labs-Policy Makers' collaboration with the objective of capacity-building for global technological progress.

The need for a dedicated Association for Technologists comprising of scientists, engineers, entrepreneurs, and policy-makers has been echoed at many summits, fora, including at the previous editions of ITC; and has been gaining strength and momentum with the call to establish an Association under the Societies Registration Act. During the recently concluded ITC-2017, a resolution was unanimously adopted in the Bangalore Declaration that Technology Professionals from the industry, R&D Laboratories, and Academic Institutions should collaborate and 'institutionalize' the synergy by establishing the Indian Technology Congress Association (ITCA).

The envisioned objectives of ITCA would include advancing and promoting the cause of technology in India and abroad; organizing annual meets / thematic expositions to promote R&D and collaboration leading to the advancement of technology; publishing country reports, journals and transactions as may be contextually relevant; taking up the consultancy and studies; and instituting and presenting Awards to recognize and honour significant contributions by individuals and organizations.

ITCA enshrining these objectives and ideas has been formally registered at Bangalore on 03 January 2018. While these were the initial thoughts, it is anticipated that refinements would happen as members collaborate and ITCA evolves over the coming months. The initial Memorandum / Articles of Association, and the associated set of byelaws is intended to set the context for growth of ITCA.

Info graph on Indian Technology Congress (ITC) Evolution

Preparatory Works: Identification of Resource Persons/Mentors. Scheduled a personal meeting with Dr. Mylsamy Annadurai, Director, ISRO Satellite Centre (ISAC) on 10 & 11 April 2016. The following Eminent Scientists have been interacted during 2016-17 and have provided us input on "ITCA Students' Satellite Programme" in such a way to shape our own programme:

- **Padma Shri. Prof. R. M. Vasagam**, Former Project Director, "APPLE" India's First Geo-Stationary Communication Satellite, Former VC, Anna University and Dr. MGR University
- **Padma Shri. Dr. Y. S. Rajan**, Vikram Sarabhai Distinguished Professor, ISRO HQ, Former VC, PTU, Punjab
- **Padma Shri. & Padma Bhushan. Dr. B. N. Suresh**, Former Director, VSSC, Former Director, Indian Institute of Space Science and Technology and Vikram Sarabhai Distinguished Professor, ISRO HQ.
- **Padma Shri. Dr. Mylswamy Annadurai,** Director, ISRO Satellite Centre (ISAC)
- **Padma Shri. Dr. Dataguru,** Former Professor & HoD, Aerospace Department, Indian Institute of Science, Bangalore

  9-16 July 2017: **Indo-Russian Technovation Delegation** to Moscow, Russia. Visit to Peoples Friendship University Student Satellite Centre: Ground Control Station at Moscow on 16 July 2017.

20 September 2017: **Visit of ITCA-UNITYsat Team to ISRO Satellite Centre:**

Interaction of ITCA-UNITYsat Team @ ISRO Satellite Centre (ISAC) with *Padma Shri.* Dr. M. Annadurai, Director, ISAC *(Now: URSC)*

ITCA-UNITYsat Team @ ISRO Satellite Centre: Students' Satellite Team Meeting with Director, ISRO Satellite Centre (ISAC), Bangalore with Padma Shri Awardee, Dr. M. Annadurai on 20 September 2017. Two hours of Interaction with Director and ITCA Team (L to R) Hari, Pranav, Vishwa, Sanketh, Dr. Gopalakrishnan, Secretary General, ITCA, Nikhil, Dr. M. Annadurai, Director, ISAC, Denzel, Dr. Sujitha, Dr. Nisha, Navya, Neha and Amrutha of ITCA Team have interacted also with Students' Satellite Program Nodal officer Mr. S.A. Kannan has sharpened the ITCA Team's focus on opportunities in Satellite Imagery and Data Analytics. It is a real icebreaker in our own Development of ITCA-UNITYsat as Students' Satellite Program.

07 November 2017

Initiated the Formation of **"Society for Student Satellite Programmes"** and actively involved in the deliberations during the Steering Committee Meeting held at Indian Technology Congress Association, Bangalore.

19-22 December 2017, Indian Engineering Congress held at Hotel Le Royal Meridian, Chennai

First draft Memorandum of Association of **"Society for Student Satellite Programmes"** prepared by **Dr. K. Gopalakrishnan,** Secretary General, ITCA as Special Officer and Secretary general of the proposed **"Society for Student Satellite Programmes"** has been reviewed by experts from consortium of professional bodies. **Dr. Marlene Kanga, President, World Federation of Engineering Organisations (WFEO)** from Australia has graced the occasion.

04 February 2018: Meeting with Our Core Team at ITCA

Our Core Team has suggested Secretary General to meet **Mr. G.N.V. Prasad, ISAC,** *Bangalore* and explored the possibilities of ITCA Students' Satellite Project with his help.

20 February 2018, Meeting with Mr. M. S. Jayachandran, Scientist/Engineer-G, Group Director -DTG Group SIS/IISU, Associate Programme Director-PSG-SI-GP, DPD,RS-3/3A and 3S/ 3SA, Vikram Sarabhai Space Centre (VSSC), Thiruvananthapuram, Kerala

Dr. K. Gopalakrishnan, Secretary General, ITCA had a meeting with **Mr. M.S. Jayachandran**, who has made significant contribution during **"Mangalyaan"** Mission and also recipient of **Prime Minister's Award** from **Dr.Manmohansingh,** and also honoured during Aerospace Convention of Institution of Engineers (India) at Chennai 2017.

12 March 2018: Meeting with Minister of Higher Education, Research and Innovation, Government of France Ms. Frederique Vidal at NHCE, Bangalore

She has expressed her support to Indo-French Collaborative Students' Satellite Programmes.

22 March 2018: Dr. K. Gopalakrishnan, Secretary General, ITCA had a Meeting with Director, ISRO Satellite Centre (ISAC), *Padmashri Awardee***, Dr. M. Annadurai at ISAC**, Bangalore and briefed about the Indo-French Collaborative Satellite Programme as promised by **Minister of Higher Education, Research and Innovation, Government of France Ms. Frederique Vidal.**

03 April 2018

Exploring the Possibilities of Indo-French Collaboration for ITCA/NHCE Students' Satellite

Meeting held on 03 April 2018 at 11.00 hrs at Liaision Office India, Centre National d'Etudes Spatiales (CNES), Consulate General of France, 21, Palace Road, Vasanth Nagar, Bangalore-560 052 with **Mr. Mathieu J Weiss,** Managing Director, Liaision Office India, CNES (Centre National d'Etudes Spatiales), Embassy of France in India

17 April 2018: Identification of suitable (innovative) Payload for our Student Satellite Project

Efforts are being made for the Identification of suitable (innovative) Payload of our proposed Student Satellite Project by involving interested students of Engineering Colleges in India. It is decided during the R&D Coordinators' Meeting of ITCA Member Institutions held on 17.04.2018 at NHCE to conduct college wide competition among the students to evolve suitable innovative payload for our space mission. Indian Technology Congress Association has agreed to sponsor the competition.

25 April 2018: Efforts are being made for the **detailed research review of 270+ Students Satellites launched so far by various Universities/Institutions across the globe**. In India, so far Nine Students Satellites has been launched with the help of ISRO. The time frame for the research review to be done by our students and faculty members has been fixed as 60 days (2 Months).

1. **Published by World Federation of Engineering Organisations (WFEO)** and Indian Technology Congress Association (ITCA), Edited by Dr. K. Gopalakrishnan, Secretary General, ITCA and has Compiled by UNITYsat Students and Released by Hon'ble CM of Karnataka on 05 September 2018 at NIMHANS Convention Centre, Bangalore (ISBN: 978-93-84893-88-0)
2. **ITCA** has founded **"75 Students' Satellite Consortium"** and Organised Successfully "**1st International Seminar on Students' Satellites"** in association with ITC 2018 and other Professional Bodies during 05-06 September 2018 at NIMHANS Convention Centre, Bangalore. He is also the Convener of **"75 Students' Satellite Consortium: Mission 2022!"**
3. **ITCA/Israel: ITCA** has established active working relationships with Israel. ITCA has coordinated **2nd Indo-Israel Delegation Visit to Israel during 10-16 November 2018** to explore the funding opportunities at Israel for EEIs.
4. **ITCA** has Organised **"2nd International Programme on Students' Satellites: Mission 2022"** during 28-29 Nov 2018 in association with ITCA and UNISEC India at FKCCI Auditorium, Bangalore as Organising Secretary.
5. **ITCA** has established **University Space Engineering Consortium (UNISEC) India** and **became the Secretary General and Point of Contact** for the **Global Activities.** http://www.unisec-global.org/pointofcontact.html. Three of our Students **Attending 6th Global Meet of UNISEC and presenting at International Space University, France.**
6. **ITCA** has been part of 1st Indo-Israel Space Tech Leadership Programme held at Israel during 10-15 February 2019 and has received Award for his contribution towards the successful delegation and visited Israel's Technical Universities. The entire event was sponsored by ITCA.
7. **ITCA** has Organised One day National Seminar on New Space-An Era of Small Satellites: Opportunities and Challenges in association with ITCA and UNISEC India at our Auditorium, NHCE on 11 April 2019.
8. **ITCA-UNITYsat Students Team Represented UNISEC India at International Space University, Strasbourg, France! Mr.Nihkil, Mr. Denzel and Ms. Bhavana** from from ITCA, Bangalore have participated and Represented Indian Student Community! during 6th UNISEC Global Meeting and presented reports of activities during presented reports of activities during the Global Meet!

University Space Engineering Consortium (UNISEC)- India has been repressed by our Delegates at 6th UNISEC Global Meeting held at International Space University (ISU), Strasbourg, France during 19-21 November 2018! UNISEC Global Head Quarters is situated at Japan. UNISEC India Chapter has been Approved and Inaugurated during the Global Meet at ISU, France!

9. **ITCA-UNITYsat Students Team Visited Israel & Russia**

   ITCA has also provided an Opportunity and arranged Financial Support/Sponsorship for **6 of ITCA UNITYsat Team Students from Bangalore** to take part in 2nd Indo-Israel Space Tech Leadership Programme held at Israel during 26-31 May 2019.

10. **ITCA** has also provided an Opportunity and arranged Financial Support/Sponsorship for **6 of ITCA UNITYsat Students** and they have participated in World Famous "The International Summer Space School: Future Space Technologies and Experiments in Space" held at Samara National Research University, Samara, Russia during 17-29 June 2019. 5 of them participated in this Summer School at Russia; even our Chairman has sponsored part of their expenses. *(6th Student has joined duty with IBM on regular scale, hence, he could not avail leaves to be part of this delegation).*

11. **ITCA-UNITYsat Team Students have Participated IBM Hackathon at Netherlands & Visited Rome Sapienza University, Italy.** ITCA-NHCE Students (13) have participated in **IBM OpenPOWER Summit Europe** and Netherlands Hackathon held at Netherlands (Amsterdam) during 06-07 October 2018, ITCA-NHCE Students' Won 2 Awards.

12. **Dr. K. Gopalakrishnan, Secretary General, ITCA** with Students Satellite Team (3) have Visited Rome Sapienza University, Italy during 24-26 November 2018 and had interactions with Prof. Fabio Santoni.

13. **ITCA** has identified potential students from current final years and have fielded them as Competition teams after 2 months of training and interventions for 2019 SERBIA CANSAT COMPETITION to be held at Serbia during 04-06 October 2019. 4 of ITCA-NHCE team have been shortlisted for the Final Competition among other teams from various Countries! We have also successful in arranging their sponsorship through ITCA and UNISEC India Chapters, they have agreed in principle and our students need to volunteer few of their activities and projects!

14. **Provided an Opportunity for Indian Institutions for Collaboration with Israel Satellite Launching at PSLV, India *(October/November 2019 Launch with PSLV, India)***

    The Israeli Student Satellite **Duchifat-3** is an experimental and educational spacecraft developed and built by students of secondary schools at the Space Laboratory of the Herzliya Science Centre (HSC), Israel. It is built to the 3U CubeSat standard *(10 cm x 10 cm x 30 cm with an Approximate Cost: USD 1.5 Million-Rs. 9-10 Cr in Last 1-2 Years. Approximate Mass of Satellite: 2.5 kg)* under the Guidance of **Dr.Meir Ariel**, Director, Nano Satellite Centre, Tel Aviv University, Israel and Director, Herzliya Science Centre, Israel who have instrumental for the design of longest serving Nano Satellite in orbit.

15. **ITCA** has Established UNISEC India Chapters at many Colleges in India and Inaugurated by ***Padmashri* Prof. R. M. Vasagam** during National Seminar on New Space-An Era of Small Satellites: Opportunities and Challenges at New Horizon Knowledge Park Auditorium, Bangalore.

16. **ITCA** has Organised FOUR International Seminars on Students' Satellites/Indo-Israel Collaboration on Nano Satellites!

17. **ITCA** has Designed and Implemented TWO Indo-Israel SpaceTech Leadership Programmes benefiting 30+ Institutions/Universities

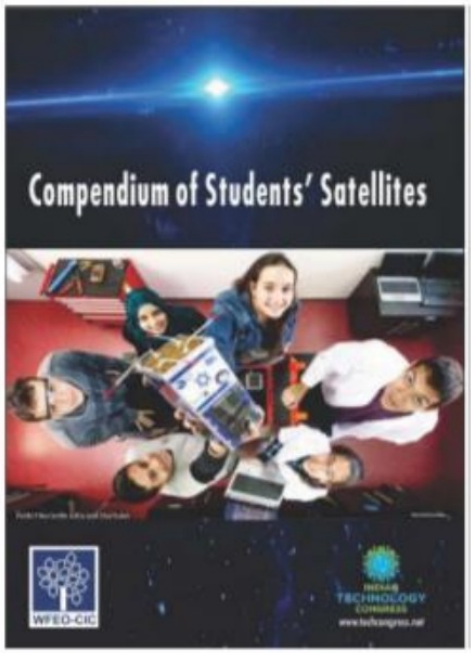
18. **ITCA** has Founded University Space Engineering Consortium (UNISEC) India and became its Secretary General and also became SPoC for UNISEC Global, Japan.

19. **ITCA** has Founded World CanSat/Rocketry Consortium to Organise "World Cup" World CanSat/Rocketry Championship in 2020-2022 (During Covid-19 Pandemics, many online events have been organised! 75+ Countries have been becoming Members!

20. THREE Satellites as UNITYsat have been launched on 28 Feb 2021 with ISRO's PSLV C51 Amazonia 1 Mission from Sriharikota under ITCA 75 Students' Satellites Consortium: Mission 2022!

21. NHCE 4 Teams Enrolled for **Serbia International CanSat/Rocketry Competition 2019** held during 04-06 October 2019 and **16 Member Teams Represented INDIA** and **Secured First and Second Place** during the events! All the **Four Teams** have also received **UNISEC Global Jury Special Awards** as well!

22. **ITCA** has Organised Israel Satellite "Duchifat 3" Launched Successfully with PSLV, ISRO (11 Dec 2019), Coordinated by ITCA Team between Israel and NSIL.



Published by World Federation of Engineering Organisations (WFEO) and Indian Technology Congress Association (ITCA), Edited by Dr. K. Gopalakrishnan, Compiled by NHCE Students and Released by Hon'ble CM of Karnataka on 05 September 2018 at NIMHANS Convention Centre, Bangalore (ISBN: 978-93-84893-88-0). The Editor and Students were Awarded with Appreciations and Honours!

INDIAN TECHNOLOGY CONGRESS

Dr. L.V.MURALIKRISHNA REDDY
President, ITCA
05 September 2018

WFEO-CIC

Indian Technology Congress Association

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75 Students' Satellites will be Launched to Celebrate India's Freedom 75 Years in the Year 2022

Supported by

सत्यमेव जयते

आज़ादी का अमृत महोत्सव Azadi Ka Amrit Mahotsav

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GOVERNMENT OF TELANGANA सत्यमेव जयते

Exploring the Participation/Support of More Numbers of Stae Governments in India

Down the Memory Lane: Media Watch

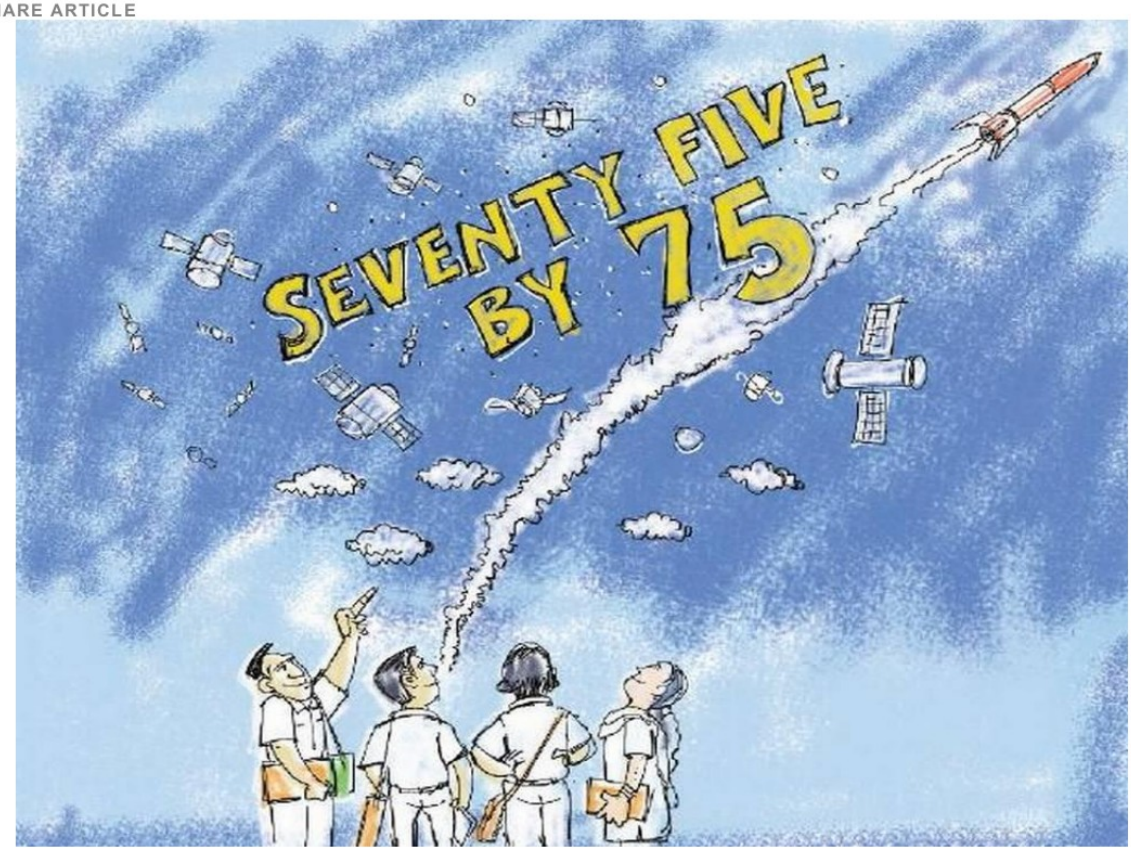
THE HINDU

THURSDAY, JUNE 27, 2019

75 Student Satellites may Fly to Space as India Turns 75

Madhumathi D.S.

BENGALURU, JUNE 27, 2019 00:41 IST



ITCA has roped in engineering colleges to form consortium

Up to 75 tiny satellites built by students of Indian universities could fly to the skies between late next year and 2022 in batches.

Seventy-five by 75: this is the dream project that the Indian Technology Congress Association (ITCA) has conceived to celebrate the nation's 75th birthday. That is also to be the year of Gaganyaan, the first trip of Indian astronauts to space.

The ITCA, a technology promotion body based in Bengaluru, has roped in around 40 engineering colleges to form a consortium. It is also in the midst of discussing launch contracts with the Indian Space Research Organisation and working out Israeli finance for its '75 Student Satellites Mission 2022', said its president Dr. L.V. Muralikrishna Reddy.

"We hope the first 25 tie-ups will happen this year. The picture will get clearer around September when we hold our conference," he told *The Hindu* recently.

Students of participating institutions would come from different disciplines and get to build nano satellites weighing between 3 and 12 kg. They may demonstrate a novel concept, science experiment, or technology in orbit. Assembling a satellite of their own, creating its ground control system, and operating the spacecraft would be a creative experience and give them an edge in the job market, according to Dr. Reddy.

200 ideas

ITCA's satellite design and payload consultant Pramitha Ramaprakash, founder-CEO of Transcend Satellite Technology, said she was keen on helping budding engineers with satellite design and payloads or experiments. ITCA has readied a list of 200 payload ideas.

Why would we want to add so many student satellites in an already crowded space? "Exciting things are happening across the world of space," said R.M. Vasagam, veteran space scientist and head of the mission's advisory committee. Students have been an important part of them in other countries and are proving interesting ideas in orbit for applying to everyday life one day. For the colleges, it can mean a branding exercise and a permanent ground infrastructure on their premises. For the students, an out-of-the-world learning experience, exposure to an elite job market, and a chance to turn entrepreneurs who can attract space majors, with frugal satellite services.

Currently the Chancellor of MGR Educational & Research Institute, Chennai, Dr. Vasagam is also the former director of APPLE, India's first experimental communication satellite, launched by the ISRO in 1981.

Space-based solutions reach people in remote areas where many other technologies do not reach or work. Students can learn to design small satellites that can offer simple, meaningful, and low-cost solutions to soldiers, farmers, boatsmen, forest personnel, or students, he noted, adding that these days ISRO wants to offload satellite assembly to the private sector.

India lags behind

In the last three to five years, other countries launched about 3,500 student satellites that demonstrated innovative technologies; another 2,500 could be in the offing. Indian universities have so far built and launched only nine satellites of fleeting life spans. They must catch up with their international counterparts, he said.

A student satellite, depending on its payload, can cost between ₹30 and ₹50 lakh and ₹5 and ₹6 crore.

ITCA Secretary General Dr. K. Gopalakrishnan, Dean-R&D of New Horizon College of Engineering, said a ready partner is Israel, whose half a dozen banks already support similar students' space initiatives in Israel and in China. Two batches of Indian institutions visited Israeli cities in February and May this year to explore technology tie-ups with three top universities.

According to Dr. Vasagam and Dr. Reddy, a lot of investment is taking place outside the country in NewSpace — the set of innovative space enterprises driven by private capital. But their own first big task is to get Indian institutions to board the ITCA's space plank.

Courtesy: **THE HINDU:**

Ref: *https://www.thehindu.com/sci-tech/science/75-student-satellites-may-fly-to-space-as-india-turns-75/article28160180.ece*

The Indian EXPRESS

Satellite Club launched in engg college

EXPRESS NEWS SERVICE
@Nagapattinam

THE Electronics and Communication Department in EGS Pillay Engineering College conducted a workshop on the recent trends in satellite communication technologies on Monday. It also started its 'Satellite Club'.

Dr K Gopalakrishnan, Dean (R&D) of New Horizon College of Engineering in Bengaluru and Secretary-General Of UNISEC India who participated as the Chief Guest, mentored the students. Around 500 students from ECE and CSE department participated in the workshop. Dr K Gopalakrishnan explained the importance of satellite and India's role in the challenging world of satellites.

Satellite Club inaugurated in RGS Pillay Engineering College on Monday | EXPRESS

7 Polytechnic students recruited by Hitachi

Seven students from Women's Polytechnic College in Karaikal were recruited in the Japanese company Hitachi Automotive Systems (India) Limited, located in Thiruperur in Kanchipuram. Three students from the ECE department and four from ICE department were recruited through placement drive where about 40 students participated. Karaikal (South) DSP KL Veeravallabane distributed offer letters to students.

தினமணி

09 February 2020, Chennai Edition of Dinamani, Tamil Daily Published by The Indian Express Group

அறிவியல் தொழில் நுட்பத்தில் மாணவர்களுக்கு ஆர்வம் ஏற்படுத்த வேண்டும்

மயில்சாமி அண்ணாதுரை

ஸ்ரீபெரும்புதூர், பிப். 8: பேராசிரியர்கள் அறிவியல் தொழில்நுட்பத்தின் ஆர்வத்தை மாணவர்களிடம் ஏற்படுத்த வேண்டும் என ஜேப்பியார் தொழில்நுட்பக் கல்லூரி வளாகத்தில் மாணவர்களால் வடிவமைக்கப்பட்ட செயற்கைக்கோள் ஏவும் நிகழ்ச்சியில் சனிக்கிழமை கலந்துகொண்ட தேசிய வடிவமைப்பு மற்றும் ஆராய்ச்சி மன்றத் தலைவர் மயில்சாமி அண்ணாதுரை கூறினார்.

சுங்குவார்சத்திரம் அடுத்த குன்னம் பகுதியில் ஜேப்பியார் தொழில்நுட்பக் கல்லூரி இயங்கி வருகிறது. இக்கல்லூரியில் மாணவர்களால் வடிவமைக்கப்பட்ட வானிலையை கண்காணிப்பதற்கான மூன்று கேன்சாட் செயற்கைக்கோள்களை விண்ணில் ஏவும் நிகழ்ச்சி சனிக்கிழமை நடைபெற்றது.

ஜேப்பியார் தொழில் நுட்ப க் கல்லூரியில் மாணவர்களால் ஏவப்பட்ட செயற்கைக்கோளை ஆய்வு செய்த தேசிய வடிவமைப்பு மற்றும் ஆராய்ச்சி மன்றத் தலைவர் மயில்சாமி அண்ணாதுரை.

கல்லூரி இயக்குநர் மரியவில்சன் தலைமையில் நடைபெற்ற இந்த நிகழ்ச்சியில், தேசிய வடிவமைப்பு மற்றும் ஆராய்ச்சி மன்றத் தலைவர் மயில்சாமி அண்ணாதுரை சிறப்பு அழைப்பாளராக கலந்துகொண்டு, மாணவர்களால் தயாரிக்கப்பட்ட செயற்கைக்கோள் இயங்கும் முறை, ராக்கெட்டில் இருந்து செயற்கைக்கோள் பிரிந்து பாராசூட் மூலம் தரையிறங்கும் முறை மற்றும் அறிவியல் தொழில்நுட்பம் குறித்து மாணவர்களுடன் கலந்துரையாடினார். பின்னர் அவர் பேசியது:

அறிவியல் தொழில்நுட்பத்தில் முக்கிய பாடமாக உள்ளது ராக்கெட் அறிவியல். ராக்கெட் தொழில்நுட்பத்தை கடந்த காலங்களில் விண்வெளி ஆய்வுக் கூடங்களால் மட்டுமே செய்ய முடியும் என்பதைத் தாண்டி இந்தியாவில் உள்ள கல்வி நிலையங்களில் படிக்கும் மாணவர்களால் கூட செய்ய முடியும் என்ற நிலை தற்போது ஏற்பட்டுள்ளது.

அறிவியல்தொழில்நுட்பத்தின் ஆர்வத்தை மாணவர்களிடையே தூண்ட வேண்டும். அப்போது தான் நாடு சிறப்பாக இருக்கும். இஸ்ரேல் சிறிய நாடாக இருந்தாலும், அந்த நாட்டில் உள்ள மாணவர்கள் ராக்கெட் தொழில்நுட்பத்தில் பல்வேறு பரிசோதனைகள் நடத்தி வருகின்றனர்.

இதனால் ராக்கெட் தொழில்நுட்பத்தின் பலதுறைகளில் இஸ்ரேல் சிறந்து விளங்கி வருகிறது. இந்தியாவில் எல்லா வளமும் உள்ளது. மாணவர்களுக்கு வாய்ப்புகளை ஏற்படுத்திக் கொடுத்தால் தான் அடுத்த தலைமுறை மாணவர்களால் சிறப்பாக வரமுடியும்.

நூலகம் எவ்வாறு அறிஞர்களை உருவாக்குகிறதோ அதே போல் ஆய்வுக்கூடங்கள் அறிவியல் திறமைகளை கண்டறியப் பயன்பட்டு வருகின்றன.

பள்ளிகளில் அறிவியல் கண்காட்சிகள் நடத்தி அவற்றில் மாணவர்களை ஈடுபடுத்த வேண்டும். தமிழ்நாட்டில் பல பள்ளிகளில் அறிவியல் ஆய்வகங்கள் ஏற்படுத்த முயற்சிகள் நடைபெற்று வருகின்றன.

பொறியியல் கல்லூரி மாணவர்களின் சிறந்த கண்டுபிடிப்புகளுக்கு பரிசுகள் வழங்கப்பட்டு வருகிறது. இது பாலிடெக்னிக் கல்லூரிகளுக்கும் விரிவுபடுத்தப்பட உள்ளது.

பொறியியல் கல்லூரிகளில் பணியாற்றும் பேராசிரியர்களும் ஆராய்ச்சி மனப்பான்மையில் பணியாற்ற வேண்டும். அப்போது தான் மாணவர்களுக்கும் ஆராய்ச்சிகளை மேற்கொள்ள ஏதுவாக இருக்கும் என்றார்.

இந்த நிகழ்ச்சியில் அட்டாஸ் நிறுவனத்தின் செயல்முறை விளக்கத் தலைவர் ஸ்ரீராம், யுனிசெப் இந்தியா நிறுவனத்தின் பொதுச்செயலாளர் கோபாலகிருஷ்ணன், இந்திய கடல் சார் நிறுவனத்தின் முதன்மை விஞ்ஞானி வெங்கடேசன், கல்லூரி முதல்வர் மெர்லின் லிவிங்ஸ்டன் உள்ளிட்ட பலர் கலந்துகொண்டனர்.

தினமணி Sun, 09 February 2020
https://epaper.dinamani.com/c/48811063

ITCA is Mentoring JPR Institute of Technology, Chennai and ITCA Students' Satellite Team has Conducted Workshop on CanSat Building and Launched CanSats using Drones! Held on 08 Feb 2020.

MYLSWAMY ANNADURAI WITH TCE STUDENTS & DRONES (VIDEO)

BY SHASTRY V MALLADYMAR 07, 2020, 21:06 PM0 300 0

MADURAI: India's Chandrayaan mission hero and space science expert Dr.Mylswamy Annadurai's visit to Thiagarajar College of Engineering (TCE) in Madurai today was an exciting moment for students.

On 7th March 2020, he took part in the inauguration of chapter of UNISEC India-TCE in the college campus, supported by National Design and Research Forum (NDRF) and University Space Engineering Consortium (UNISEC).

HAVE PASSION, YOU CAN ACHIEVE: Dr.Mylswamy Annadurai, who is a former Project Director for Chandrayaan 1 and 2 missions, had spent time with students as they watched drones flying and listened to experts explaining about science, space, India's achievements in space etc.

"If you have passion, you will enjoy what you are doing……With that you can learn and achieve anything easily," he told the students.

Dr. V. Dilli Babu, Director, NDRF- Scientist GTRE-DRDO and Dr. K. Gopalakrishnan, Secretary General, UNISEC India, Dean (R&D), New Horizon College of Engineering, Bangalore was among those who were present and gave insight to students. Incidentally, Dr. K. Gopalakrishnan was one of the proud old student of TCE where from he has completed his BE and ME degrees!

. Dr.V.Abhaikumar, Principal, TCE is lighting the lamp as mark of inauguration of UNISEC India Chapter along with other dignitaries on the dais.

Demonstration of "Near Space Launch of CanSats" Using "OctoCopter" @ TCE

07 March 2020: Madurai Thiagarajar College of Engineering (Founded 1957). Inauguration of UNISEC-INDIA Chapter and Demonstration of "Near Space Launch of CanSats" Using "OctoCopter" by "New Horizon" Students' Satellites Team" which has received IEI Centenary Young Research Engineers Team Award! Under the Guidance of Padmashri Dr.Mylswamy Annadurai, Former Director, ISRO Satellite Centre and Project Director, Chandrayaan 1 & 2 and Mangalyaan (Mars Orbiter Mission)-MOM! Dr. V. Dillibabu, Scientist, GTRE-DRDO, Director, National Design and Research Forum is addressing. Dr.V.Abhaikumar, Principal, TCE and Dr. K. Gopalakrishnan, Dean (R&D)-NHCE are look on.

Dr. K. Gopalakrishnan, Dean (R&D)-NHCE is explaining the CanSat Launching by OctoCopter built by ITCA R&D Team to Dr. Mylswamy Annadurai.

Dr. V. Abhaikumar, Principal, TCE, had presided over the function. Demonstration of near space launch and deployment of CanSat had enthused the students.

Ref: http://www.lotustimes.org/2020/03/07/mylswamy-annadurai-with-tce-students-drones-video/

Indian Technology Congress 2018 and First International Conference on Small Satellites Organised by ITCA

Indian Technology Congress 2018 (ITC 2018) held at NIMHANS Convention Centre during 05-05 September 2018. ITCA has hosted First International Conference on Small Satellites during ITC 2018! Compendium of Students' Satellites of ITCA has been Published by World Federation of Engineering Organisations-CIC and Released by CM of Karnataka. Indo-Israel Collaborations on Students' Satellites has been Finalised during the Event.

தினத்தந்தி
DAILY THANTHI
வெல்க தமிழ்

திருச்செந்தூர் டாக்டர் சிவந்தி ஆதித்தனார் பொறியியல் கல்லூரியில் கருத்தரங்கு

திருச்செந்தூர்

டாக்டர் சிவந்தி ஆதித்தனார் பொறியியல் கல்லூரியில் கருத்தரங்கு

திருச்செந்தூர், மார்ச்.7– திருச்செந்தூர் டாக்டர் சிவந்தி ஆதித்தனார் பொறியியல் கல்லூரியில் இந்திய பொறியாளர்களின் அமைப்பு மற்றும் தூத்துக்குடி உள்ளூர் மையம் சார்பில், 'ரசாயன ஆலைகளின் பாதுகாப்பான செயல்பாட்டிற்காக கையாளும் யுக்திகள்' என்ற தலைப்பில், கல்லூரி பேராசிரியர்கள், மாணவர்கள், பெருநிறுவன உறுப்பினர்களுக்காக ஒரு நாள் கருத்தரங்கு நேற்று நடந்தது. காலையில் நடந்த தொடக்க விழாவில் தூத்துக்குடி உள்ளூர் மையத்தின் முன்னாள் தலைவரான அரிபு சுல்தான் வரவேற்று பேசினார். பொறியாளர்கள் அமைப்பு தலைவர் மரிய மைக்கேல்ராஜ் கருத்தரங்கின் மையக்கருத்து பற்றி பேசினார். தூத்துக்குடி அனல்மின் நிலைய முன்னாள் தலைமை பொறியாளர் செல்வராஜ் தொடக்க உரையாற்றினார்.

பின்னர் மதியம் 'யுனிசெக்' இந்தியா நிறுவனத்தின் சார்பில், 'சிறிய செயற்கைக் கோள்கள்–பெரிய பயன்பாடுகள்' என்ற தலைப்பில் கருத்தரங்கு நடந்தது. கல்லூரி முதல்வர் வைஸ்லின் ஜிஜி வரவேற்று பேசினார். சிறிய செயற்கைக் கோள்களின் பயன்பாடுகள் குறித்து 'யுனிசெக்' இந்தியா நிறுவன பொதுச்செயலாளரும், என்.எச்.சி.இ. அமைப்பு தலைவருமான கோபாலகிருஷ்ணன் விளக்கி கூறினார்.

இந்த கருத்தரங்கு மாணவர்கள், பேராசிரியர்களின் ஆராய்ச்சி திறனை மேம்படுத்தி கொள்ள உறுதுணையாக இருந்தது. ஐ.இ.ஐ. நூற்றாண்டின் புதுமை கண்டுபிடிப்புகளுக்கான இளம் ஆராய்ச்சி பொறியாளர் குழு விருதினை நியூ ஹரிசன் ஸ்டூடன்ட் சேட்டிலைட் குழுவுக்கு வழங்கப்பட்டது. கருத்தரங்கில் பங்கேற்றவர்களுக்கு சான்றிதழ் வழங்கப்பட்டது. பேராசிரியர் சிவனணைந்த பெருமாள் நன்றி கூறினார்.

ITCA Team Received IEI-NDRF Young Research Engineer Award

100 Years Old Institution of Engineers (India) **Centenary Innovation Award** has been presented to **Young Research Engineers' Team of ITCA/NHCE, Bangalore** during the National Seminar on New Space: Small Satellites-Big Applications held on 06 March 2020 at Dr. Sivanthi Aditanar College of Engineering, Tiruchendur, Tamilnadu. ITCA-NHCE R&D Team has demonstrated the Deployment of CanSats using OctoCopter designed and developed by them during the event and motivated Students and faculty members!

Ref: https://www.dailythanthi.com/News/Districts/2020/03/06221906/Seminar-at-Dr-Sivanthi-Adityanar-College-of-Engineering.vpf

தினமலர்
உண்மையின் உரைகல்

08 March 2020, Madurai Edition of Dinamalar, Tamil Daily

பதிவு செய்த நாள்: 08 மார்ச் 2020, 04:24

மதுரை தியாகராஜர் பொறியியல் கல்லூரியில் விண்வெளி தொழில் நுட்ப ஆராய்ச்சி மைய கிளை துவக்க விழாவில் ஆளில்லா விமான மாதிரி செயல்பாடுகள் குறித்து மாணவர்களுக்கு செயல் விளக்கம் அளிக்கப்பட்டது.

புதிய தொழில்நுட்பங்களை மாணவர்கள் கற்க வேண்டும்

விஞ்ஞானி மயில்சாமி அண்ணாதுரை அறிவுரை

திருப்பரங்குன்றம் : "பொறியியல் மாணவர்கள் புதிய தொழில் நுட்பங்களை கற்றுக் கொள்ள வேண்டும்" என விஞ்ஞானி மயில்சாமி அண்ணாதுரை பேசினார்.மதுரை தியாகராஜர் பொறியியல் கல்லூரியில் விண்வெளி தொழில் நுட்ப ஆராய்ச்சி மையம்(யுனிசெக்) கிளை துவக்க விழா நடந்தது. முதல்வர் அபய்குமார் தலைமைவகித்தார். விஞ்ஞானி மயில்சாமி அண்ணாதுரை பேசியதாவது: பட்டம் பெறுவது புதிது. ஆனால் பாடத்திட்டங்கள் பழையது. பொறியியல் மாணவர்கள் புதிய தொழில்நுட்பங்களை கற்றுக் கொள்ள வேண்டும். ஆள் இல்லா விமானம்,நீர் மேலாண்மை, புதுப்பிக்கத்தக்க எரிபொருள் உள்ளிட்ட அடுத்த 20 ஆண்டுகளில் உலகிற்கு என்ன தேவையோ அந்த தொழில் நுட்பங்களில் ஆராய்ச்சிகளை மேற்கொள்ள வேண்டும்.அடுத்தவர்கள் செய்தவற்றை பின்தொடராதீர்கள். புதியவற்றை கண்டுபிடியுங்கள். நீங்கள் கண்டுபிடிக்கும் புதிய தொழில் நுட்பங்களால் கடைக்கோடி மனிதனின் வாழ்க்கை தரத்தை உயர்த்துவதாக அமைய வேண்டும்.ஒவ்வொரு மாணவரும் செயற்கைகோள் தொழில்நுட்பங்களை கட்டாயம்தெரிந்து கொள்ள வேண்டும் என்றார்.யுனிசெக் இந்தியா பொதுச்செயலாளர் கோபாலகிருஷ்ணன், ஜி.டி.ஆர்.இ., விஞ்ஞானி டில்லிபாபு பேசினர்.ஆளில்லா விமான மாதிரியின் செயல்பாடுகள் குறித்து மாணவர்களுக்கு செயல் விளக்கமளிக்கப்பட்டது.

07 March 2020: Madurai Thiagarajar College of Engineering (Founded 1957). Inauguration of UNISEC-INDIA Chapter and Demonstration of "Near Space Launch of CanSats" Using "OctoCopter" by "ITCA" Students' Satellites Team" which has received IEI Centenary Young Research Engineers Team Award! Under the Guidance of ***Padmashri Dr. Mylswamy Annadurai****, Former Director, ISRO Satellite Centre and Project Director, Chandrayaan 1 & 2 and Mangalyaan (Mars Orbiter Mission)-MOM! Dr. V. Dillibabu, Scientist, GTRE-DRDO, Director, National Design and Research Forum is addressing. Dr. K. Gopalakrishnan, Secretary General, ITCA looks on.*

தினமணி
www.dinamani.com

01 August 2019, Bangalore Edition of Dinamani, Tamil Daily Published by The Indian Express Group

பெங்களூரில் தேசிய வடிவமைப்பு ஆராய்ச்சி நூல் நிலையம் திறப்பு

பெங்களூரு, ஜூலை 31: பெங்களூரில் தேசிய வடிவமைப்பு ஆராய்ச்சி மையத்தின் நூல்நிலையம் திறக்கப்பட்டது.

பெங்களூரு அம்பேத்கர் வீதியில் உள்ள இந்திய பொறியாளர் மையத்தின்(ஐஐஇ) அங்கமாக விளங்கும் தேசிய வடிவமைப்பு ஆராய்ச்சி மையத்தின்(என்.டி.ஆர்.எஃப்) தலைமை அலுவலகத்தில் உயர் தொழில்நுட்ப நூல் நிலையம் அமைக்கப் பட்டுள்ளது.

புதன்கிழமை நடைபெற்ற விழாவில் நூல் நிலையத்தை என்.டி.ஆர்.எஃப். மையத்தின் தலைவரும், விஞ்ஞானியுமான மயில் சாமி அண்ணாதுரை திறந்து வைத்தார். நிகழ்ச்சியில் என்.டி.ஆர்.எஃப். மையத்தின் இயக்குநரும், டி.ஆர்.டி.ஓ. விஞ்ஞானியுமான வி.டில்லிபாபு, இந்திய பொறியாளர்கள் அமைப்பின் செயற்குழு உறுப்பினர் கோபால கிருஷ்ணன் மற்றும் மையத்தின் உறுப்பினர்கள் பங்கேற்றனர். இந்த நூல் நிலையம் காலை 11 மணி முதல் மாலை 6 மணி வரை திறந்திருக்கும்.

பெங்களூரில் புதன்கிழமை நடைபெற்ற விழாவில் தேசிய வடிவமைப்பு ஆராய்ச்சி மையத்தின்(என்.டி.ஆர்.எஃப்) நூல் நிலையத்தை திறந்துவைக்கிறார் அதன் தலைவரும், விஞ்ஞானியுமான மயில்சாமி அண்ணாதுரை. உடன், என்.டி.ஆர்.எஃப். மையத்தின் இயக்குநரும், டி.ஆர்டிஓ விஞ்ஞானியுமான வி.டில்லிபாபு, இந்திய பொறியாளர்கள் அமைப்பின் செயற்குழு உறுப்பினர் கோபால கிருஷ்ணன்.

இதுகுறித்து வி.டில்லிபாபு கூறியது: தேசிய வடிவமைப்பு மற்றும் ஆராய்ச்சி மையம்(என்.டி.ஆர்.எஃப்), எதிர்கால தொழில் நுட்பங்கள், வளர்ந்து வரும் பொறியியல் துறைகள் சார்ந்த நூல்களை வெளியிட்டு இந்தியாவில் பொறியியல்-தொழில்நுட்ப பரவலுக்கு வழி செய்கிறது. செயற்கைக்கோள்கள், முப்பரிமாண அச்சு, விமான தொழில் நுட்பங்கள், ஆளில்லா விமானங்கள், நானோ தொழில்நுட்பம், உயிரி உணரிகள் உள்ளிட்ட துறைகளைச் சார்ந்த நூல்கள் என்.டி.ஆர்.எஃப் மையத்தால் வெளியிடப்பட்டுள்ளன.

இதை துறை சார்ந்தவர்கள் பயன்படுத்திக் கொள்ள நூல் நிலையம் திறக்கப்பட்டுள்ளது. இது பொறியாளர்களுக்கு மிகவும் பயனுள்ளதாக அமையும் என்றார்.

Inauguration of Research Resource Centre at National Design and Research Forum (NDRF) at Bangalore

Research Resource Centre at National Design and Research Forum (NDRF) at Bangalore have been inaugurated by **Padma Shri Dr. Mylswamy Annadurai**, Chairman, NDRF and Former Scientist, Director, ISRO Satellite Centre on 31st July 2019, Wednesday at the premises of the Institution of Engineers (India), Dr. B.R. Ambedkar Veedhi, Bangalore. NDRF Director and Scientist from Gas Turbine Research Establishment, Defence Research and Development Organisation (DRDO), **Dr. V. Dillibabu** and **Dr. K. Gopalakrishnan**, Member of Board of Governors, NDRF, National Council Member of the Institution of Engineers (India) and Secretary General, Indian Technology Congress Association and Convener, 75 Students' Satellites Consortium: Mission 2022 have been felicitated during the event.

Courtesy: ***Dinamani,*** Tamil Daily, Bangalore Edition, the New Indian Express Group of Publications

• సుస్వాగతం

మైసూరు దసరా ఉత్సవాల పిలుపులు గజ పయనాన్ని ముగించుకుని ప్యాలెస్‌కు చేరిన దృశ్యం.

-2లో

సాక్షి 24/7 కర్ణాటక

గురువారం 6-9-2018

ప్రగతికి వరం టెక్నాలజీ మార్గం

- ముఖ్యమంత్రి కుమారస్వామి
- బెంగళూరులో ఇండియన్ టెక్నాలజీ కాంగ్రెస్ ప్రారంభం
- తరలివచ్చిన దేశ విదేశీ ప్రతినిధులు, శాస్త్రవేత్తలు
- శాస్త్ర, సాంకేతిక రంగాలకు సహకరిస్తామన్న సీఎం

ఐటీసీ స్మారక సంచికతో సీఎం కుమారస్వామి, మురళీకృష్ణారెడ్డి తదితరులు

ప్లాట్స్‌లో ఆధునిక విమానాల నమూనాలను ఆసక్తిగా తిలకిస్తున్న విద్యార్థులు

- మిగతా 2లో

కొత్త ఆవిష్కరణలు అవసరం: మురళీకృష్ణారెడ్డి

అతివేగం.. అనర్థం

బెంగళూరు దేవనహళ్లి రోడ్డులో ప్రమాదంలో ధ్వంసమైన కారు

- దేవనహళ్లి వద్ద జనప కట్టెల లారీని వెనుకనుంచి ఢీకొన్న కారు
- ముగ్గురు యువకులు మృతి
- తుమకూరు జిల్లాలో మరో విషాదం
- నలుగురు మృత్యువాత

ఒకేరోజు రెండు ప్రమాదాలు ఏడుగురు యువకుల నిండు ప్రాణాలను బలిగొన్నాయి. అతివేగం ఈ విషాదాలకు కారణమైంది. దేవనహళ్లి వద్ద జరిగిన యాక్సిడెంట్‌లో ముగ్గురు విద్యార్థులు, తుమకూరు జిల్లాలో మరో దుర్ఘటనలో నలుగురు అసువులు బాశారు. మరో నలుగురు తీవ్రంగా గాయపడ్డారు.

2లో

అనుమతులన్నీ ఆన్‌లైన్‌లో

ఇల్లు కట్టుకోవాలి, కొనాలి, కరెంటు కనెక్షన్లు కావాలి, అన్నిపన్ను చెల్లించాలి, పట్టా మార్పు చేయాలి.. ఇలా ఏ పనైనా ఆన్‌లైన్‌లో దరఖాస్తు చేసి పూర్తి చేసుకొనే రోజులు రాబోతున్నాయి. ఇప్పటివరకు కాగిత దరఖాస్తులు ఇవ్వడం, దాని వెనుక లంచాలు, జాప్యం, కొర్రీలు వంటి సమస్యలు ఆన్‌లైన్ విధానంలో ఉండబోవని ఆశించాలి.

- బీబీఎంపీ సహా అన్ని పాలికెల్లో సన్నాహాలు

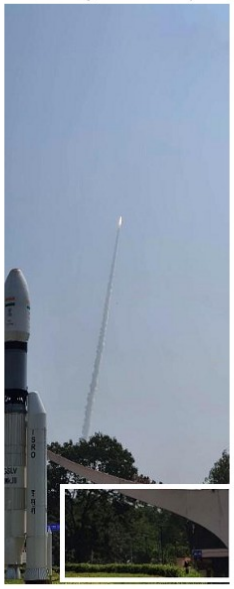
ఒక్క క్లిక్‌తో సమస్తం

- మిగతా 2లో

Indian Technology Congress 2018 (ITC 2018) held at NIMHANS Convention Centre during 05-05 September 2018. ITCA has hosted First International Conference on Small Satellites during ITC 2018! Compendium of Students' Satellites of ITCA has been Published by World Federation of Engineering Organisations-CIC and Released by CM of Karnataka. Indo-Israel Collaborations on Students' Satellites has been Finalised during the Event.

UNITYSat MISSION MEDIA COMPILATION – PSLV C-51 LAUNCH, SHAR

UNITYsat Team Meeting with Chairman **Dr. K. Sivan**, Secretary, Department of Space (DOS), Indian Space Research Organisation (ISRO) @ Sathish Dhawan Space Centre SDSC – SHAR, Sriharikota post launch of ISRO's PSLV C51



Launch of PSLV C-51

UNITYSat Core team @ SDSC – SHAR, Spaceport of India, Sriharikota

Felicitation of Dr. K Sivan, Chairman, ISRO by TSC Core Team and Directors of JIT, GHRCE and SIET Institutions

UNITYSat MISSION MEDIA COMPILATION – PSLV C-51 LAUNCH, SHAR

Post Launch Event

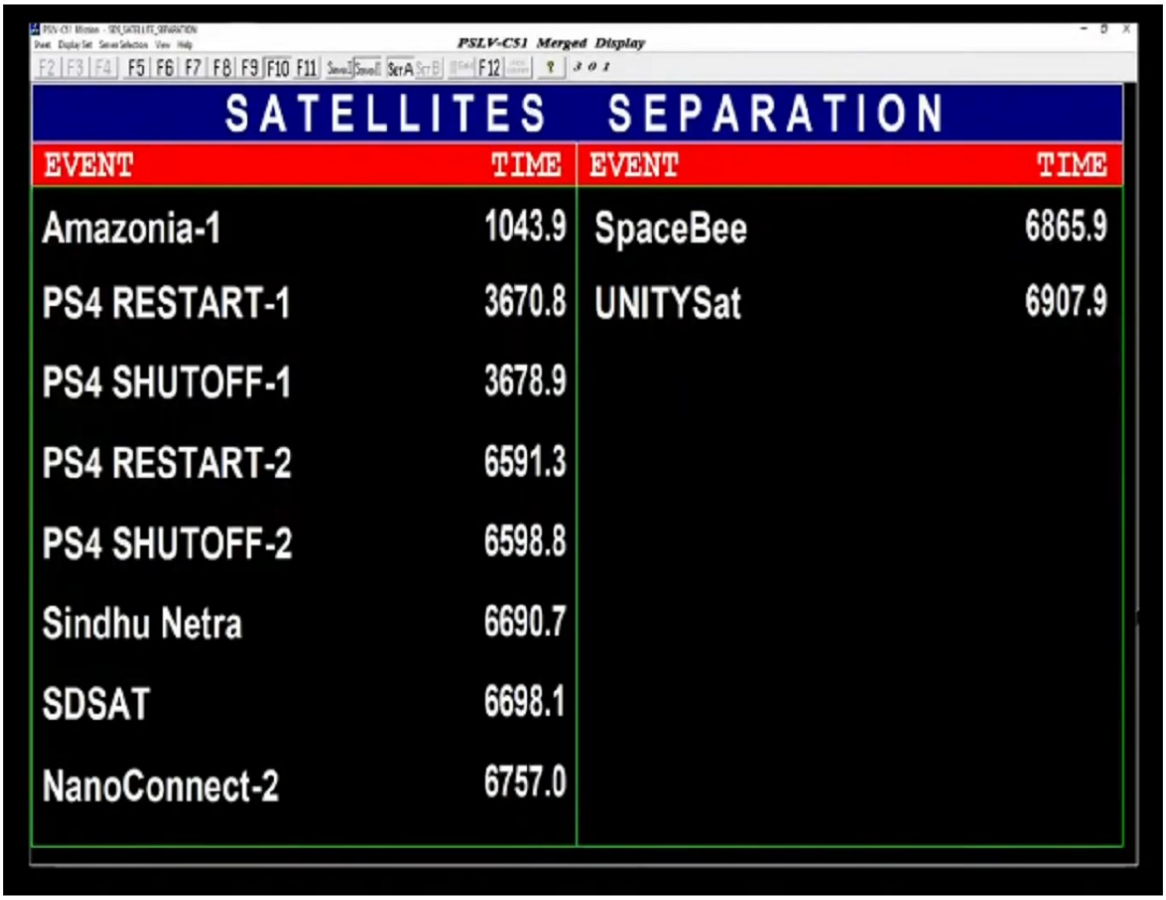
Presented the shawl of honour to Dr. K. Sivan, Chairman ISRO an congratulated him on the success of PSLV-C51 mission

UNITYsat Team Meeting with Chairman **Dr. K. Sivan**, Secretary, Department of Space (DOS), Indian Space Research Organisation (ISRO) @ Sathish Dhawan Space Centre SDSC – SHAR, Sriharikota post launch of ISRO's PSLV C51

Revealed UNITYSat Stamps for circulation as a commemoration souvenir

UNITYSat MISSION MEDIA COMPILATION – PSLV C-51 LAUNCH, SHAR

PSLV C-51 Satellites Separation Confirmation Screen



UNITYSats' Deployment confirmed!

3rd International Seminar on Students' Satellites: Mission 2022, Bangalore, INDIA

L to R: **Dr K Gopalakrishnan**, Council Member, IEI, Dr Ashok Dalwai, CEO- National Rainfed Area Authority, GoI, **Ms Dana Kursh**, Consul General of Israel, **Dr Wooday P Krishna,** National President, IIPE, **Dr Ashwath Narayan C N,** Hon'ble Deputy Chief Minister and Minister for Higher Education, IT&BT, Science and Technology, Government of Karnataka, **Dr LV Muralikrishna Reddy,** Chairman, ITCA, **Brig Gen (res) Prof. Chaim Eshed,** Co-Founder, Israel Space Agency, Israel, **Dr P V Venkitakrishnan,** Director - Capacity Building Programme Office, Indian Space Research Organisation (ISRO), Padma Shri **Prof RM Vasagam,** Eminent Scientist, ISRO, Former VC, Anna University.

04-05 September 2019, Indian Technology Congress 2019: NIMHANS Convention Centre, Portion of the Gathering!

New Space Era: Small Satellites-Big Applications
Compiled by TSC Team! Published by UNISEC India and ITCA

New Space Era

Small Satellites
Big Applications

Published by
University Space Engineering Consortium-India

TSC Team has Compiled the above Book: L to R: Hariraj, Ashwin, Sainath, Shyam, Sanketh, Bhavana, Denzel, Nikhil, Athira, and Mithun
Released by **Dr Ashwath Narayan C N**, Hon'ble Deputy CM, Karnataka and **Brig Gen (res) Prof. Chaim Eshed**, Co-Founder, Israel Space Agency

TSC R&D Team with Russian Astronaut at Samara University, Russia

TSC R&D Team at Tel Aviv University, Israel

Sanketh, Hariraj, Nikhil, Vishwa and Denzel at Tel Aviv University, Israel
as part of Indo-Israel Space Tech Leadership Programme

Academic Delegation Including ITCA/IEI President Visited Russia with Hon'ble President of India Shri. Pranab Mukherjee

L to R Sitting: Shri. Manoj Sinha, Minister of State, Railways, Hon'ble President of India Shri. Pranab Mukherjee and Shri. P. S. Raghavan, Ambassador of India to the Russian Federation
L to R Standing: Prof. Bimal K. Roy, Director, Indian Statistical Institute, Dr. K. Gopalakrishnan, Secretary General, ITCA and Chairman, R&D-IEI, Mr. A. Basa, Immediate Past President, IEI, Mr. S. S. Rathore, Past President, IEI, Prof. R. K. Shevgaonkar, Director, IIT Delhi, Dr. L. V. Muralikrishna Reddy, President, IEI and ITCA, Mr. Satyanarayan Mohanty, MHRD Secretary, Prof. Dinesh Singh, Vice Chancellor, University of Delhi, Dr. Jayant B. Udgaonkar, National Centre for Biological Sciences, Prof. Devang Khakhar, Director, IIT Bombay and Prof. Bhaskar Ramamurthi, Director, IIT Madras *(not seen)*

President of India: Academic Delegation: May 2015 @ Russia

President of India: Academic Delegation during May 2015: Dr. K. Gopalakrishnan, Chairman, R&D-IEI along with other delegates from India!

Moscow State University, Russia

Indo-Russian Technovation Delegation 2015 of National Design & Research Forum of the Institution of Engineers (India) led by Dr. L. V. Muralikrishna Reddy, President, IEI before the Moscow State University in Moscow on 23-2-2015. ***L-R:*** Dr. T. V. Govinda Raju, Dr. Arvind Kulkarni, Dr. Enti Ranga Reddy, Dr. K. Brahma Raju, Dr. L. V. Muralikrishna Reddy, Dr. Wooday P. Krishna, Er. Appi Reddy, Dr. K. Gopalakrishnan and Er. Narasaraju.

INDO-ISRAEL COLLABORATIONS: Genesis of 75 Students' Satellites

ITCA Team at the **Israeli Parliament "Knesset"** on Wednesday, 06 June 2018

INDO-ISRAEL COLLABORATIONS: Genesis of 75 Students' Satellites

Indian Technology Congress Association (ITCA) Delegation led by its President, **Dr. L. V. Muralikrishna Reddy, Dr. K. Gopalakrishnan, Secretary General, ITCA, Mr. Milind, Dr. Enti Ranga Reddy and Dr. Wooday P Krishna** had a meeting with **Mr. Ofir Akunis, Israel's Minister of Science, Technology and Space** at the **Israeli Parliament "Knesset"** on Wednesday, 06 June 2018. Collaboration and Joint pursuit in the areas of capacity building for futuristic requirements and small satellites and space applications ecosystem were discussed during the meeting.

Indo-Israel Space Tech Leadership Award

CERTIFICATE OF AWARD

Presented to

Dr. K. Gopalakrishnan

Dean (R&D), New Horizon College of Engineering, Bangalore, India

for his successful role played during

Indo-Israel Space-Tech Leadership Programme

Brig. Gen. Prof. Chaim Eshed
Chairman
Israeli National Space Council

Dr. Meir Ariel
Director, Herzliya Science Center
Director, NanoSat Center, The Tel Aviv University

Dr. L.V. Muralikrishna Reddy
President
Indian Technology Congress Association

Akiba Penkar
Director
TMISAT

INDIAN TECHNOLOGY CONGRESS

75 Students' Satellites: Mission 2022

UNISEC GLOBAL
University Space Engineering Consortium

University Space Engineering Consortium (UNISEC)
Global Head Quarters, Japan

7th UNISEC Global Meeting
held at
The University of Tokyo,
Institute for Open Innovation

30 November-05 December 2019 at Koshiba Hall, Hongo Campus, the University of Tokyo, Tokyo, JAPAN

Award of Appreciation

Presented to

Indian Technology Congress Association
BANGALORE
INDIA

For having vibrant activities related to Small Satellites, involving Students and Academic Institutions under the banner of UNISEC India in the areas of NanoSats, CanSats and CubeSats.

REI KAWASHIMA
Secretary General, UNISEC Global, JAPAN

2019, JAPAN

75 Student Satellites' Mission 2022

Supporting and Co-Hosting Organizations

UNISEC INDIA

Partnering Institutions

SRM · Karunya · NITTE · REVA UNIVERSITY · KALASALINGAM · NEW HORIZON · PERIYAR MANIAMMAI · JEPPIAAR

TMIsat · IEEE · Indian Technology Congress Association

Indian Technology Congress Association (ITCA)
Delegation to
Israel
11-14 February 2019

ITCA's National Programme for the development of 75 Student satellites is to commemorate India's Independence during 2022. To strengthen the mentoring process and inspire confidence for the partnering institutions, ITCA has built a profound and wide-ranging network of leading international experts who would support the institutions during various phases of the satellite development life-cycle. The process of creating the framework for achieving the mission objectives by the partnering Institutions of developing, launching and deploying satellites into orbit by their teams is progressing well with International space-tech organisations including Israeli institutions.

The scope of the exploratory visits is to adopt best practices for building the credence of Indian Academia that the student satellite development initiatives can be successful and protect the investments made by stakeholders. This inter-disciplinary programme would also help to build global alliances for knowledge-based institutions to establish linkages with best-of-class international institutions and organisations. The blended study visits will as well augment Indian Academia's research and development facilities precisely in space-tech by attracting Israeli diaspora of institutional enterprises.

ISRAEL 70

A program to develop and launch into space! 70 satellites by 70 high-schools! Celebrating 70 years of ISRAEL's Independence!

Interaction with "Israel 70" (70 Students Satellites Launch Programme Team) headed by **Dr.Meir Ariel,** Director, The Herzliya Science Centre and **Brig. Gen. (Res.) Abraham (Avi) Bachar**, Founder & CEO IsraTeam 98 LTD, The Israeli Homeland Security Team, Professional Crisis Management, Israel.

Program "Israel 70" will be the most advanced space project combining science and education, having a tremendous impact on the Israeli education system, academia and industry and contribute to the scientific and technological prestige of the State of Israel with support of Israel Space Agency and Ministry of Science, Technology and Space, Government of Israel. "Israel 70" is a program for developing, building, and launching into space 70 satellites, celebrating 70 years Israel's Independence. The satellites will be built by 70 high schools and by seven Israeli universities.

The satellites will form a formation flight that will cover the face of the planet and will be able to stay and function in space for several years. The formation of satellites will be capable of uploading algorithms from the ground and will serve as a platform for scientific experiments and the development and testing of future technologies. The satellites will be controlled and commanded by ground control stations to be set up in schools and universities throughout Israel, but in addition also "talk" to each other and act as a single intelligent and complex being that continues to learn and develop after launch.

The budget of the entire program is estimated at **$25 million (Rs.170 Crores)** and includes four main components: satellite hardware, ground equipment, launch and manpower (expert scientists and engineers). Budget is based on the assumption of a 36-month long program and does not include the cost of employing teachers, lecturers or local teaching staff in schools and universities. The core team is open for Indian involvement and expressed their interest to collaborate with us. Indian Technology Congress Association (ITCA) as a consortium will facilitate interactions with interested Institutions/Students in Bangalore/India and The Herzliya Science Centre, Israel.

Dr. K. Gopalakrishnan, Secretary General, ITCA with Mock-up of Nano Satellite built by School Students. Right Side Photo: Indian Delegation with Dr.Meir Ariel, Director, The Herzliya Science Centre and Brig. Gen. (Res.) Abraham (Avi) Bachar, Founder & CEO IsraTeam 98 Ltd along with Students of Satellite Team who built Nano Satellite.

Supporting Agencies:

1. Indian Space research Organization , ISRO
2. Israel Space Agency and Israel Aerospace Industry
3. French National Space Research Center, CNES
4. NASA - National Aeronautics and Space Administration *(Israel will help)*
5. European Space Agency, ESA *(Israel will help)*
6. German Space Agency, DLR *(Israel will help)*
7. Italian Space Agency, ASI *(Approaching through Known Sources/ISISpace)*
8. Canadian Space Agency, CSA *(Approaching through Known Sources/ISISpace)*
9. Japan Aerospace Research Agency, JAXA *(Approaching through Known Sources/ISISpace)*
10. Mexican Space Agency, AEM *(Approaching through Known Sources/ISISpace)*
11. United Nations Space Office – UNOOSA *(Israel will help)*
12. Innovative Solutions in Space (ISISpace), Netherlands

Funding Agencies:

Banking/Non Banking Institutions from Israel and/or Self Supporting by Host Institutions

ITCA-UNITYsat Team has Won Award at IBM Event at IIT Madras Research Park

ITCA-UNITYsat Team Students (18) have participated in IBM Watson IoT & Power AI Developer Conference held at IIT Madras Research Park, Chennai on 03 Nov 2017. ITCA Team has received Most Innovative Team Award for Poster Design Completion for "Future of AI". Dr. K. Gopalakrishnan, Secretary General, ITCA and Mentor of NHCE Team at IIT Madras Research Park, Chennai.

12 Member ITCA UNITYsat Team of NHCE has Received IEI-NDRF Young Research Engineers' Team Awards

Indo-Serbia Collaborations: Looking for Stronger Ties!

COMMITTEE FOR SPACE PROGRAMME DEVELOPMENT

Комитет за развој свемирског програма
Република Србија
21000 Нови Сад
МБ: 28104294
2comnet.info/komsat/sr/

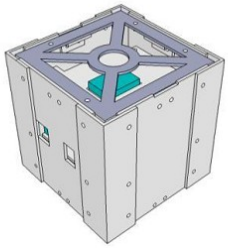
Committee for Space Programme Development
Republic of Serbia
21000 Novi Sad
IDN: 28104294
2comnet.info/komsat/en/

INDIAN TECHNOLOGY CONGRESS ASSOCIATION (ITCA)

Indian Technology Congress Association

L to R: *Dr. K. Gopalakrishnan, Dean R&D, NHCE, Dr. M S Ganesh Prasad, Dean, Mechanical Department, NHCE, Dr. B Rajalakshmi, HoD, CSE Department, NHCE, Dr. Prashant CSR, Dean-Academics, NHCE, Dr. Manjunatha, Principal, NHCE, Dr. A S Deshpande, Registrar, Visvesvaraya Technological University, Belgavi, Mr. Dušan Radosavljević, Head, Committee for Space Programme Development, Republic of Serbia, Prof. Santoni Fabio, University of Rome, Italy, Mr. Carl Broadridge, Technology Service Center Lead, India, ANZ, Mr. Sourav N Bisvas, Senior Manager, Capgemini, Prof. Gurucharan Singh, Executive Driector, Training & Placements, Mr. Prabhakar Sitaram Puranik, President- Global Products Business, JMR Infotech and Ms. NOEMI GILL, Co-founder, Progen, Spain*

Collaboration for Testing and Launching of CSPD Sat of Serbia in India



CSPDsat-1
[1U CubeSat Small Spacecraft of Serbia]

Collaboration for Conducting Capacity Building CanSat Workshops in Eastern Europe along with CSPD Organizing Continental and Global CanSat/Rocketry Competitions 2020/2021 at Serbia
Students' Exchange/Higher Education/Joint Development of Satellites for Former Yugoslavia! Regions

Israeli high-school students launch nano-satellite into space

'This is Israeli pride for the future generation, and an opportunity to increase public awareness about space.'

By Viva Sarah Press APRIL 23, 2017, 8:00 AM

Duchifat-2 nano-satellite, built by Israeli teenagers. Photo by Roei Greenberg

A nano-satellite built by Israeli high school students was launched to the International Space Station on April 18. Named for Israel's national bird, the Duchifat-2 (in English, Hoopoe-2) nano-satellite was one of 28 student-built nano-satellites sent into space, to be released from the space station in about six weeks' time..... Israel has built itself an impressive reputation as a developer of the latest satellite technologies. The country holds prominence in the field of nano-satellites and micro-satellites.

According to the **Israel Space Agency (ISA)**, the country's engineers and scientists are considered world leaders in "miniaturizing the technology and developing small, light satellites with high resolution, remote sensing and communication capabilities" as well as specializing in "the development of technologies for miniature satellites and methods for launching them."……

The **Herzliya Science Center** is now working on an even more ambitious national project that will include the planning, programming, construction and launch of **70 CubeSats by 70 High Schools** in **Israel, to celebrate the 70th birthday of Israel in 2018!**

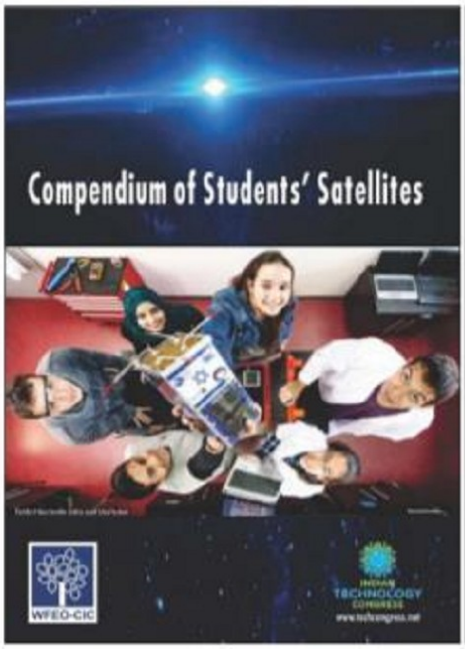
Compendium of Students Satellites, Compiled by ITCA-UNITYsat Team @ ITC 2018
Published by WFEO and Released by CM of Karnataka

Compendium of Students Satellites, Compiled by UNITYsat Team @ ITC 2018, Bangalore, Published by World Federation of Engineering Organization (WFEO)-CIC and Indian Technology Congress Association has been Released by Hon'ble Chief Minister of Karnataka, Shri .H.D. Kumaraswamy today (05 Sept) at NIMHANS Convention Centre, Bangalore during the Inaugural Function of Indian Technology Congress 2018 and International Seminar on Students Satellites!

Compendium of Students Satellites, Compiled by UNITYsat Team, Published by World Federation of Engineering Organization (WFEO)-CIC and Indian Technology Congress Association has been Released by Hon'ble Chief Minister of Karnataka.

World Federation of Engineering Organizations (WFEO)
Indian Technology Congress Association (ITCA)

AWARD OF APPRECIATION AND HONOURS




MESSAGE

WFEO-CIC

Published by World Federation of Engineering Organisations (WFEO) and Indian Technology Congress Association (ITCA), Edited by Dr. K. Gopalakrishnan, Compiled by NHCE Students and Released by Hon'ble CM of Karnataka on 05 September 2018 at NIMHANS Convention Centre, Bangalore (ISBN: 978-93-84893-88-0). The Editor and Students were Awarded with Appreciations and Honours!

INDIAN
TECHNOLOGY
CONGRESS

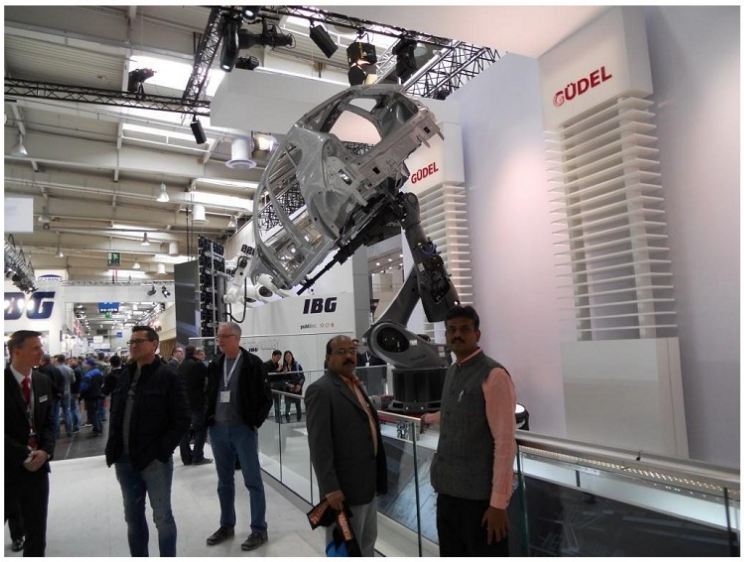
Dr. L.V.MURALIKRISHNA REDDY
President, ITCA
05 September 2018

WFEO-CIC

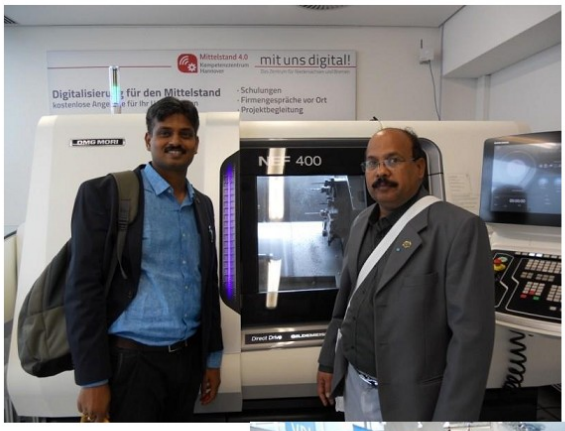
Peoples Friendship University, Moscow, Russia

Dr. K. Gopalakrishnan, Secretary General, ITCA has been invited (July 09-13) as Jury Member and Speaker at Global Industrial Design Forum of International Trade Fair 2017 held at Ekatherineburg, Russia with Japan as Partner Country

ITCA Team Visited Hannover Trade Fair at Germany

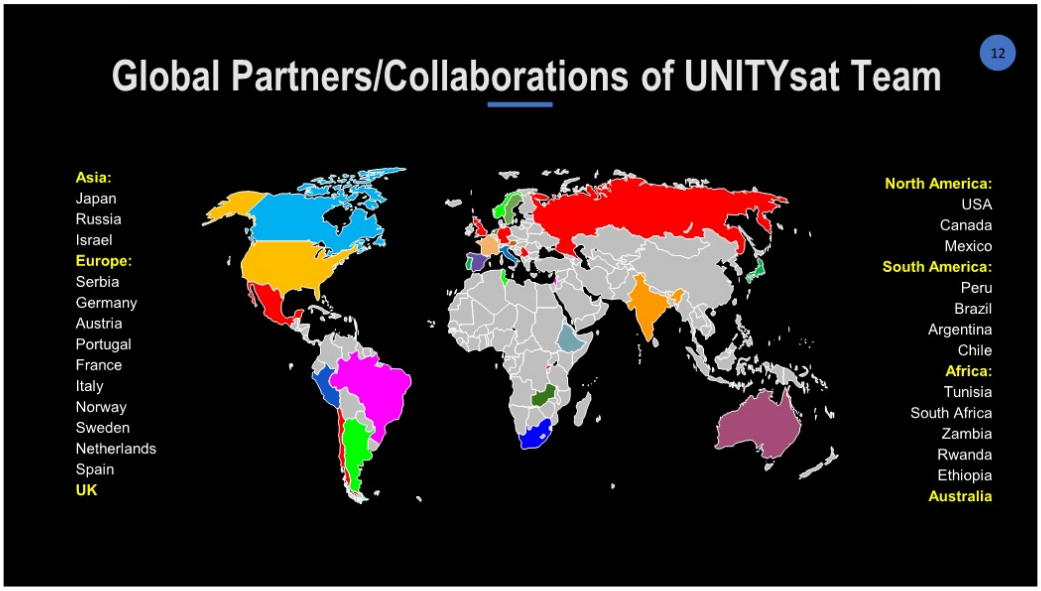


ITCA Team Visited Hannover Trade Fair at Germany



ITCA Team Visited Hannover Trade Fair at Germany

Global Networking/Exposures of ITCA-UNITYsat Team



Global Exposures of ITCA-UNITYsat Team

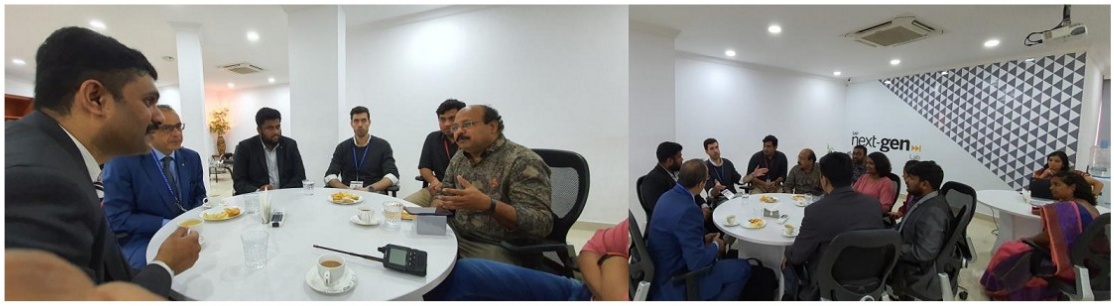
- *Attended Samara University International Summer School at Samara National Research University, Russia (Made World's 1st Satellite "Sputnik" and Pioneer in Space Research; Also have sent World's 1st Cosmonaut to Space)*
- *Core Team Members have been Trained at International Space University, Strausberg, France*
- *Participated Trained at Indo-Israel Space Tech Leadership Programme at Tel Aviv University, Israel and COSPAR/UNOOSA*
- *Core Team Members have been Trained at Tokyo University, Japan*
- *Core Team Members have been Trained at Sapienza/Rome University, Rome, Italy and Portugal*
- *Indo-Israel, Indo-Serbia, Indo-Russia, Indo-Japan, Indo-Italy, Indo-Germany, Indo-Portugal, Indo-Canada*
- *UCAL-USA, Samara-Russia, Skoltech-Moscow, Russia, ISU, France, Tokyo University, Japan, Tel Aviv University & Teknion, Israel, COSPAR/ UNOOSA, Israel, IBM OpenPOWER Foundation, IIT Kanpur etc.*

UNITYsat Team @ International Space University, Strasburg, France

UNISEC India was Approved during 6th Global Meeting of UNISEC at Strasburg, France.

UNITYsat Team was Instrumental for establishing University Space Engineering Consortium-India Chapter

ITCA Indo-Serbia Interactions



Interaction on Organizing Global CanSat/Rocketry Competition 2021 and Continental Competitions 2020 with Prof. Javeed Ahmed Khan, Canada, Mr. Dušan Radosavljević, Head, CSPD, Serbia, Prof. Santoni Fabio, University of Rome, Italy, Dr. K. Gopalakrishnan and his Students' Satellites Team at NHCE, Bangalore, India on 21 Dec 2019

Sponsored and Supported by ITCA

Report on Activities of UNISEC India

(For the Period: September 2018 to November 2019)

Preamble:

During the preparation (August 2018) for the 1st International Seminar on Students' Satellites to be held along with 6th Indian Technology Congress at NIMHANS Convention Centre at Bangalore on 5-6 September 2018, ***Ms. Rei Kawashima,*** *Secretary General, UNISEC Global, Japan has been in touch with the Organizing Committee and introduced the Single Point of Contact for India (SPOC),* ***Dr. G. P. Ganapathy*** *who have initiated the process of establishment of* ***UNISEC India Chapter.***

Major Events:

a) UNISEC Global has actively participated in the 1st International Seminar on Students' Satellites as one of the Invited Agency, represented by SPOC, **Dr. G. P. Ganapathy** during the **Inaugural Session** and highlighted the various activities of UNISEC Global and other Satellites Projects supported by UNISEC.

b) **Ms. Rei Kawashima** has sent her recorded Video Presentation which has been screened during the event. The active support and services of UNISEC has been recognized during the event and logo of UNISEC has been displayed in all print materials and event display backdrops etc.

c) UNISEC has supported the publication of **"Compendium of Students, Satellites"** which has been published by Indian Technology Congress Association (ITCA) in association with World Federation of Engineering Organisations (WFEO) and BRICS Federation of Engineering Organisations (BRICS FEO). The Compendium has been released by **Honorable Chief Minister of Karnataka State**, India, **Mr. H. D. Kumaraswamy** during the Inaugural Session of 6th Indian Technology Congress held on 5 September 2018 at Bangalore, India.

d) **Competition for Designing Innovative Payload for Students' Satellites** has been Organized.

e) During the two days of Seminar the initiative for establishing **"UNISEC India Chapter"** has been completed with the support of the President, ITCA, **Dr. L. V. Muralikrishna Reddy** and he has provided necessary support to house the Secretariat at his office.

f) **UNISEC India Chapter** has been formally established on **18th October 2018** and communicated by **Ms. Rei Kawashima,** Secretary General, UNISEC Global, Japan.

g) The following Local Chapters/Institutional Chapters have been Established:

1. *New Horizon College of Engineering, Visvesvaraya Technical University, Bangalore, Karnataka*
2. *Bangalore University, Bangalore, Karnataka*
3. *REVA University, Bangalore, Karnataka*
4. *VIT University, Vellore, Tamil Nadu*
5. *SRM University, Chennai, Tamil Nadu*
6. *Dr.MGR University, Chennai, Tamil Nadu*
7. *Saveetha Engineering College, Saveetha University, Chennai, Tamil Nadu*
8. *Karpagam University, Coimbatore, Tamil Nadu*
9. *Kalasalingam University, Krishnankoil, Tamil Nadu*
10. *Thiagarajar College of Engineering, Madurai, Anna University, Tamil Nadu*
11. *S. V. National Institute of Technology, Surat, Gujarat*
12. *SRKR Engineering College, Bhimavaram, JN Technical University, Kakinada, Andhra Pradesh*
13. *Andhra University, Visakhapatnam, Andhra Pradesh*
14. *Indian Institute of Technology-Kanpur, Uttar Pradesh*

(The Core Committee is in the process of evolving suitable federal arrangements considering the largest number of Universities/Engineering Educational Institutions (EEIs) in India. According to the HRD Ministry, India has 6,214 engineering and technology institutions which are enrolling 2.9 million students. Around 1.5 million engineers are being graduated every year in India from 900 Degree Awarding Universities/Institutions)

h) **UNISEC India** has been actively involved in the process of Organizing **2nd International Programme on Students' Satellite: Mission 2022** *(Link to http://itca.org.in/satellite).* Universities/Institutions associated with UNISEC India has been given priority in participation during the event.

i) Major Initiatives of UNISEC India: Nano Satellite for Class Room Teaching at University/EEIs
Design and Development of 1U & 2U Functional Engineering Model (Timeline: 9-12 Months)
Design and Development of "Single Card Satellite-Bus (SiCS-B)": 10 cm x10 cm (Timeline: 18 Months)

j) Contact

UNISEC India *(Key Executives/Core Team)*
Mentor: *Padmashri* Prof. R. M. Vasagam (Vasagam@gmail.com)
President: Dr. L. M. Muralikrishna Reddy (mlingireddy@yahoo.com)
Secretary General: Dr. K. Gopalakrishnan (profgoki@yahoo.com)
SPOC: Dr. G. P. Ganapathy (seismogans@yahoo.com)
Students Representative: Mr. Nikhil Riyaz (nikhilryz@gmail.com)

UNISEC India
Secretariat, 4th Floor,
#3, First Main, BDA Layout,
Kodihalli, HAL 2nd Stage,
Bengaluru – 560008, Karnataka, India
Contact Info
+91 80 6559 2501
+91 80 4850 8380
Website: www.unisec-india.in

L to R: Dr.K.Gopalakrishnan *(Secretary General, UNISEC India*), Padma Shri Prof. R.M. Vasagam *(Mentor, UNISEC India*), Dr.W.P.Krishna *(Founder Member, UNISEC India),* Hon'ble CM of Karnataka, Mr. H.D. Kumaraswamy, Dr. L.V. Muralikrishna Reddy *(Founder President, UNISEC India),* Dr. Sanjay Sanchetti *(Founder Member, UNISEC India)* and Mr. P.K. Thiagarajan.

ITCA: First International Seminar on Students' Satellites

Evolution of 75 Students' Satellites Consortium: Mission 2022

ITCA: First International Seminar on Students' Satellites

Inaugurated by Padmashri & Padmabhushan **Dr. B. N. Suresh,** Former Director, Vikram Sarabhai Space Centre, (VSSC), Former Director, Indian Institute of Space Science and Technology and Vikram Sarabhai Distinguished Professor, ISRO HQ.

Dr. G.P.Ganapathy, (SPOC, UNISEC Global and Founder Member, UNISEC India)

Video Presentation of Ms. Rei Kawashima, (Secretary General, UNISEC Global)

ITCA: First International Seminar on Students' Satellites

ITCA: First International Seminar on Students' Satellites

ITCA: First International Seminar on Students' Satellites

1st International Seminar on Students' Satellites *(For More Information and Photo Gallery, Visit to https://drive.google.com/drive/folders/1PISlSWwoPEhXjLxLUikPGtdU7B3oBDMR*

ITCA: First International Seminar on Students' Satellites

INAUGURAL SESSION OF

1st International Seminar on Students' Satellites

during

6th Indian Technology Congress 2018

Technology First: Make India Innovate, Excel Globally and Prosper

Wednesday, 05 September 2018	**14:00 – 15:30 Hrs**

Inauguration and address by Chief Guest

Dr B N Suresh

Padma Bhushan Awardee

Chancellor, Indian Institute of Space Science and Technology (Deemed University)

Former Director, Vikram Sarabhai Space Centre(VSSC)

Vikram Sarabhai Distinguished Professor, ISRO

Keynote Address by

Student Participation in Space Exploration

Shri M S Jayachandran

Scientist/Engineer-G, Group Director -DTG Group SIS / IISU

Associate Programme Director, VSSC, ISRO

University Space Engineering Consortium (UNISEC) - Global Activities and Students Satellite Projects

Dr G P Ganapathy

Professor & Director, Vellore Institute of Technology (Deemed University)

University Space Engineering Consortium (UNISEC)- Single Point of Contact for India

Prof B Dattaguru

Padma Shri Awardee

Former Chairman, Department of Aerospace Engineering, Indian Institute of Science

Presided the Inaugural Session

Wednesday, 05 September 2018	**16:00 – 17:30 Hrs**
Chair	**Dr K R Venugopal** Vice Chancellor, Bangalore University
Speaker	**Theme**
Dr Shaun Whitehead *(VIDEO)* Creationeering/Scoutek Ltd, UK	ThumbSat - the Tiny Satellite that will unlock space for Everyone *(VIDEO Presentation)*
Shri Sudip Kar Co-Founder, D'Vine Research Labs	Quest of 'Space' Based Solutions
Er. Bharatha Raja, Senior Engineer-Satellite Systems, Datta Patterns (I) P Ltd	Small Students Satellites: Role of Industries
Dr Sharan Asundi *(VIDEO)* Assistant Professor, Department of Aerospace Science Engineering at Tuskegee University and Visiting Researcher at NASA Goddard Space Flight Center, USA	Pico/Nano/Micro-Satellite (PNMSat) Program: An Effort to Establish Space Systems Engineering Research and Education Paradigm for Aspiring Engineers *(VIDEO Presentation)*
Ms Rei Kawashima *(VIDEO)* Secretary General, UNISEC Global (University Space Engineering Consortiums), Japan	UNISEC-Indo-Japan Possible Collaborative Initiatives and Prospects for Small Satellites *(VIDEO Presentation)*

ITCA: First International Seminar on Students' Satellites

Thursday, 06 September 2018	**09:30 to 11:00 Hrs**
Chair and Address **Dr Y S Rajan** *Padma Shri Awardee* Honorary Distinguished Professor, Indian Space Research Organization	
Speaker	
Dr Mylswamy Annadurai *Padma Shri Awardee* Former Director, ISRO Satellite Centre Former Project Director, *Chandrayan* (Moon Mission) and Former Programme Director, *Mangalyan* (Mars Orbiter Mission)-MOM	
Dr Meir Ariel Director The Herzliya Science Centre, ISRAEL	
Shri Arun Venkatesan Managing Director VSTP Ltd/Sapienza Space Systems and Space Surveillance Laboratory, Italy	

Way-Forward and Concluding Session	
Thursday, 06 September 2018	**11:30 to 13:00 Hrs**
HALL B NIMHANS Convention Centre, Bengaluru	
Dr G P Ganapathy Professor & Director, Vellore Institute of Technology (Deemed University) University Space Engineering Consortium (UNISEC)- Single Point of Contact for India	
Dr J Ramkumar Professor, IIT Kanpur	
Dr Wooday P Krishna National President, Indian Institution of Production Engineers	
Dr Meir Ariel Director, The Herzliya Science Centre, Director, The Centre for NanoSatellites, Tel Aviv University, Israel	
Dr Enti Ranga Reddy Legend Technologies, Bangalore	
Shri Sudip Kar Co-Founder, D'Vine Research Labs, Bangalore	
Dr V Dillibabu Scientist, Gas Turbine Research Establishment, DRDO and Founder, Engineers Without Borders-Bangalore	
Dr K Gopalakrishnan Convener, Students Satellite Programme, ITCA, Chairman, R&D, IEI & Secretary General, ITCA	

ITCA-UNISEC India has Organized **"2nd International Programme on Students' Satellites: Mission 2022"** during 28-29 Nov 2018 in association with ITCA and UNISEC India at FKCCI Auditorium, Bangalore as Organizing Secretary.

ITCA-UNISEC India has Jointly Organized

2nd International Programme on Students' Satellites: Mission 2022

SECOND INTERNATIONAL PROGRAMME ON

Students' Satellite Mission 2022

28-29 November, 2018
Bengaluru, India

UNISEC INDIA
University Space Engineering Consortium

INDIAN TECHNOLOGY CONGRESS

UNISEC India has been part of 1st Indo-Israel Space Tech Leadership Programme held at Israel during 10-15 February 2019 and has received Award for his contribution towards the successful delegation and visited Israel's Technical Universities. The entire event was sponsored by ITCA. Also provided an opportunity to one more faculty member from NHCE to be part of the delegation.

Indo-Israel Space Tech Leadership Programme Supported by UNISEC India

Professor Colin Price, Porter School of the Environmental and Earth Sciences, Tel Aviv University and Dr. Meir Ariel with ITCA Delegation during the walk the talk tour of Tel Aviv University

ITCA-UNISEC India National Seminar on
New Space: An Era of Small Satellites-Opportunities and Challenges

ITCA and UNISEC India has Organized One day National Seminar on New Space-An Era of Small Satellites: Opportunities and Challenges in association with ITCA and UNISEC India at our Auditorium, NHCE on 11 April 2019 without any cost to College and has saved Rs.42,000/- out of registration fees. Established UNISEC India Institutional Chapter at NHCE and Inaugurated by ***Padmashri*** **Prof. R. M. Vasagam** during National Seminar on New Space-An Era of Small Satellites: Opportunities and Challenges held on 11 April 2019 at our Auditorium, NHCE.

L to R: Dr.K.Gopalakrishnan, Secretary General, UNISEC India, Mr. R.K Rajangam, President, Planet Aerospace, Padmashri. Prof. Vasagam, Dr.Manjunatha, Principal, NHCE and Mr. Venkat Rao, Former Systems Engineer for Electro-Optical Payloads of ISRO

Section of Gathering during the Inaugural Session of National Seminar on "New Space: An Era of Small Satellites: Opportunities and Challenges"

ITCA-UNITYsat Students Team with Major General (Res.) Prof. Isaac Ben-Israel, Chairman of the Israel Space Agency, Head of the Tel Aviv University Cyber Center: "The Israeli Space Programme" and Dr.Meir Ariel, Director, Nano Satellites Centre, Tel Aviv University and Herzliya Science Centre during 26-31 May 2019.

New Space India @ 75

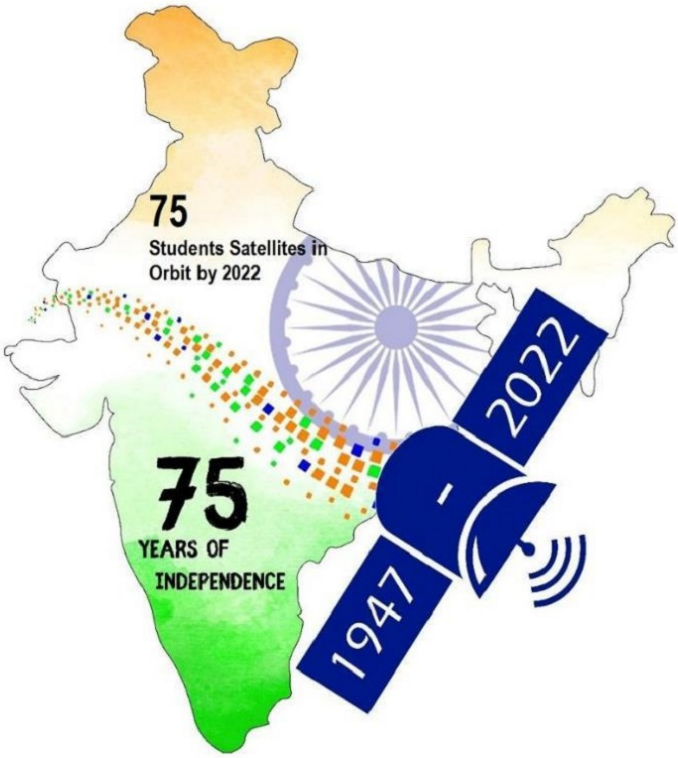
ITCA has Initiated/Provided Global Opportunities for Space Tech Summer Schools for Interested Students at Colleges

NEW HORIZON COLLEGE OF ENGINEERING

NHCE Students have been Selected for the World Famous "The International Summer Space School: Future Space Technologies and Experiments in Space" to be held from June 17-29 2019 at Samara National Research University, Russia.

NHCE Team has also been invited to Indo-Israel SpaceTech Leadership Programme in May 2019 to be held at Tel Aviv, Israel

Celebrate India's Freedom: 75 Years!
75 Students' Satellites will be Launched by 2022!



Supporting Countries/Agencies: India, Israel, France, Russia, Canada, Netherlands, UK, USA, Japan, Italy, Serbia & Germany

Signing MoU: Indo-Serbia Collaborations; Jeppiaar Institute of Technology, Chennai!


JEPPIA R INS TUTE OF TEC

Interactions at Adhiyamaan Engineering College, Hosur, Tamilnadu

Crescent University, Chennai, Tamilnadu

Interactions with Dr. Mylswamy Annaduari, Outstanding Scientist, ISRO

At his Residence in Bangalore, India

Dr. M. Annadurai is Former Project Director, Chandrayaan 1 & 2 (Moon Mission) & Programme Director, Mars Orbiter Mission and Director, ISRO Satellite Centre

7th University Space Engineering Consortium (UNISEC)

Global Meeting held at Japan

The University of Tokyo,
Institute for Open Innovation

30 November-05 December 2019 at Koshiba Hall, Hongo Campus, the University of Tokyo, Tokyo, JAPAN

Students' Satellite Team Represented by Nikhil, Denzel, Sainath and UNITYsat Mentor Dr. K. Gopalakrishnan, ITCA

UNITYsat Team has Represented INDIA and Won 1st and 2nd Place during Serbia International CanSat/Rocketry Competition 2019 at Serbia!

We are proud to announce that UNITYsat-SriShakthiSat Student Teams have participated in Serbia International CanSat / Rocketry Competition held at Serbia during 03 to 06 October 2019 and Secured 1st and 2nd Place.

All the Four Teams of India, Sponsored by ITCA-UNITYsat-Team have Secured UNISEC Global Special Jury Awards as well!

Four Team from UNITYsat-SriShakthiSat/JITsat with the support of UNISEC India/ITCA has been shortlisted for SERBIA CanSat International Competition! Among the 58+ Teams from many European/ East European Countries for various categories of CanSat/ Rocketry Competitions held during 03-06 October 2019 at SERBIA! Since, 11 April 2019, NHCE teams have been worked on the design and development of CanSat (A Satellite fit in to the size of Coke/Pepsi Can) and was Launched with Rockets which have fulfilled the mission objectives as stated in the Competition Rules! Dr. K. Gopalakrishnan, Convener, 75 Students' Satellite Consortium has Mentored and Encouraged the Teams, since April 2019!

ITCA-UNITYsat: CanSat Workshop and Launching of CanSat with Drones

Portion of the Gathering at Young Research Engineer Award Function during the CanSat Launching Event held on 08 Feb 2020 at Jeppiar Institute of Technology (JIT), Sunguvarchatram, Chennai, Tamilnadu. Padmashri Dr.Mylswamy Annadurai, Director, National Design and Research Forum, Former Project Director, Chandrayaan 1 & 2 and Program Director, Mangalyaan, Presently VP, Tamilnadu State Council for Science and Technology has graced the occasion as Chief Guest and distributed the Awards and Presented the Special Stamps!

National Design and Research Forum
In Association with
University Space Engineering Consortium (UNISEC)-INDIA
08 February 2020 at Jeppiaar Institute of Technology, Sriperumpudur, Chennai, Tamilnadu, INDIA
International CanSat Workshop: Space Quest and Launching of CanSats

Young Research Engineer Award

Presented to

Mr. HARIRAJ
New Horizon College of Engineering
Bangalore - 560013
INDIA

For carrying out vibrant activities related to Small Satellites, involving Students and Academic Institutions under the banner of UNISEC India in the areas of NanoSats, CanSats and CubeSats

Prof. R.M. Vasagam — Chairman, National Advisory and Awards Committee, UNISEC India, Padma Shri Awardee
Dr. K. Gopalakrishnan — Secretary General, UNISEC India
Dr. V. Dillibabu — Director, NDRF
Dr. M. Annadurai — Chairman, NDRF, Vice President, TANSCST, Padma Shri Awardee

NDRF/2020/007

National Design and Research Forum
In Association with
University Space Engineering Consortium (UNISEC)-INDIA
08 February 2020 at Jeppiaar Institute of Technology, Sriperumpudur, Chennai, Tamilnadu, INDIA
International CanSat Workshop: Space Quest and Launching of CanSats

Young Research Engineer Award

Presented to

Mr. JOSHUA TOM JACOB
New Horizon College of Engineering
Bangalore - 560013
INDIA

For carrying out vibrant activities related to Small Satellites, involving Students and Academic Institutions under the banner of UNISEC India in the areas of NanoSats, CanSats and CubeSats

Prof. R.M. Vasagam — Chairman, National Advisory and Awards Committee, UNISEC India, Padma Shri Awardee
Dr. K. Gopalakrishnan — Secretary General, UNISEC India
Dr. V. Dillibabu — Director, NDRF
Dr. M. Annadurai — Chairman, NDRF, Vice President, TANSCST, Padma Shri Awardee

NDRF/2020/008

National Design and Research Forum
In Association with
University Space Engineering Consortium (UNISEC)-INDIA
08 February 2020 at Jeppiaar Institute of Technology, Sriperumpudur, Chennai, Tamilnadu, INDIA
International CanSat Workshop: Space Quest and Launching of CanSats

Young Research Engineer Award

Presented to

Ms. BHAVANA SAVANTH
New Horizon College of Engineering
Bangalore - 560013
INDIA

For carrying out vibrant activities related to Small Satellites, involving Students and Academic Institutions under the banner of UNISEC India in the areas of NanoSats, CanSats and CubeSats

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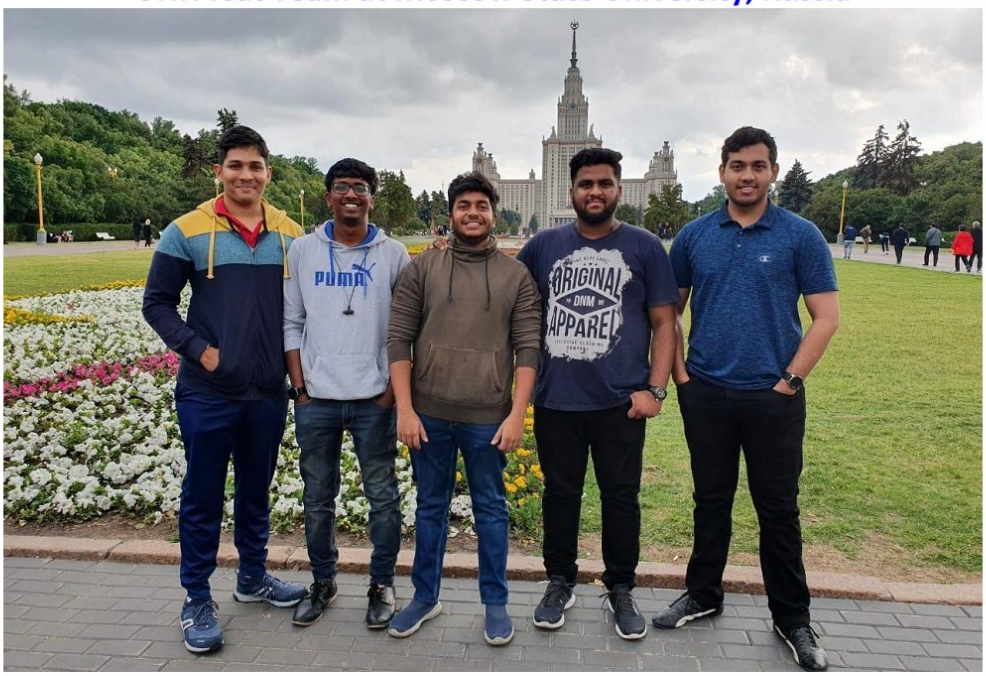
Dr. M. Annadurai — Chairman, NDRF, Vice President, TANSCST, Padma Shri Awardee

NDRF/2020/012

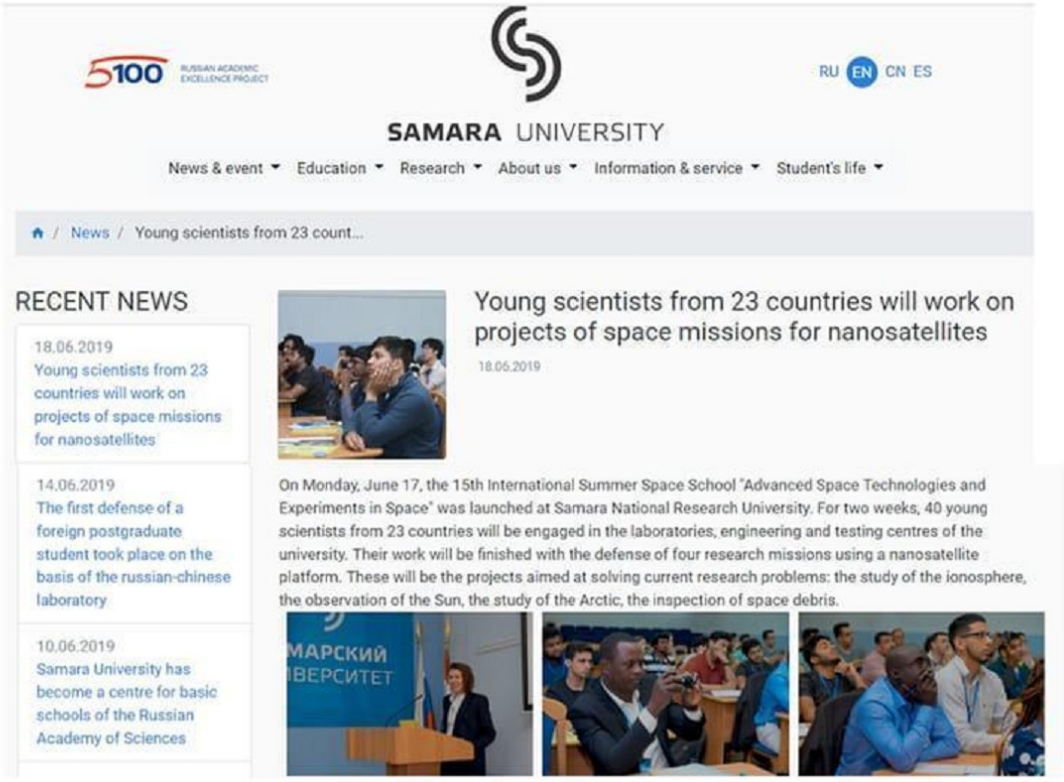
ITCA-UNITYsat: SriShakthiSat-JITsat Team has Secured 12 Young Research Engineers Awards from *Padma Shri* Dr.Mylswamy Annadurai at JIT, Chennai

UNITYsat-SriShakthiSat Students Team (12 Members) has received **Young Research Engineer Award** from ***Padma Shri*** **Dr.Mylswamy Annadurai**, Director, National Design and Research Forum, Former Project Director, Chandrayaan 1 & 2 and Program Director, Mangalyaan, Presently VP, Tamilnadu State Council for Science and Technology during the CanSat Launching Event on 08 Feb 2020 at Jeppiaar Institute of Technology (JIT), Sunguvarchatram, Sriperumpudur, Chennai, TN. Students Satellite Team has mentored JIT Team and Conducted Workshop on building CanSats and Launched 5 CanSats on 08 February 2020.

UNITYsat Team at Moscow State University, Russia



TSC R&D Team at Samara University International Summer School



https://ssau.ru/english/news/16878-young-scientists-from-23-countries-will-work-on-projects-of-space-missions-for-nanosatellites

4th International Colloquium on NanoSatellites: Tech Solutions

UNITYsat Team has Organised this Event!

4th International Colloquium on NanoSatellites: Tech Solutions held on 30 January 2020 at Conference Room, New Horizon Knowledge Park, Bangalore. Organized by University Space Engineering Consortium (UNISEC) India and Supported by AICTE Margdarshan Project, 75 Students' Satellites Consortium: Mission 2020. Lead presentations have been done by Mr. Tom Barton, Formerly COO, Planet Labs, Chief Executive Officer (CEO), Diamanti, San Francisco, USA and Mr. Govindhasamy Karthik, Chief Operating Officer (COO), Diamanti, San Francisco, USA. Padma Shri. Prof. R.M.Vasagam, Outstanding Scientist, ISRO and Former Project Director, India's First Geo Stationary Communication Satellite, Former Vice Chancellor, Anna University has presided. Dr.Manjunatha, Principal has welcomed the Guest Speakers and participants who have initiated Nano Satellites Projects at various institutions. Dr. C.S.R. Prashanth, Dean (Academics) graced the occasion. The interactions paved the way for cost effective indigenous development of Subsystems and systems for Nano Satellites in India itself.

Mr. Tom Barton, Formerly COO, Planet Labs, Chief Executive Officer (CEO), Diamanti, San Francisco, USA

Padmashri. Prof. R.M.Vasagam, Outstanding Scientist, ISRO and Former Project Director, India's First Geo Stationary Communication Satellite, Former Vice Chancellor, Anna University has addressed the gathering on frugal exploration of space with limited resources.

UNITYsat Team has Initiated the Indo-Serbia Collaboration!

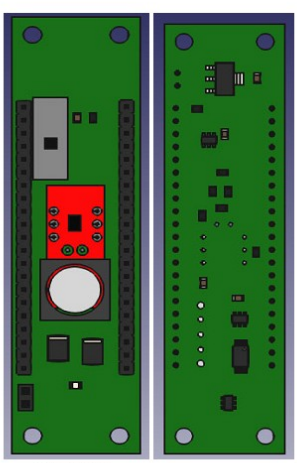
Signing MoU: Indo-Serbia Collaborations; Looking for Stronger Ties!

Collaboration for Conducting Capacity Building CanSat Workshops in Eastern Europe along with Committee for Space Program Development (CSPD) Organizing Continental and Global CanSat/Rocketry Competitions 2021/2022 at Serbia Students' Exchange/Higher Education/Joint Development of Satellites for Former Yugoslavia Regions! Eastern Europe!

Views of Final Assembly of CanSat Built during above Workshops ***(Patents Filed)***

UNITYsat Team has Innovated CanSats Systems and Subsystems for Global Markets!

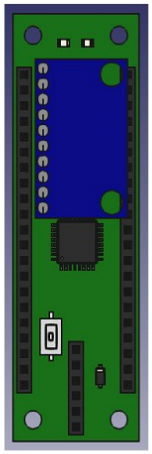
UNITYsat Team has Innovated CanSats Systems and Subsystems for Global Markets!



Top View Bottom View

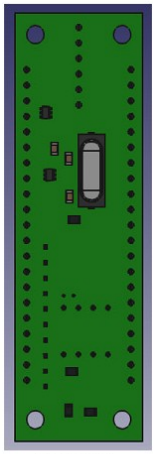
Battery Board

Battery

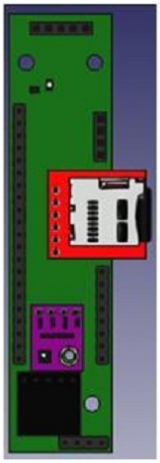


Top View

Micro Controller Board



Top View



Bottom View

Sensor Board

(Patents Filed)

3D Printed Compact CanSat (Vertical Stacking of Boards Arround Battery) ***(Patents Filed)***

UNITYsat Team has Initiated the Indo-Serbia Collaboration!

Signing MoU: Indo-Serbia Collaborations; Looking for Stronger Ties!

UNITYsat Team has Initiated the Indo-Serbia Collaboration!

Indo-Serbia interactions at NanoSats Space Lab @ ITCA/UNISEC India

UNITYsat Team has Initiated the Indo-Serbia Collaboration!

Foundation Meeting of World CanSat/Rocketry Competition: WCRC 2021-22 and Continental Competitions 2020-21

Interaction on Organizing Global CanSat/Rocketry Competition 2021 and Continental Competitions 2020 with Prof. Javeed Ahmed Khan, Canada, Mr. Dušan Radosavljević, Head, CSPD, Serbia, Prof. Santoni Fabio, University of Rome, Italy, Dr. K. Gopalakrishnan and his UNITYsat Students' Satellites Team at International Conference-Sideline Collaborative Projects' Meeting, Bangalore, India on 21 Dec 2019

UNITYsat Indo-Italy Delegation: Visited Sapienza University, Rome, Italy
Interaction with Prof. Fabio, PoC, Italy

Dr. Blumberg Presented Certificates of Award to the Successful Delegates from ITCA SpaceTech Institutional Consortia

UNITYsat Team Members with Major General (Res.) Prof. Isaac Ben-Israel, Chairman of the Israel Space Agency, Head of the Tel Aviv University Cyber Center: "The Israeli Space Programme" and Dr.Meir Ariel, Director, Nano Satellites Centre, Tel Aviv University and Herzliya Science Centre during 26-31 May 2019.

UNITYsat Team was Part of Indo-Israel Space Tech Leadership Programme 2019!

UNITYsat Team have been Selected for the World Famous "The International Summer Space School: Future Space Technologies and Experiments in Space" held during 2019 June 17-29 at Samara National Research University, Russia
UNITYsat Team has also been invited to Indo-Israel Space Tech Leadership Programme held in May 2019 at Tel Aviv, Israel

New Space India @ 75

UNITYsat Students' Satellite Team Interaction with Russian and UK Experts

TSC Satellites Team with *Ms Lucille Baudet* - Open Cosmos, UK, *Dr. Margarita Safonova* - Russia/Visiting Scientist, Indian Institute of Astrophysics and Dr. J. Ramkumar, Professor, IIT Kanpur during Interaction at NHCE held on 03 September 2019 at Conference Room.

Celebrate India's Freedom: 75 Years!
75 Students' Satellites will be Launched by 2022!

Supporting Countries/Agencies: India, Israel, France, Russia, Canada, Netherlands, UK, USA, Japan, Italy, Serbia & Germany

India Israel France Russia Canada Netherlands UK USA Japan Italy Serbia Germany

UNITYsat Team has Played an Active Role in Promoting 75 Students' Satellites Consortium!

Award of Appreciation has been Presented to UNITYsat Team @ Japan during 7th UNISEC Global Meeting held at Japan

Award of Appreciation Presented to UNITYsat Team, INDIA for promoting Small Satellites Programmes

UNITYsat Team has Attended the UNISEC Global Meeting at Tokyo, Japan!

UNITYsat Team have Participated in IBM Hackathon at Netherlands & Visited Rome Sapienza University, Italy

UNITYsat Team Members (13) have participated in **IBM OpenPOWER Summit Europe** and Netherlands Hackathon held at Netherlands (Amsterdam) during 06-07 October 2018-UNITYsat Team Members' Won 2 Awards.

(This event has paved the way and instrumental for IBM has agreed to establish IBM OpenPOWER AI Centre of Excellence at Bangalore)

UNITYsat Team @ International Space University, Strasburg, France

UNISEC India was Approved during 6th Global Meeting of UNISEC at Strasburg, France.

UNITYsat Team was Instrumental for establishing University Space Engineering Consortium-India Chapter

UNISEC INDIA
University Space Engineering Consortium

UNITYsat Team have Participated in IBM Hackathon at Netherlands and have Won Awards!

UNITYsat Team has Represented INDIA and Won 1st and 2nd Place during Serbia International CanSat/Rocketry Competition 2019 at Serbia!

UNITYsat Team with 16 members' from INDIA to 2019 CanSat/Rocketry International Competition held at Serbia

UNITYsat Team has Represented INDIA and Won 1st and 2nd Place during Serbia International CanSat/Rocketry Competition 2019 at Serbia!

COSPAR Capacity Building Workshop on Small Satellites at Tel Aviv University, Israel

Five of UNITYsat/ UNISEC India have attended COSPAR Capacity Building Workshop on Small Satellites, held at Tel University, Israel from 26 Oct to 03 Nov 2019. All the five Students of UNITYsat Team have received full sponsorship from Tel Aviv University, Israel.






UNITYsat Team @ Tel Aviv University, Israel

SriShakthiSat Programme Launched at SIET, Coimbatore

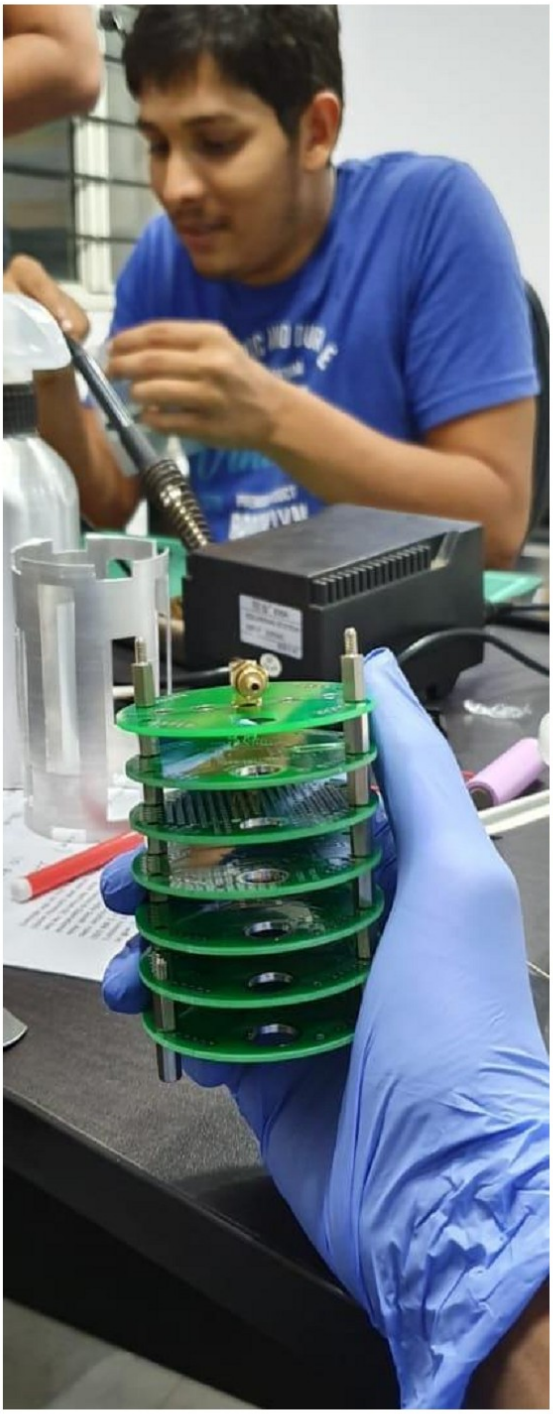
31 August 2019 Sri Shakthi Institute of Engineering and Technology, Coimbatore, Tamil Nadu

UNITYsat Team of Research Engineers is in Action! Making of CanSat @ ITC Event

UNITYsat Students' Teams during Hackathon/CanSat Workshop Conducted by UNISEC India at Bangalore

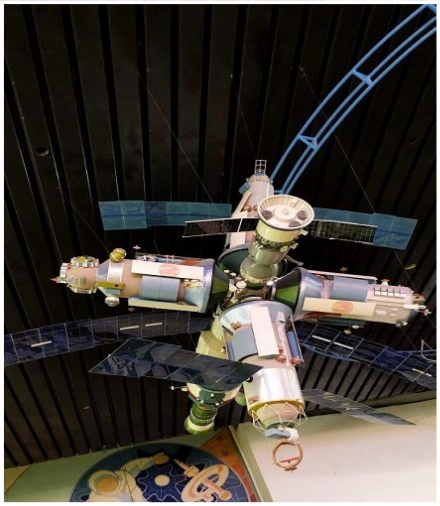
National Seminar on New Space by UNITYsat Team @ Bangalore

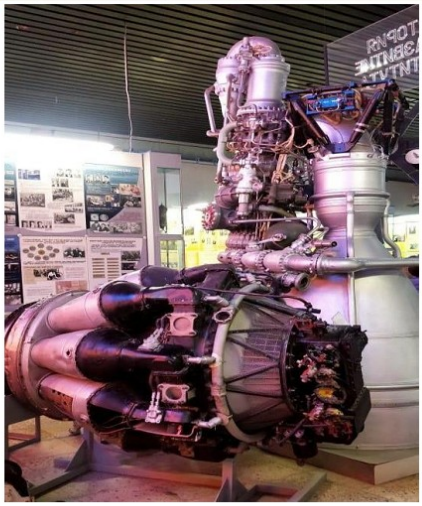
L to R: Dr.K.Gopalakrishnan, Secretary General, UNISEC India and Mentor, UNITYsat Team, **Mr. R.K Rajangam,** President, Planet Aerospace, **Padmashri. Prof. Vasagam, Dr.Manjunatha,** Principal, NHCE and **Mr. Venkat Rao,** Former Systems Engineer for Electro-Optical Payloads of ISRO



UNISEC INDIA
University Space Engineering Consortium

International Internships for ITCA-UNITYsat Team @ Samara, Russia





ITCA-UNITYsat Team Internships at IIT Kanpur

Hariraj, Sanketh, Vishwa, Denzel and Nikhil of UNITYsat Team @ IIT Kanpur During Internship @ 4i LAB, Central Workshop and Tinkering Lab with Prof. J. Ramkumar and Dr. K. Gopalakrishnan in Indian Institute of Technology (IIT) Kanpur

Collaborative Research Initiatives of ITCA-UNITYsat Team: Established Marine Technology Society (MTS) Chapter at NHCE National Institute of Ocean Technology, Chennai and Interactions with Dr. R. Venkatesan, Head & Chief Scientist, NIOT

UNITYsat Team @ NHCE R&D Cell has visited Tsunami Warning System & Ocean Observation System at National Institute of Ocean Technology, Chennai on 04 November 2017 and interacted with Dr. R. Venkatesan, Head & Chief Scientist. Also identified Collaborative Projects.

Bangalore Chamber of Industry and Commerce (BCIC)

12-14 April, 2019

Inter-College 48 Hours Hackathon

Accelathon '19

UNISEC and ITCA Sponsored UNITYsat Team Won at Accelathon 2019 @ Bangalore

Team Consolidated bagged a Prize for developing a Working Prototype of a 2U CubeSat Modular Satellite Bus within the 48 hours time frame. **Solution:** This project aims to create a Satellite bus which can be used for nanosatellite payloads so that it makes development and utilization of NanoSat Technology easier and faster. The Sub-Systems are On Board Computer, Electrical Power Supply and Communication System.

Winning Team – Modular Satellite Bus: UNISEC and ITCA Sponsored UNITYsat Team
L to R: Mr. Manas, BCIC, Mr. Mithun, Mr. Sanketh, Mr. Denzel, Ms. Richa, BCIC, Mr. Nihkil, , Ms. Athira and Dr.C.S.R. Prashanth

Getting Featured By BCIC Team: UNISEC and ITCA Sponsored UNITYsat Team has Built 2U Modular Satellite Bus:
Proud UNITYsat Members: L to R: Ms. Athira, Mr. Denzel, Mr. Mithun, Mr. Sanketh, Mr. Shyam, Mr. Vinod, BCIC and Mr. Nihkil

UNITYsat Team Sponsored by UNISEC India and ITCA

UNISEC and ITCA Team Sponsored UNITYsat Team: Mr. Shyam, Mr. Sanketh, Mr. Denzel, Mr. Nihkil and Ms. Athira

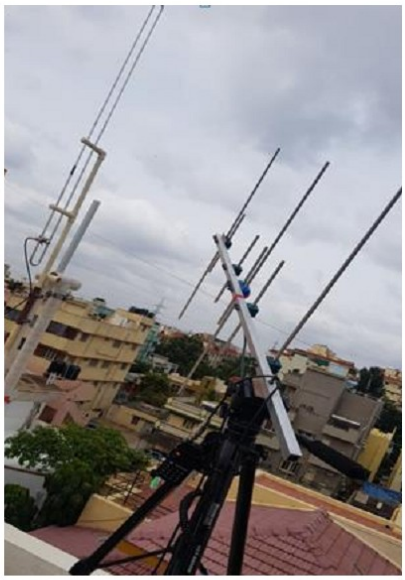
Mr. Sanketh S Huddar receiving memento from Ms. Richa Sarna, BCIC

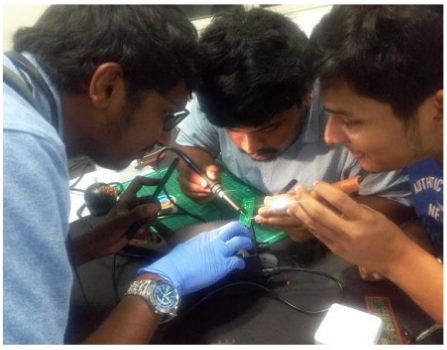
Proud Moments: UNITYsat Team Felicitated by BCIC, UNISEC India and ITCA

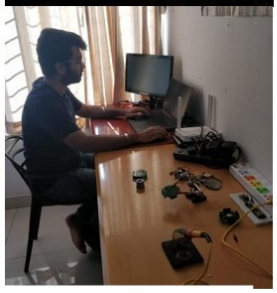
UNITYsat Team from NHCE: Mr. Mithun, Mr. Shyam, Mr. Nihkil, Mr. Sanketh, Ms. Divya Philip, Danske IT, Ms. Athira and Mr. Denzel

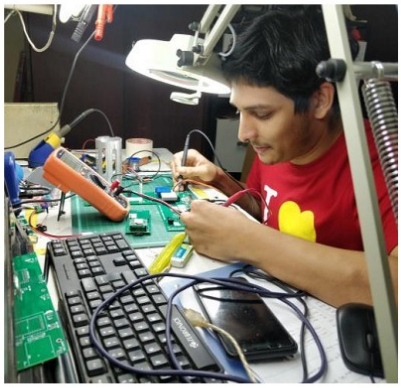
"New Space Era: Small Satellites-Big Applications" Published by UNITYsat Team-Released during Indo-Israel Event at B'lore

Real Co-working Space: Home Labs of UNITYsat Team









Real Co-working Space: Home Labs of UNITYsat Team













ITCA CanSat Launched by OctoCopter at New Horizon Knowledge Park

12 March 2020 Last Event held before Corona Virus Lockdown

UNITYsat Team's CanSat Launched by OctoCopter at New Horizon Knowledge Park

07 March 2020: Madurai Thiagarajar College of Engineering (Founded 1957). Inauguration of UNISEC-INDIA Chapter and Demonstration of "Near Space Launch of CanSats" Using "OctoCopter" by ***"UNITYsat Students' Satellites Team"*** *which has received IEI Centenary Young Research Engineers Team Award! Under the Guidance of Padmashri Dr.Mylswamy Annadurai, Former Director, ISRO Satellite Centre and Project Director, Chandrayaan 1 & 2 and Mangalyaan (Mars Orbiter Mission)-MOM! Dr. V. Dillibabu, Scientist, GTRE-DRDO, Director, National Design and Research Forum is addressing. Dr. K. Gopalakrishnan, Mentor of UNITYsat Team looks on.*

தினமலர்

உண்மையின் உரைகல்

08 March 2020, Madurai Edition of Dinamalar, Tamil Daily

பதிவு செய்த நாள்: 08 மார்ச் 2020, 04:24

மதுரை தியாகராஜர் பொறியியல் கல்லூரியில் விண்வெளி தொழில் நுட்ப ஆராய்ச்சி மைய கிளை துவக்க விழாவில் ஆளில்லா விமான மாதிரி செயல்பாடுகள் குறித்து மாணவர்களுக்கு செயல் விளக்கம் அளிக்கப்பட்டது.

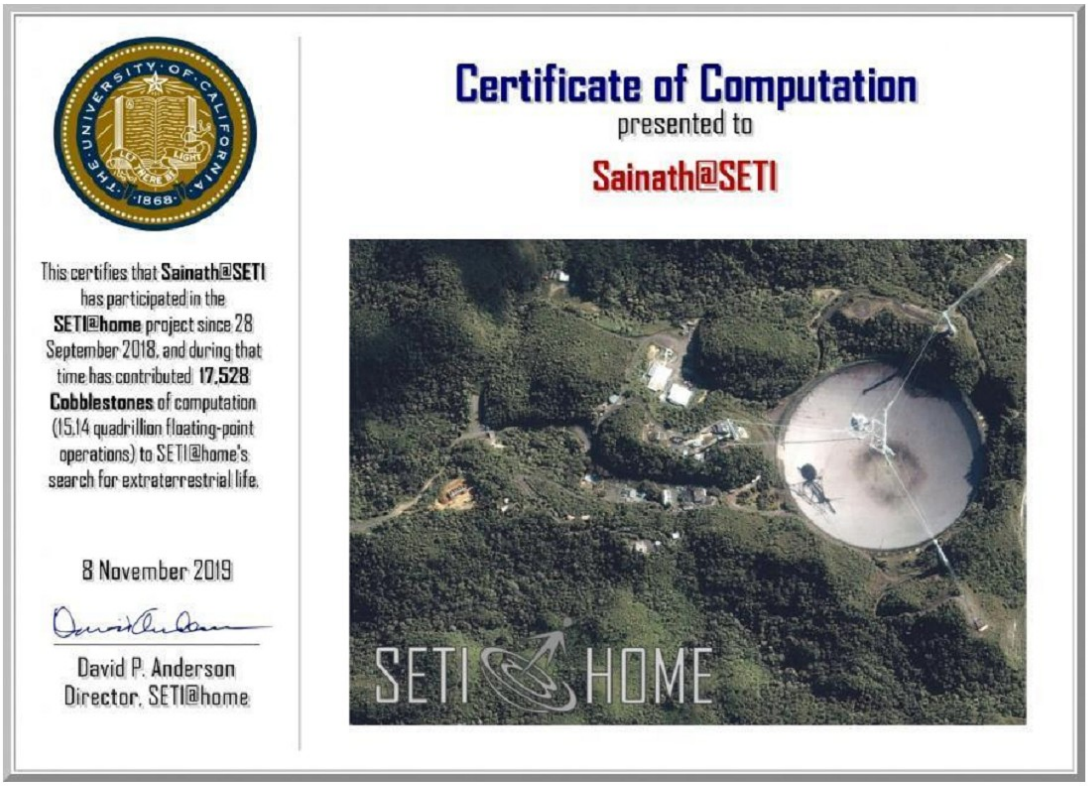
புதிய தொழில்நுட்பங்களை மாணவர்கள் கற்க வேண்டும்

விஞ்ஞானி மயில்சாமி அண்ணாதுரை அறிவுரை

திருப்பரங்குன்றம் : "பொறியியல் மாணவர்கள் புதிய தொழில் நுட்பங்களை கற்றுக் கொள்ள வேண்டும்" என விஞ்ஞானி மயில்சாமி அண்ணாதுரை பேசினார்.மதுரை தியாகராஜர் பொறியியல் கல்லூரியில் விண்வெளி தொழில் நுட்ப ஆராய்ச்சி மையம்(யுனிசெக்) கிளை துவக்க விழா நடந்தது. முதல்வர் அபய்குமார் தலைமைவகித்தார். விஞ்ஞானி மயில்சாமி அண்ணாதுரை பேசியதாவது: பட்டம் பெறுவது புதிது. ஆனால் பாடத்திட்டங்கள் பழையது. பொறியியல் மாணவர்கள் புதிய தொழில்நுட்பங்களை கற்றுக் கொள்ள வேண்டும். ஆள் இல்லா விமானம்,நீர் மேலாண்மை, புதுப்பிக்கத்தக்க எரிபொருள் உள்ளிட்ட அடுத்த 20 ஆண்டுகளில் உலகிற்கு என்ன தேவையோ அந்த தொழில் நுட்பங்களில் ஆராய்ச்சிகளை மேற்கொள்ள வேண்டும்.அடுத்தவர்கள் செய்தவற்றை பின்தொடராதீர்கள். புதியவற்றை கண்டுபிடியுங்கள். நீங்கள் கண்டுபிடிக்கும் புதிய தொழில் நுட்பங்களால் கடைக்கோடி மனிதனின் வாழ்க்கை தரத்தை உயர்த்துவதாக அமைய வேண்டும்.ஒவ்வொரு மாணவரும் செயற்கைகோள் தொழில்நுட்பங்களை கட்டாயம்தெரிந்து கொள்ள வேண்டும் என்றார்.யுனிசெக் இந்தியா பொதுச்செயலாளர் கோபாலகிருஷ்ணன், ஜி.டி.ஆர்.இ., விஞ்ஞானி டில்லிபாபு பேசினர்.ஆளில்லா விமான மாதிரியின் செயல்பாடுகள் குறித்து மாணவர்களுக்கு செயல் விளக்கமளிக்கப்பட்டது.

Appreciation from University of California, Berkeley, USA to UNITYsat Team Member: Part of Extraterrestrial Intelligence (SETI) Life! SETI@home Project, USA

Mr. Sainath Vamshi, Core Team Member of UNITYsat Team



Mr. Sainath Vamshi, Core Team Member of UNITYsat is working on SETI@home Project of The University of California, since 28 September 2018 and during this period he has contributed 17,528 Cobblestones of Computation (1541 Quadrillion floating-point operations) to SETI@home Search for Extraterrestrial intelligence (SETI) Life! On 08 Nov 2019, the above Certificate of Computation has been issued to him as an Appreciation to his tireless efforts! SETI@home is an Internet-based public volunteer computing project employing the BOINC software platform created by the Berkeley SETI Research Center and is hosted by the Space Sciences Laboratory, at the University of California, Berkeley.

ARISS SSTV Award from International Space Station (ISS)/NASA to UNITYsat Core Team Member Mr. Sainath Vamshi

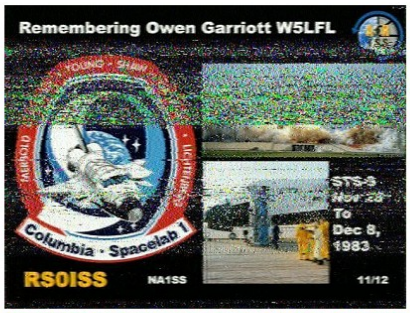
One more Feather on UNITYsat Team's Cap! Sainath Vamshi received the ARISS SSTV Award from International Space Station (ISS) for receiving the images beamed by ISS when it pass over India yesterday using the Ground Station built by UNITYsat Students' Satellites Team!

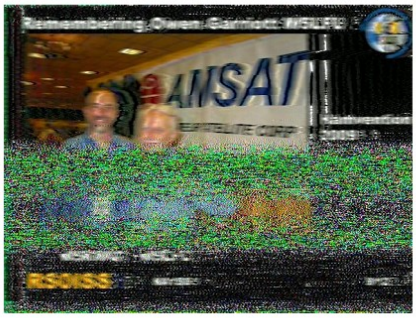
Appreciation to Sainath Vamshi, UNITYsat from ISRO Chairman Dr. K. Sivan

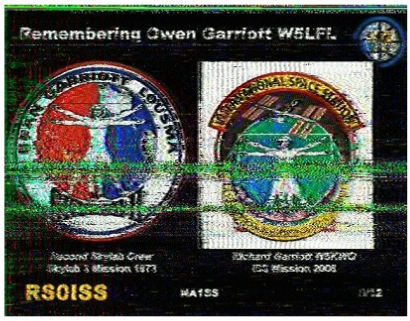
We are Glad that UNITYsat Core Team Member, Sainath Vamshi, to be a part of NASA's Psyche Mission scheduled to launch in August 2022; Where the Satellite will Orbit an Asteroid to study its metallic surface. This course, Process and Lifetime of a Space Mission educates the development of psyche from AO to Phase E. Truly Informative and helpful in developing a mission roadmap.

Sainath Received ARISS SSTV Award from International Space Station/NASA

One of the Core Team Member of UNITYsat, Sainath, India has Successfully received some SSTV images from the INTERNATIONAL SPACE STATION (ISS) using his own Ground Station built by him at UNITYsat Lab. This is a memorial event to honour Owen Garriott -W5WFL, First person to operate amateur radio from space. Amateur Radio (HAM) helps disaster management, Worldwide when all our communications failed! Sainath has received the SSTV Award for submitting the decoded SSTV TRANSMISSION from ISS.







INDIAN TECHNOLOGY CONGRESS

India-International On-line Event held during 24-25 September 2021

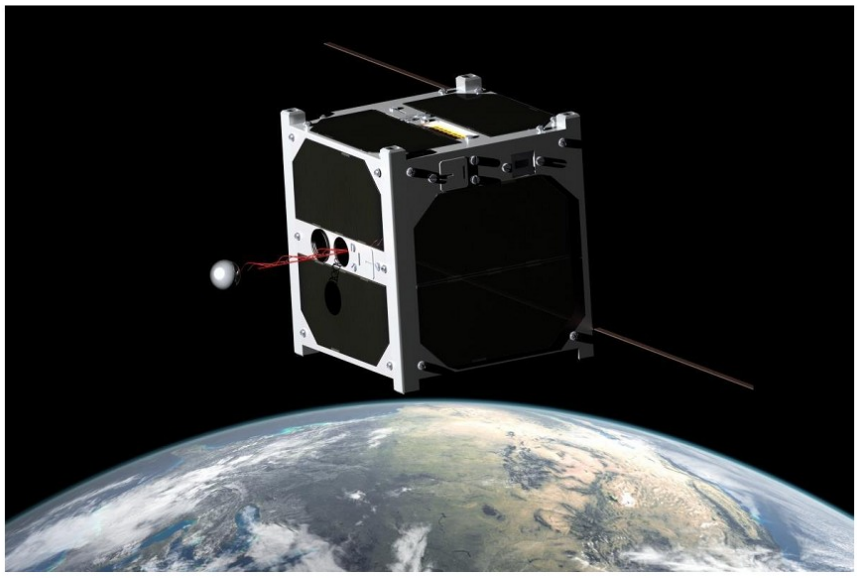
Satellite for Everyone and Space for Everyone!

Launching of CU-World-UNITYsat Programme

50+ With the Participation of WCRC Member Countries

Announcement of Opportunity

CU-World-UNITYsat will be built by CU-ITCA-CSPD-TSC-WCRC Team!



For More Details: ***Er. Dušan Radosavljević, Founder and Head, CSPD, Serbia/WCRC***

Indian Technology Congress Association

TSC

КРСП/CSPD Комитет за развој свемирског програма

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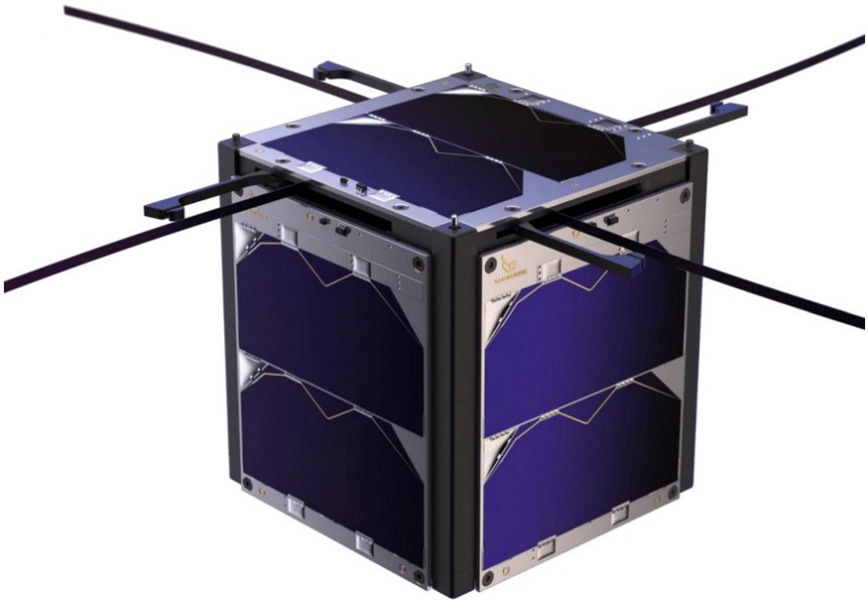
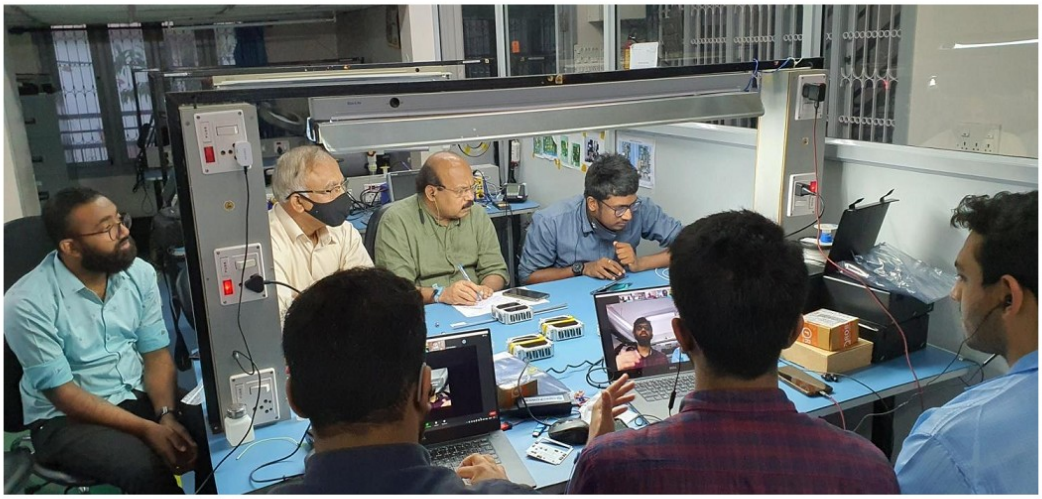
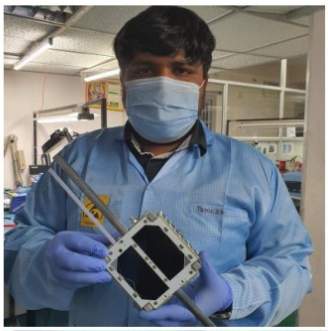
India Israel France Russia Canada Netherlands UK USA Japan Italy Serbia Germany Portugal Tunisia Peru

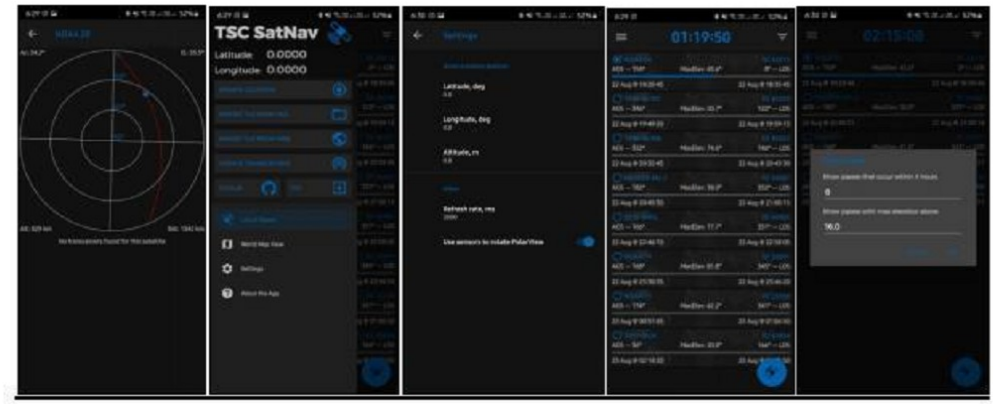
CU-World-UNITYsat



UNITYsat: Development Process and Testing

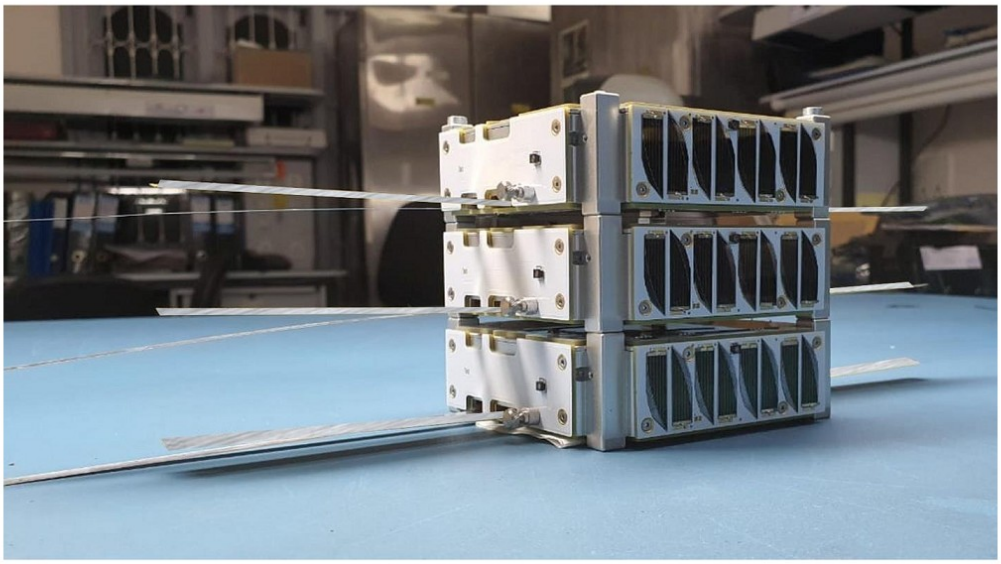




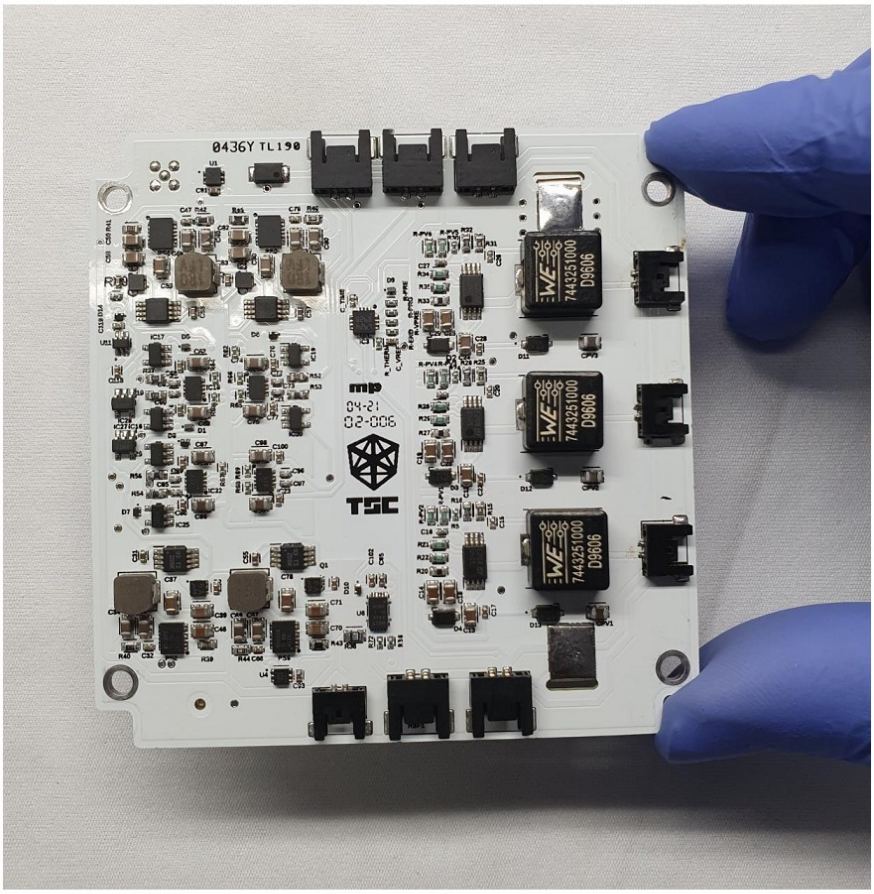

TSC SatNav
Latitude: 0.0000
Longitude: 0.0000
01:19:50


THERMAL IMAGER FIRE CONTROL SYSTEM (TIFCS)
FOR T-72 TANKS
MILOS for CHEETAH Upgrade
DESPL

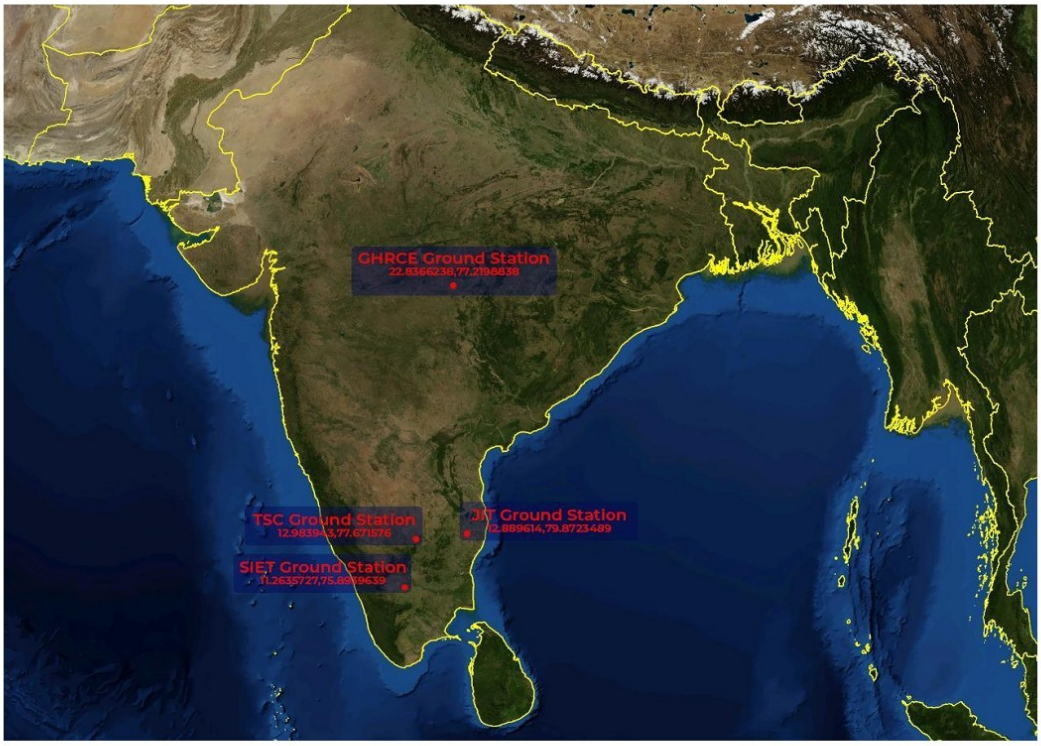

THERMAL IMAGER FIRE CONTROL SYSTEM (TIFCS)
FOR T-72 TANKS



UNITYsat is ready for Launch! Demonstration of Inter-Satellite Communication



Electronic Power System of UNITYsat



Ground Station at Sri Shakthi Institute of Engineering and Technology
Virtually Inaugurated by Dr. K. Sivan, Chairman, ISRO

- **SatNOGS (Satellite Networked Open Ground Station) project is a open source hardware and software.**
- **Platform aimed to create a satellite ground station network.**
- **380 Active Ground Stations will Track UNITYsat across the World**

UNITYsat

MISSION OBJECTIVE:

Primary Mission:

The UNITYSat is designed for it being a Technology Demonstration of Indigenously developed systems for nanosatellite applications.

Secondary Mission:

- Experimental study of ultra-compact satellites in space environment
- Experimental LoRa Inter Satellite Communication
- Establishment of open-source satellite IoT network based on LoRa
- Testing indigenously developed CubeSat Deployer System

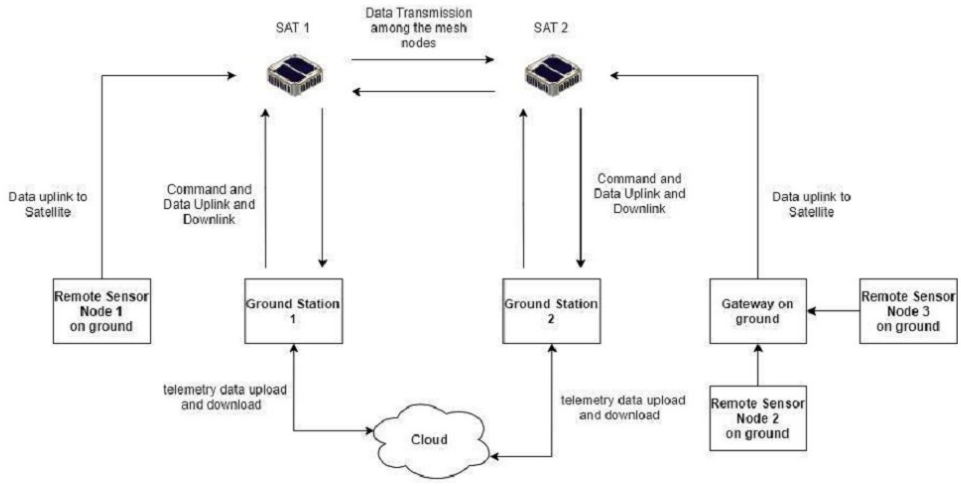


Figure 1: Block Diagram of Satellite IOT Network

CUBESAT DESIGN SPECIFICATION REQUIREMENTS

In this section, all the requirements restricting typical CubeSats are presented. CubeSat Design Standard and PCB Specification are the most important ones for the UNITYSat mission and their subsections are compared to the final results of a configuration project at the end of this document. Requirements presented in this section are all directly extracted from CubeSat Standard. All quotes relevant to UNITYSat mission (from configuration point of view) are divided between several groups: general, mechanical and electrical. Fulfilment of each of the subsections is usually necessary to gain permission from the launch provider to put a CubeSat on board of the rocket.

General

- All parts shall remain attached to the CubeSat during launch, ejection and operation. No additional space debris will be created.
- No pyrotechnics shall be permitted.
- CubeSat materials shall satisfy the following low out-gassing criterion to prevent contamination of other spacecraft during integration, testing and launch. – crucial for any deployable and moving elements

Mechanical

- The CubeSat coordinate system will match the P-POD coordinate system while integrated into P-POD.
- The origin of the CubeSat coordinate system is located at the geometric centre of the CubeSat.
- The Z- face of the CubeSat will be inserted first into the P-POD
- Deployables shall be constrained by the Satellite, not the P-POD.
- Rails shall have a minimum width of 8.5 mm.
- Rails will have a surface roughness less than 1.6 µm.
- The edges of the rails will be rounded to a radius of at least 1 mm.
- At least 75 % of the rail will be in contact with the P-POD rails.
- The maximum mass of a 2U CubeSat shall be within 2 kg.
- The 0.35U CubeSat centre of gravity shall be located within 2 cm from its geometric centre in the X and Y direction and 1 in the Z direction.
- Aluminum 6061, will be used for both the main CubeSat structure and the rails.
- The CubeSat rails and standoff, which contact the P-POD rails and adjacent CubeSat standoffs, shall be hard anodized aluminum to prevent any cold welding within the P-POD. – all aluminum elements are hard anodized
- The 0.35U CubeSats shall use separation springs to ensure adequate separation. Spring will be centred on the end of the standoff on the CubeSat Z-/Z+ face.

Electrical

- The CubeSat power system shall be at a power-off state to prevent CubeSat from activating any powered functions while integrated into the P-POD from the time of delivery to the LV through on-orbit deployment.
- The CubeSat shall have, at a minimum, one deployment switch on a rail standoff.
- The Remove Before Flight (RBF) pin and all CubeSat umbilical connectors shall be within designated Access Port locations.

PCB Specification

This section gives an overview of the PCB layout, stack-up, and connector placement.

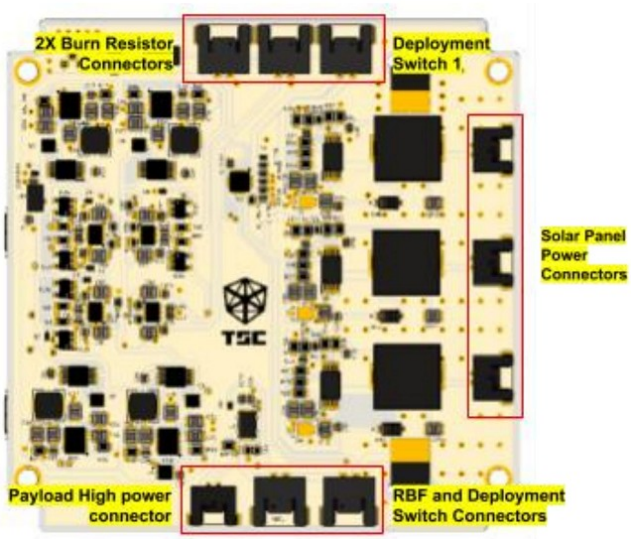


Figure 2: Main Board Connector Locations (Bottom)

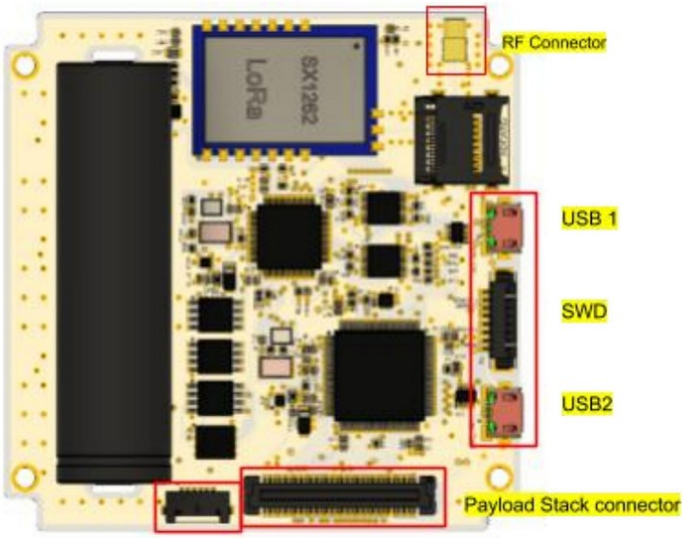


Figure 3: Main board Connector Locations (Top)

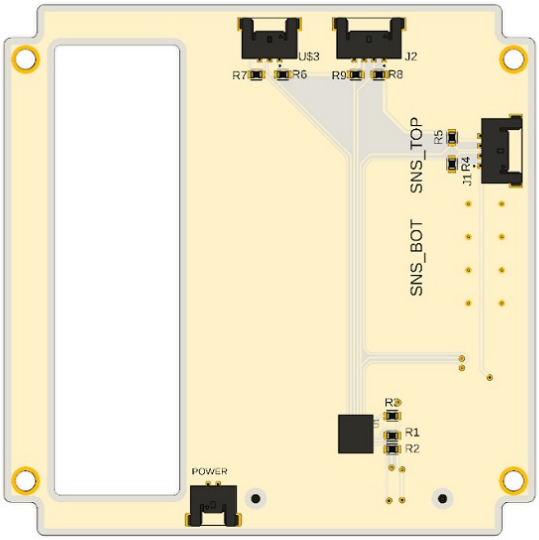


Figure 4: Daughter Board

PCB StackUp

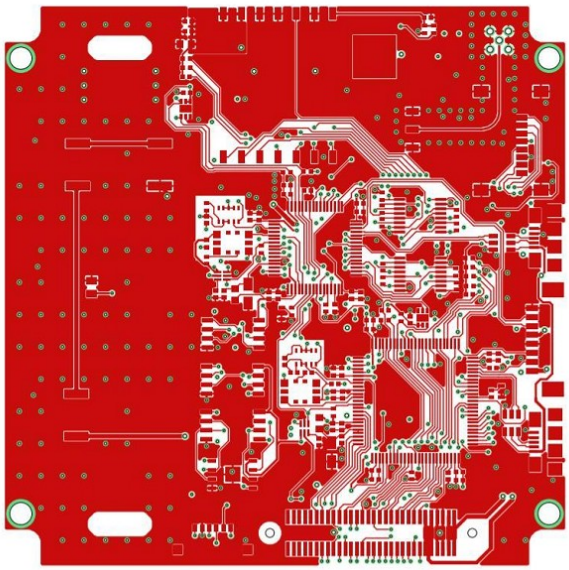


Figure 5: Layer 1

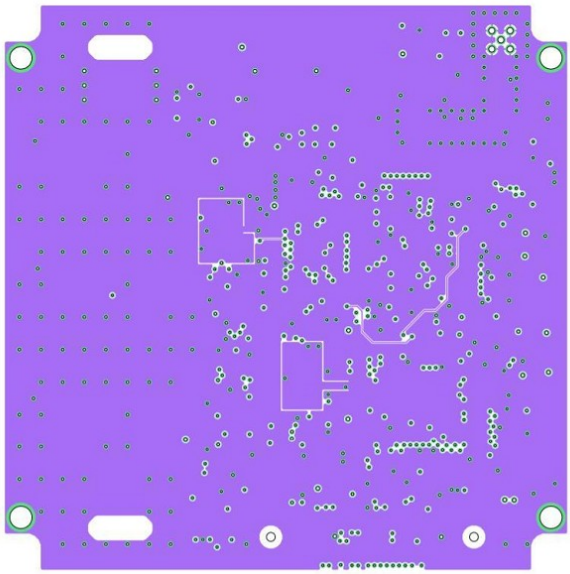


Figure 6: Layer 2

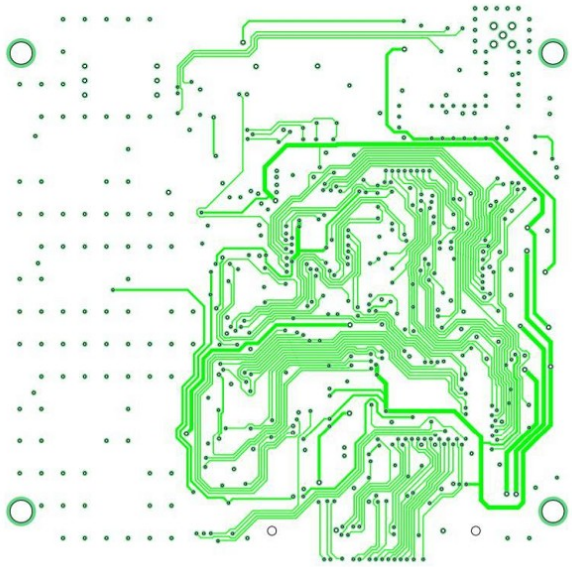


Figure 7: Layer 3

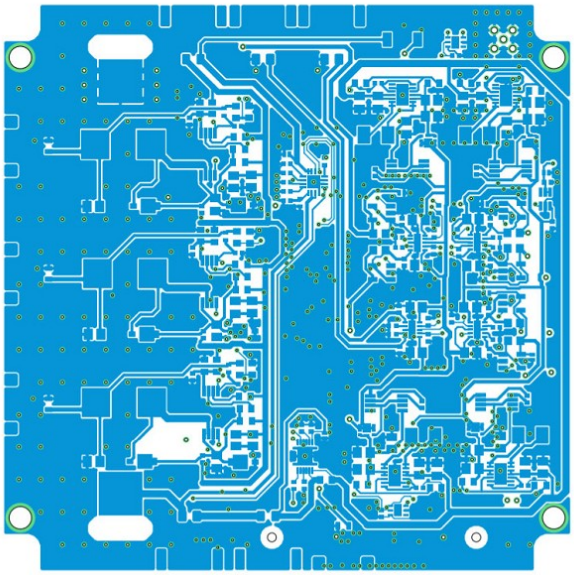


Figure 8: Layer 4

UNITYSat CONFIGURATION

General Configuration Description

This section presents the general configuration. In the figure below, UNITYSat assembly is presented (outside walls are removed to show the inside of the satellite)

UNITYSat can be divided into several modules:

- Structure Unibody Aluminium that provides support for the satellite's components and mounting and deployment support for its systems.
- PCB Stack – consists of every piece of electronic equipment
- Solar Panels – PCB mounted solar panels connected on the exterior of the satellite that provide power for the satellite.

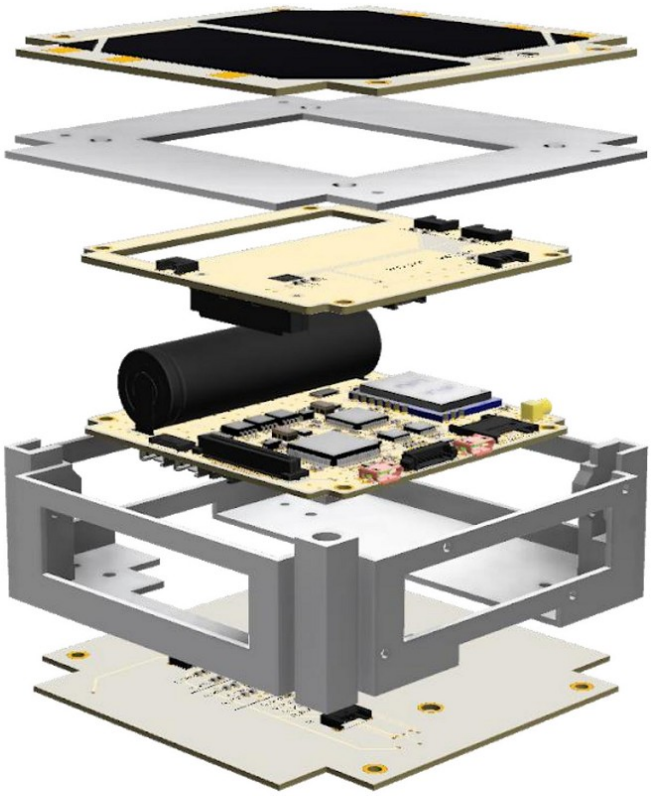


Figure 9: Exploded View of UNITYSat

Axes Definition

Parts are named after predefined axes of the satellite. Definition is based strictly on CubeSat Design Standard and configuration of the satellite in the p-pod. UNITYSats axes definition is presented in the Figure Below.

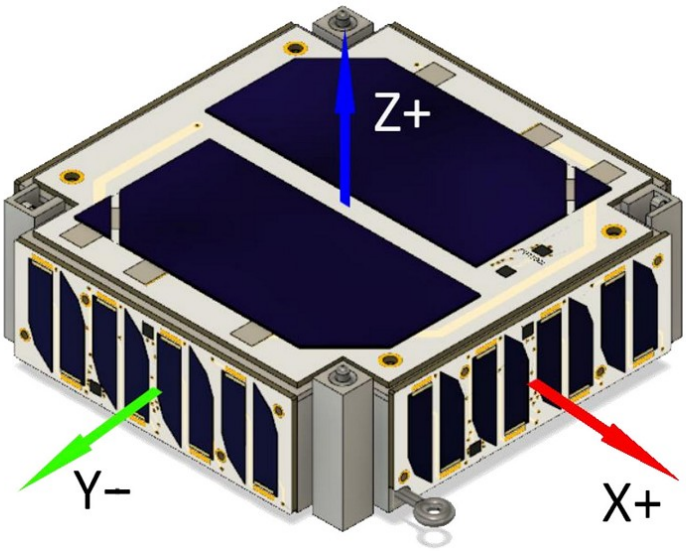


Figure 10: Axes with Respect to UNITYSat

Battery

The battery used is a single 18650 cell with a capacity of 3000 mAh. The following are the features:

- Protected with 3 MOS Seiko Circuit
- Charging temperature of 0 to 50 Celsius
- Discharge Temperature of -20 to 75 Celsius
- 300 Charge Cycles lifetime

Figure 11: 18650 Battery

STRUCTURE

The structure is machined from a single aluminium block and further anodized to prevent cold welding of the structure rails to the P-POD. The main structure serves as the support structure for all faces excluding the Z+ face. The Z+ face is a 1.5mm machined and anodized aluminium sheet that is secured to the main structure using the standoffs used to mount the PCBs to the body. 4 M3 Screws in a rectangular pattern are used to hold the top cap secure to the standoffs.

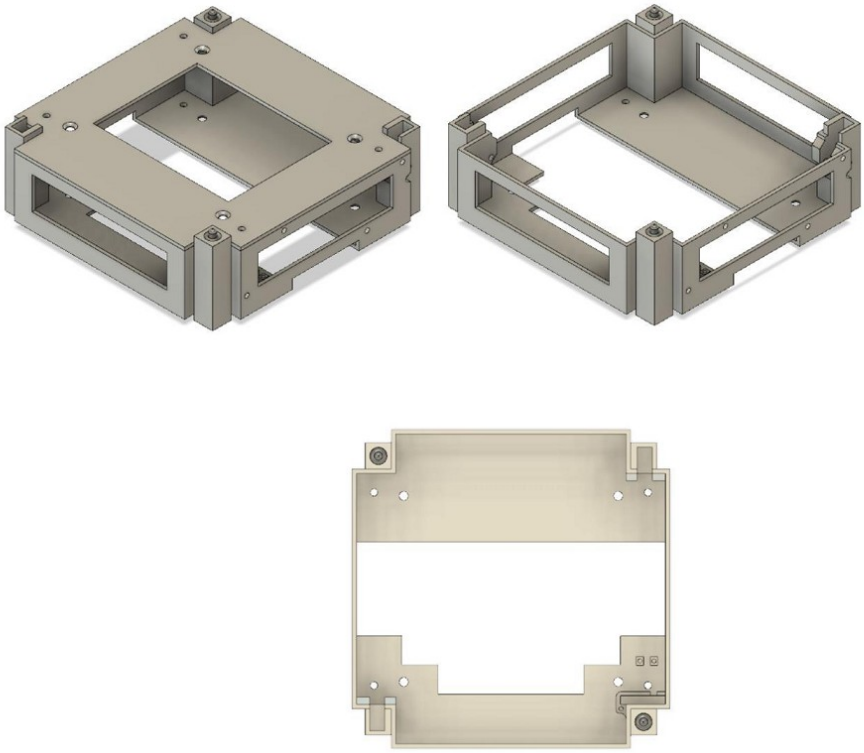


Figure 12: Structure Design

SOLAR PANELS

There are 6 solar panels. Two 1U panels on the Z+ and - face and 4 0.25U panels on the sides faces. The Z+ panel has burn resistors to assist with antenna deployment, and the Z- face has mounting holes for the antenna and differs from the Z+ face in that it has a Balun and a MMCX RF connector for the antenna.

1U Panels Interface

There are two 1U panels in UNITYSat. One is mounted on Z+ and the other on Z- faces. Both panels are as centered as possible. Each of them is mounted by 4 ISO 14581 M2 3mm screws. Screws have a rectangular pattern.

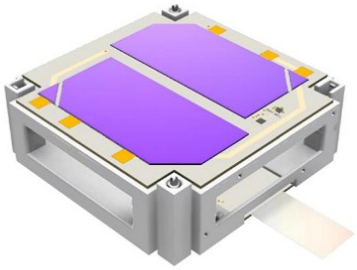


Figure 13: Z+ Face

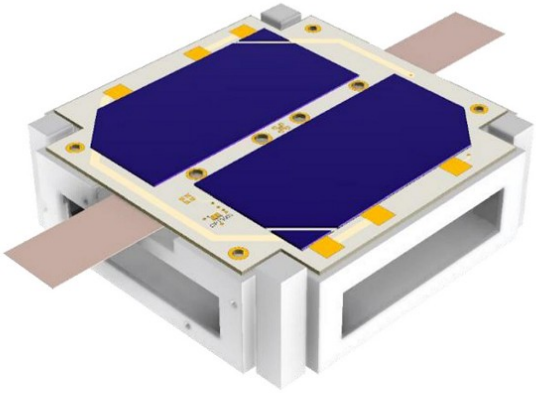


Figure 14: Z- Face

Figure 15: X+, X-, Y+, Y- Faces

Sun Sensor Interface

Coarse Sun sensors are mounted on all 6 faces of UNITYSat allowing approximate measurements to determine direction and intensity of the sun. The sun sensors used are redundant as there are two types of sensors on all faces, one digital ambient light sensor and one photodiode operating in photoconductive mode.

Connectors placement

The Z+ and Z- faces have dedicated connectors for Solar power and for communication with the sun sensor and temperature sensor. The power connector is a 2pin connector capable of supporting a maximum power output of 3.5A per terminal. The Interface connector is a 4 pin connector capable of supporting 3.5A per terminal also.

The X+/X-/Y+/Y- faces have two 5 pin connectors which connect all 4 faces parallelly and break out into solar power and communication at one point to connect to the payload interface board and the EPS board separately. Represented in figure below.

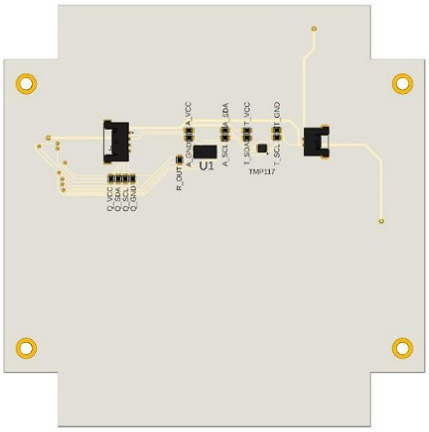


Figure 16: Z+ Solar Panel PCB

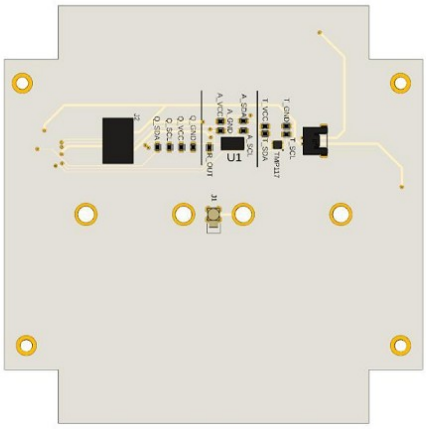


Figure 17: Z- Solar Panel PCB

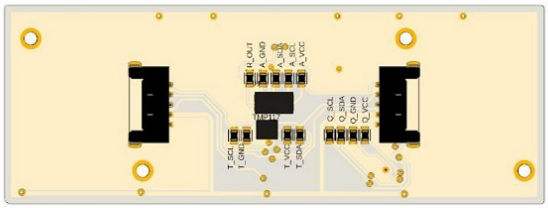


Figure 18: X+, X-, Y+, Y- Solar Panels PCB

STRUCTURAL LOADS

Static Structural Acceleration Load

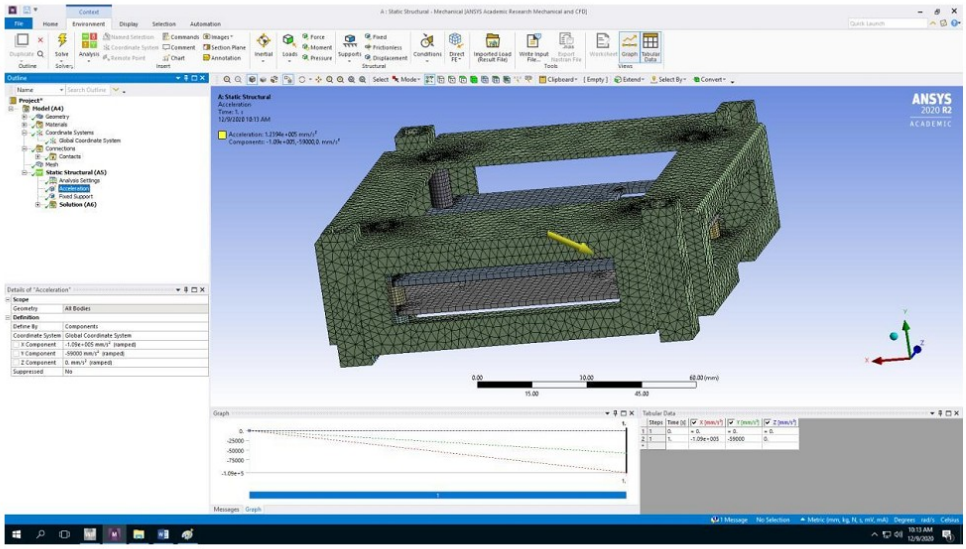


Figure 19: Inertial Acceleration Load is Applied at C.G. The Components are [109m/s2, 59m/s2, 0]. Fixed Constraint is Applied on the Bottom Surface of the Four Rails

Equivalent Stress (von-Mises)

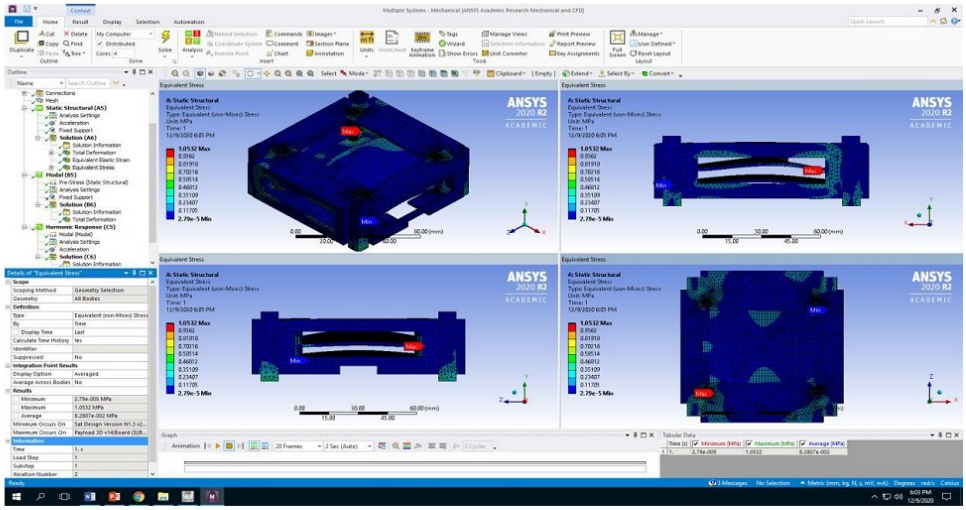


Figure 20: Maximum Equivalent Stress Of 1.0532 Mpa Has Been Observed. Also The Maximum Deformation And Stresses Occurred In The Pcbs (Material FR4). The Tensile Strength Of A Typical PCB Is Greater Than 250 Mpa. Therefore The Maximum Stress From The Simulation Is Less Than The Typical Values

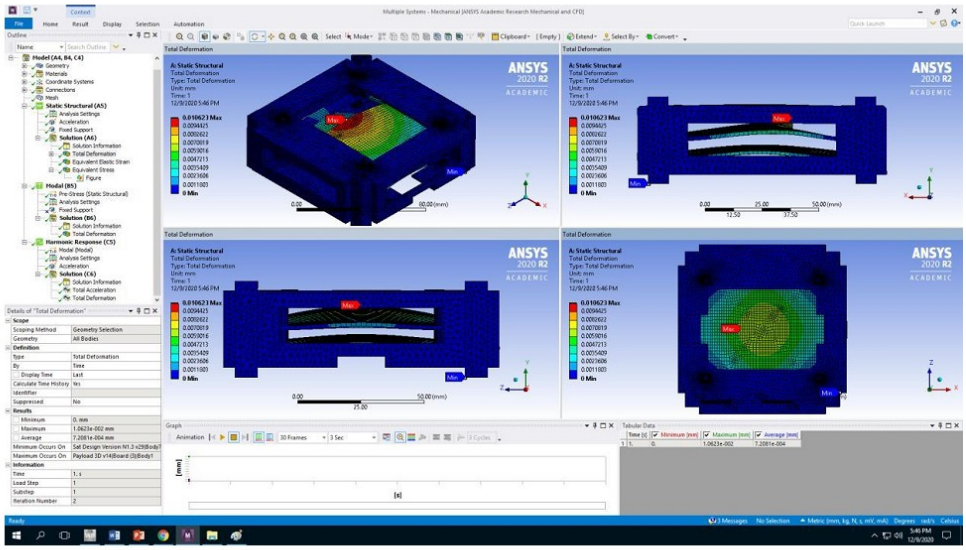


Figure 21: A Total Deformation Of About 0.010623 Mm Was Observed For The Above-Mentioned Loads. The Above Fig. Also Depicts The Location Of The Maximum Deformation

MODAL ANALYSIS

Total Deformation (Mode 1)

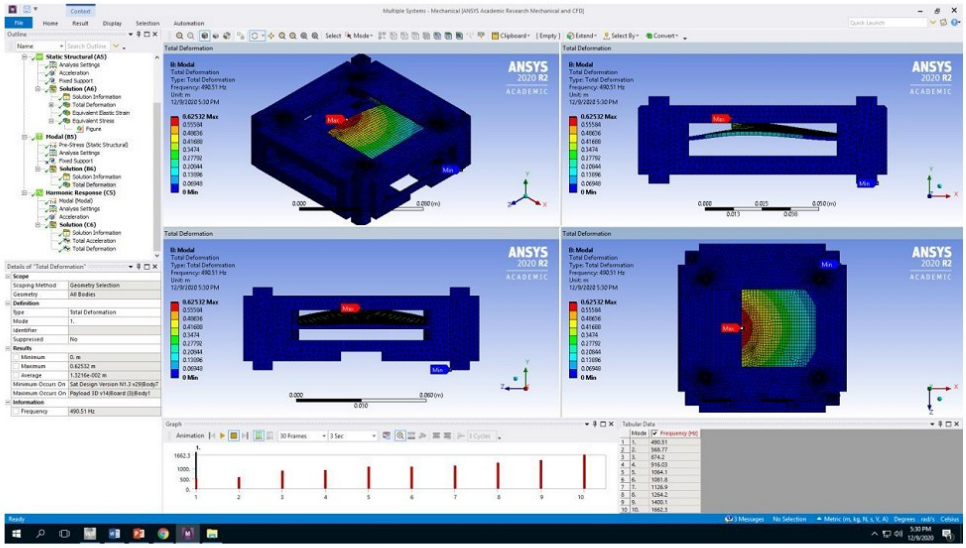


Figure 22: The First Modal Frequency Occurred at 490.51 Hz with a Maximum Deformation Value of 0.625m. As per the Stiffness Requirements, the Fundamental Frequency has to be Greater than 135 Hz in Longitudinal Direction and 70 Hz in Lateral Direction. The Maximum Deformation in all the 10 modes Occurred in the PCBs

Total Deformation (Mode 2)

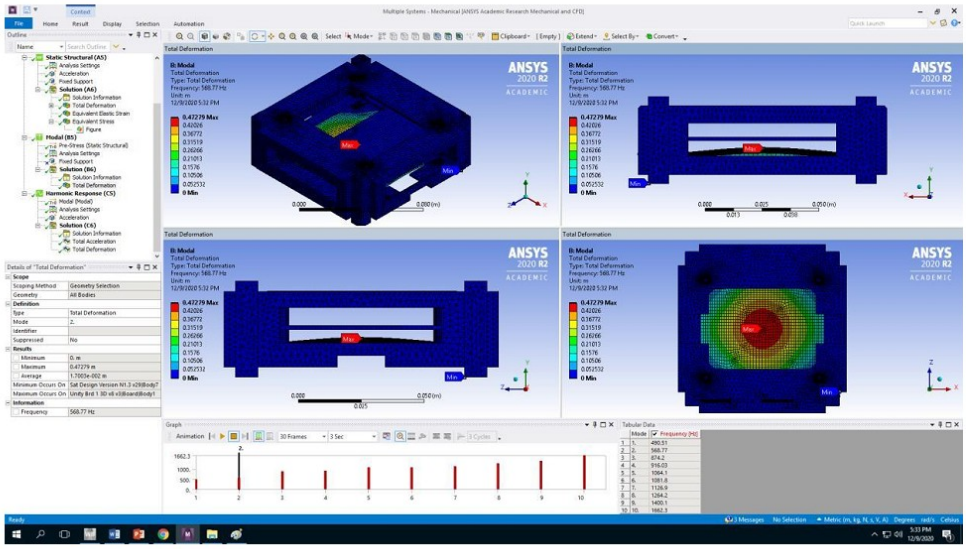


Figure 23: The Second Modal Frequency Occurred at 568.77 Hz with a Max. Deformation of 0.472m

Total Deformation (Mode 3)

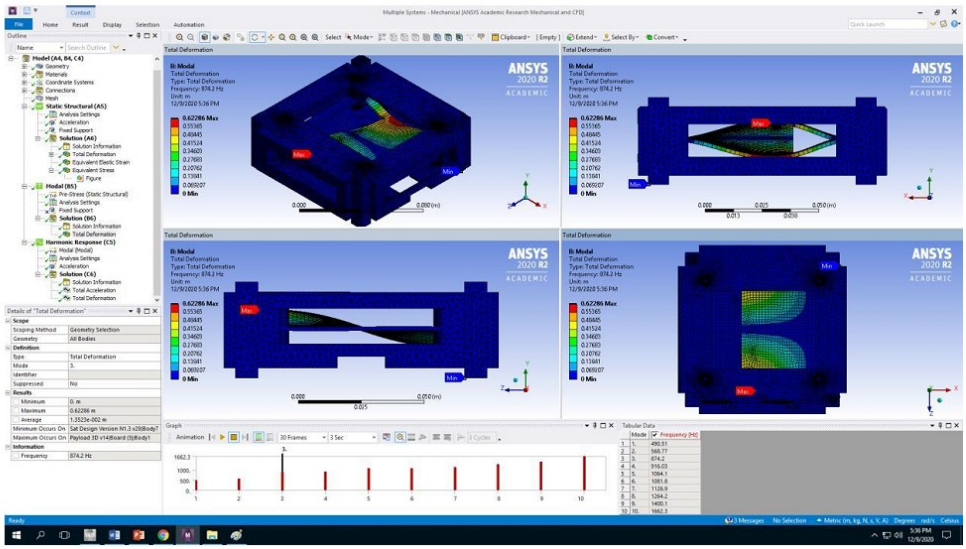


Figure 24: Third Modal Frequency of 874.2 Hz with Max. Deformation of 0.622 m

Total Deformation (Mode 4)

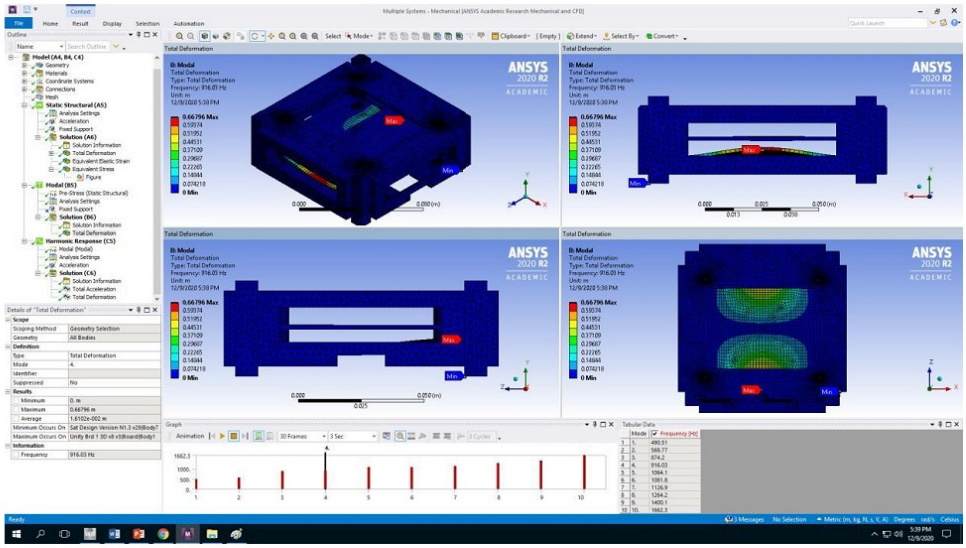


Figure 25: Fourth Modal Frequency of 916.03 Hz with Max. Deformation of 0.667 m

Total Deformation (Mode 5)

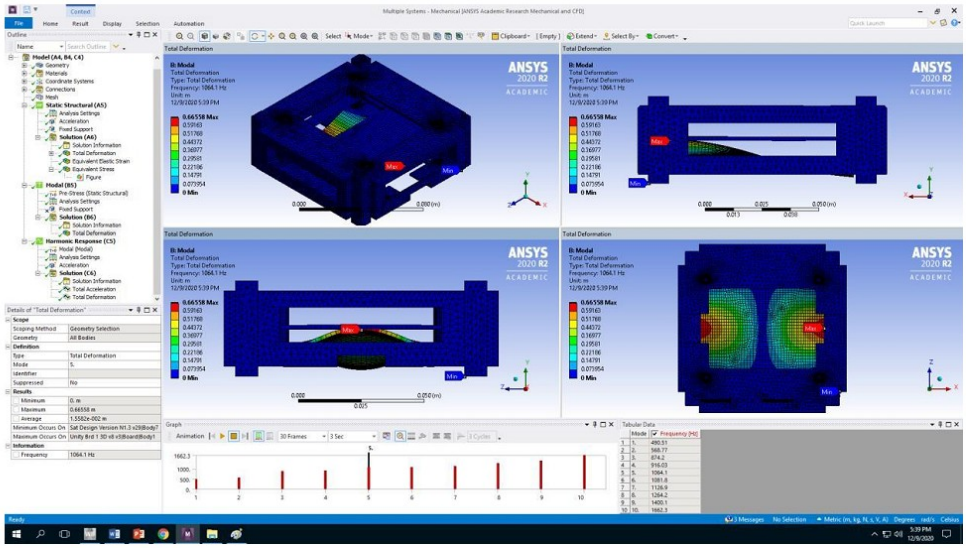


Figure 26: Fifth Modal Frequency: 1064.1 Hz with Max. Deformation: 0.665 m

Total Deformation (Mode 6)

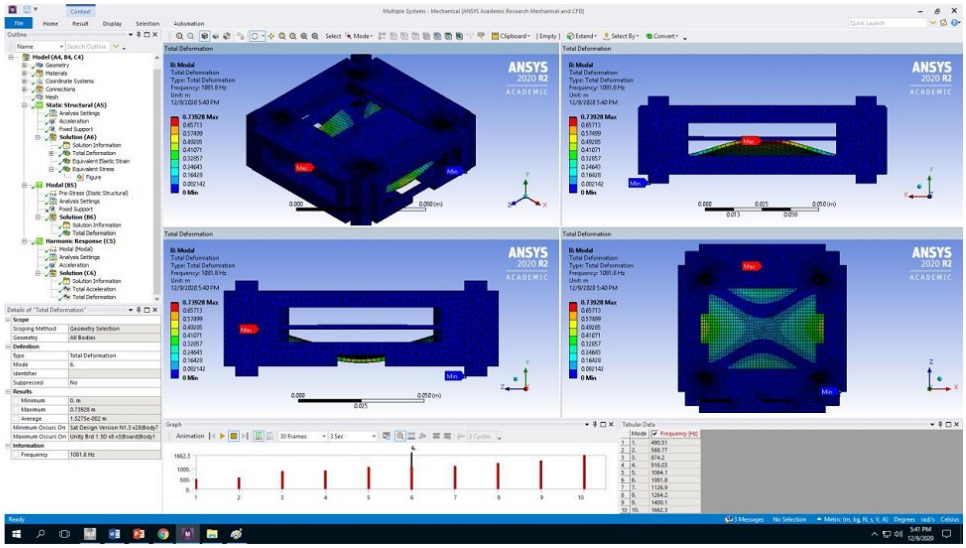


Figure 27: Sixth Modal Frequency: 1081.1 Hz with Max. Deformation of 0.7392 m

Total Deformation (Mode 7)

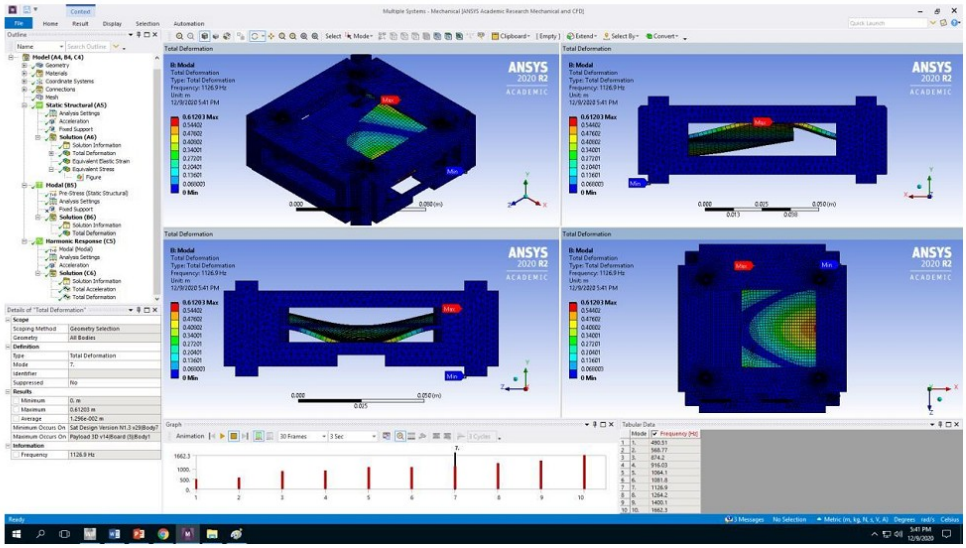


Figure 28: Seventh Modal Frequency: 1126.9 Hz with Max. Deformation of 0.612 m

Total Deformation (Mode 8)

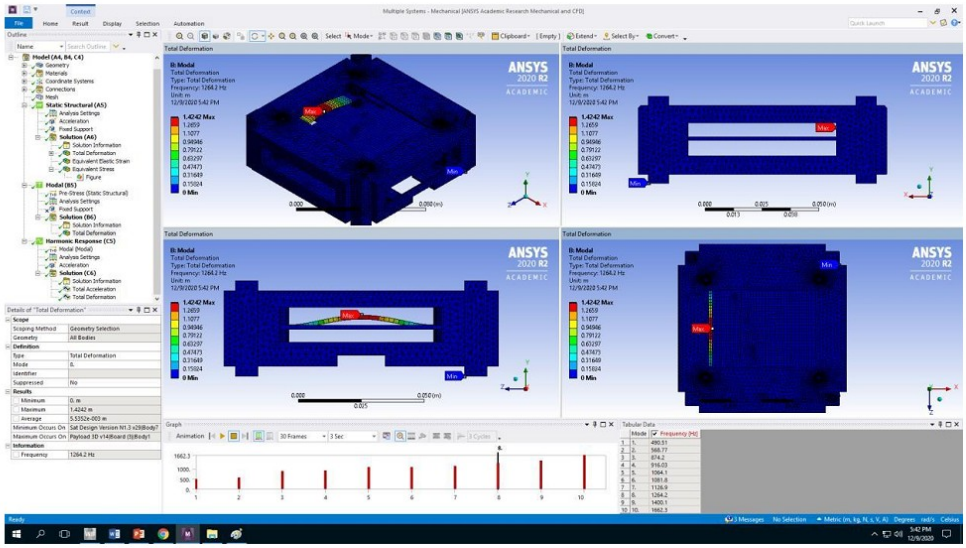


Figure 29: Eight Modal Frequency: 1264.2 Hz with Max. Deformation of 1.424 m

Total Deformation (Mode 9)

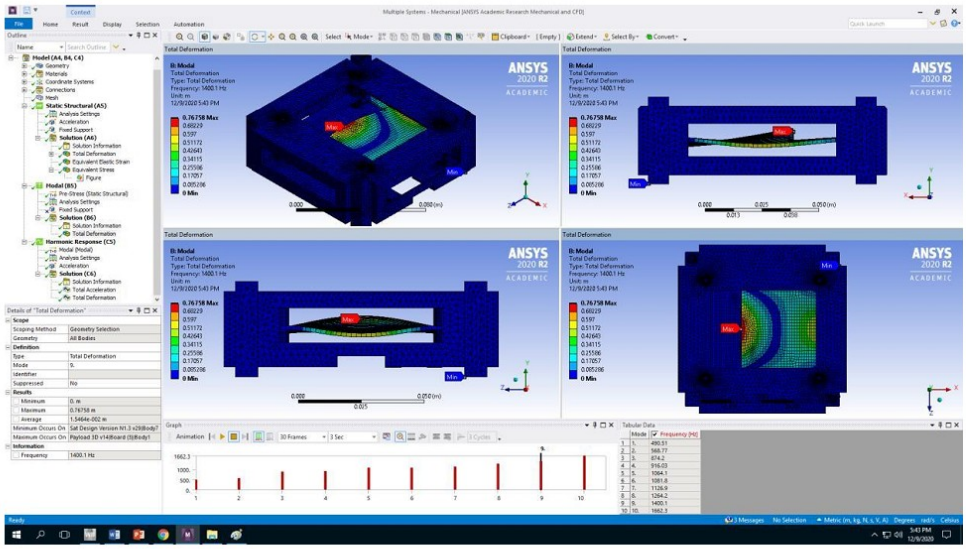


Figure 30: Ninth Modal Frequency: 1400 Hz with Max. Deformation of 0.767 m

Total Deformation (Mode 10)

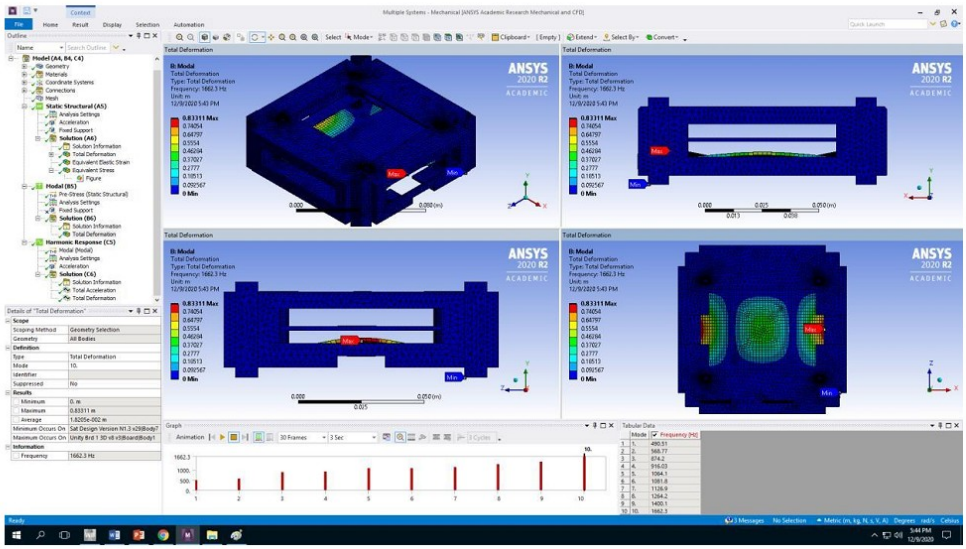


Figure 31: FIG 16: Tenth Modal Frequency: 1662.3 Hz with Max. Deformation of 0.833 m

HARMONIC ANALYSIS

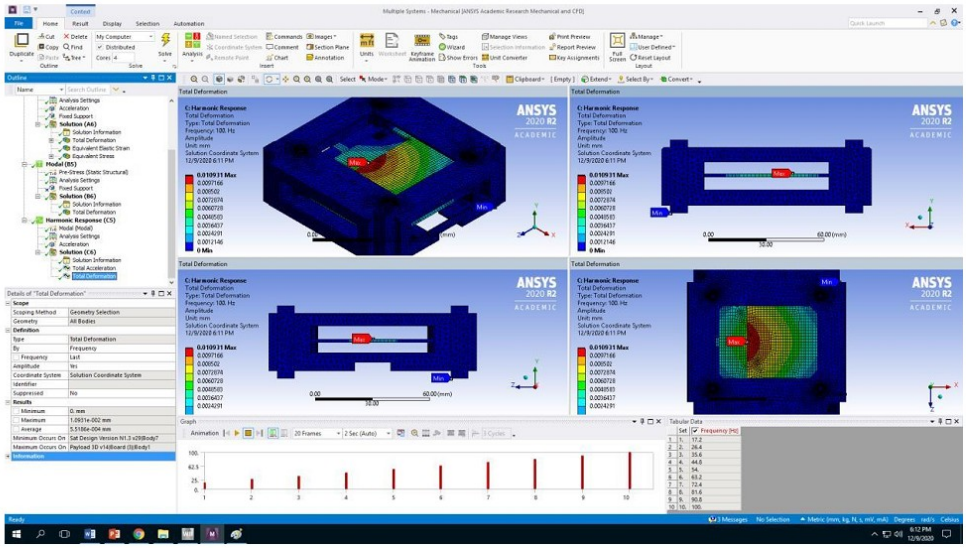


Figure 32: Harmonic Analysis was conducted for a Frequency Range of 8-100 Hz. Acceleration Load same as that in Static Structural, has been Applied. A Damping of 1% is given in the Analysis Settings. The Total Deformation Observed is 1.0931e-02 mm

General Configuration Description of Proposed 1U Satellite of ITCA Consortium

In the figure below, Karnataka Government School Students' Satellite (KGS3sat) assembly is presented. KGS3sat can be divided into several modules:

- Structure Unibody Aluminium that provides support for the satellite's components and mounting and deployment support for its systems.
- PCB Stack – consists of every piece of electronic equipment
- Solar Panels – PCB mounted solar panels connected on the exterior of the satellite that provide power for the satellite.

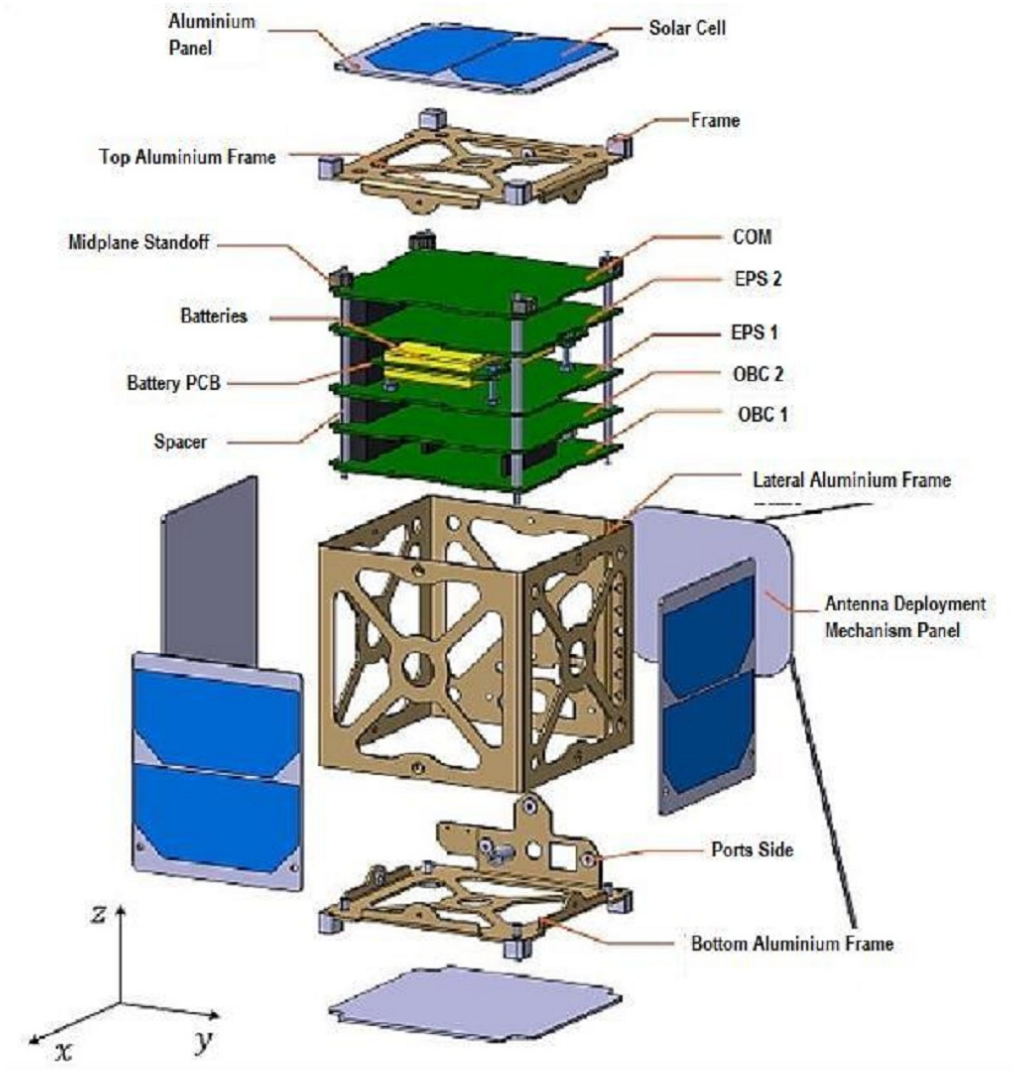


Figure 9: Exploded View of the General CubeSat Structure (Image Credit: University of Liège)

STRUCTURE

The structure is machined from a single aluminium block and further anodized to prevent cold welding of the structure rails to the P-POD. The main structure serves as the support structure for all faces excluding the Z+ face. The Z+ face is a 1.5mm machined and anodized aluminium sheet that is secured to the main structure using the standoffs used to mount the PCBs to the body. 4 M3 Screws in a rectangular pattern are used to hold the top cap secure to the standoffs.

PSLV FLIGHT ENVIRONMENT TESTS

Sinusoidal Vibration

	FREQ. RANGE (Hz)	QUALIFICATION LEVEL	ACCEPTANCE LEVEL
LONGITUDINAL AXIS (PSLV)	5-8 8-100	34.5mm DA 4.5g	23mm DA 3g
LATERAL AXIS (PSLV)	5-8 8-100	24mm 3g	16mm 2g
SWEEP RATE		2 Oct/min	4 Oct/min

Random Vibration

Frequency (Hz)	Qualification	Acceptance
	PSD (g2 / Hz)	PSD (g2 / Hz)
20	0.002	0.001
110	0.002	0.001
250	0.034	0.015
1000	0.034	0.015
2000	0.009	0.004
g RMS	6.7	4.47
Duration	2 min/axis	1 min/axis

Shock Levels

- **105g**, 2ms half sine pulse in vehicle longitudinal axes
- **70g**, 2ms, half sine pulse in vehicle lateral axes
- One shock per axis per direction

Thermo Vacuum

- **10^{-5} Torr** at 323K for 24 hours

ITCA-75 UNITYsat Core Team

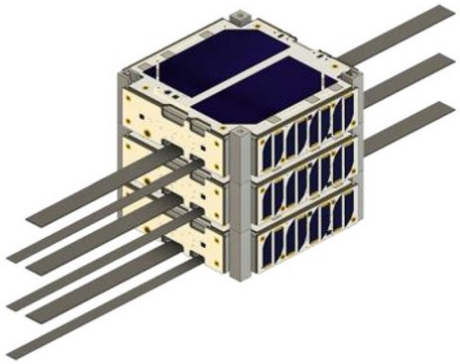
Distinguished Mentors of UNITYsat

ITCA-TSC Team has Launched UNITYsat: 3 Satellites: Indo-Serbia Initiative

ITCA-CSPD-TSC Technologies Team- After Successful Launch of THREE Satellites: Team with Chairman **Dr. K. Sivan**, Secretary, Department of Space (DOS), Indian Space Research Organisation (ISRO) @ Satish Dhawan Space Centre (SDSC) – SHAR, Sriharikota. THREE Satellites were built by TSC Technologies for their Client as Joint Development as UNITYsat (JITsat, GHRCEsat and SriShakthiSat) and has been Launched Successfully by PSLV. Post Launch of ISRO's PSLV C51 on 28 Feb 2021. L to R: Dr. K. Gopalakrishnan, WCRC Core Team and Mentor of TSC, Dr. Marie Wilson, MD, JIT, Dr. Gaikwad, Professor, GHRCE, Tarun, Dr .S. Thangavelu, Chairman, SIET, Nikhil, Dr. K. Sivan, Chairman, ISRO, Hari, Bhavana, Dr. R Umamaheswaran, Distinguished Scientist & Scientific Secretary, ISRO and Interim Chairman, IN-SPACe, Athira, Adithya, Ashwin, Sainath and Denzel

Launch of ISRO's PSLV C51

UNITYsat Core Team @ SDSC – SHAR, Spaceport of India, Sriharikota



UNITYsat built by ITCA-CSPD-TSC Technologies, A Successful Startup by WCRC Team!

Supporting Countries/Agencies: India, Israel, France, Russia, Canada, Netherlands, UK, USA, Japan, Italy, Serbia, Germany, Portugal, Tunisia & Peru

ITCA Success Meet of UNITYsat: JITsat, GHRCEsat and SriShakthiSat

On the 6thApril 2021, the Indian Technology Congress Association (ITCA) has celebrated the Successful design, development, fabrication, integration, testing, launch and operation of the **UNITYsat** aboard the **PSLV C-51 Amazonia Mission in 28th February 2021** from India's spaceport Satish Dhawan Space Center (SDSC) at Sriharikota, India, at The Leela Palace, Bangalore, India.

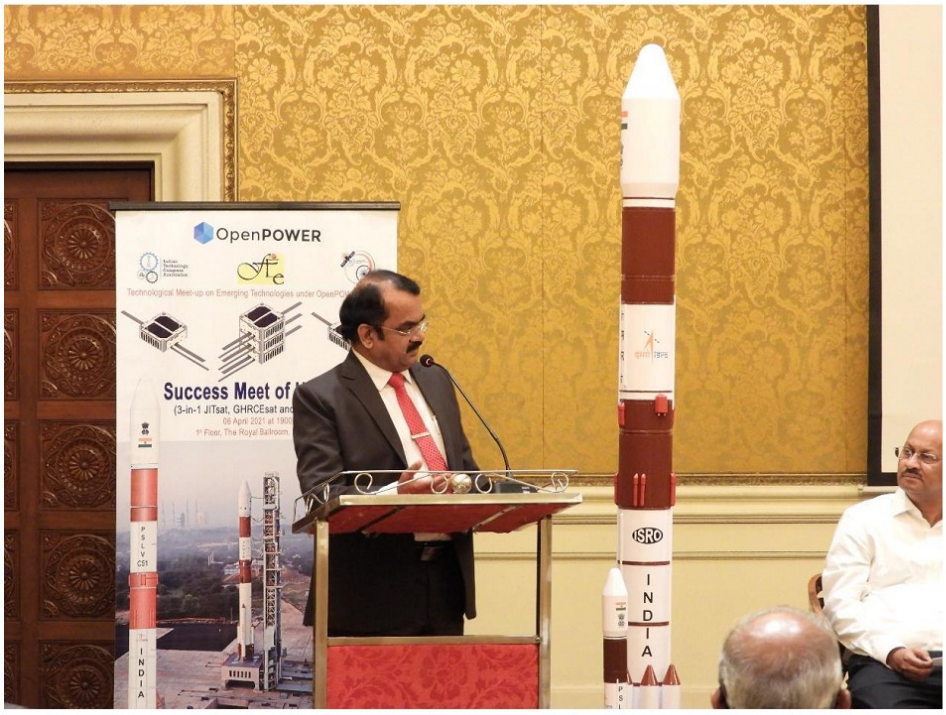
The event was chaired by **Dr. C. N. Ashwath Narayan**, Honourable Deputy Chief Minister of Karnataka and Honourable Minister for Higher Education, IT&BT, Science and Technology, Government of Karnataka. The guests of honour also included **Padma Shri Prof. R. M. Vasagam**, **Padma Shri Mylswamy Annadurai, Dr Wooday P Krishna** and **Dr L. V. Muralikrishna Reddy**. It was also graced with the presence of various senior and eminent engineers/scientists from ISRO and various industry leaders.

Padma Shri Prof. R. M. Vasagam, Eminent Scientist, ISRO, Former Vice Chancellor, Anna University

The success meet began with a short presentation of the satellites launch and deployment into orbit. After this, the welcome address was delivered by **Dr. L.V. Muralikrishna Reddy,** President ITCA, UNISEC India and 75 Students' Satellite Consortium: Mission 2022. The presidential address was delivered by **Padma Shri Prof. R. M. Vasagam, Eminent Scientist, ISRO, Former Vice Chancellor, Anna University and Former EC member, VTU, Karnataka.**

Dr. C. N. Ashwath Narayan, Honourable Deputy Chief Minister of Karnataka and Honourable Minister for Higher Education, IT&BT, Science and Technology, Government of Karnataka.

Following this, the guest of honour, **Dr. Ashwath Narayan C N** delivered his address to the gathering. During the event, ITCA also awarded him the Honorary Fellowship. The event felicitated the students for their achievement in the successful launch of the UNITYsat and the first step in the 75 Students' Satellites Mission 2022. As a part of the first launch of the mission, they were awarded with certificates and mementos to commemorate their hard-earned victory., addressed the gathering expressing how this mission is a stepping stone in the greater mission and how this will be an important step in the future of the Indian space industry.



Padma Shri Dr. Mylswamy Annadurai, Chief Advisors on the 75 Students' Satellites Mission 2022

Mr. Ganesan Narayanaswamy, OpenPOWER Leader in Education and Research, IBM

Dr. Wooday P Krishna, National President, IIPE, Vice President, ITCA and UNISEC India

ITCA-TSC Team with Dr. C. N. Ashwath Narayan, Honourable Deputy Chief Minister of Karnataka and Honourable Minister for Higher Education, IT&BT, Science and Technology, Government of Karnataka at Leela Palace, Bangalore, INDIA

WCRC International Webinar-Phase 0: Promoters/Partners

World CanSat/Rocketry Championship (WCRC) – Phase 0

The Phase 0 of the WCRC objective is to help students around the world understand about Nanosatellites. This Phase has a series of Webinar and a bundle of fun quizzes. The adversity of the pandemic can be turned into an opportunity for the focused learning of satellites.

The webinar began from 22nd June, 2020 to 26th June, 2020. The webinar also provided information for others who wish to organise the National CanSat/Rocketry Competition or to be promoters of WCRC. The speakers of Webinar Series represented various countries. The diverse speakers covered a variety of topics in the field of Nanosatellites.

ORGANISATION	WEBSITE
Indian Technological Congress Association (ITCA), India	https://www.itca.org.in/
BRICS Federation of Engineering Organisations', Brazil, Russia, India, China and South Africa	https://infobrics.org/
Committee for Space Programme Development	http://2comnet.info/
UNISEC (University Space Engineering Consortium) Global	http://www.unisec-global.org/
NHCE MHRD Institutions' Innovation Council, India	https://www.mic.gov.in/iic.php
National Design and Research Forum (NDRF), India	https://www.ndrf.res.in/
Engineers Without Borders	http://ewb-international.com/
TSC Technologies Private Limited, India	https://tsctech.in/
GeekSpace Labs	https://geekspace.in/

The **World CanSat/Rocketry Championship (WCRC)** was formulated and negotiated among the Organizations from 6 countries: **Serbia, India, Italy, Tunisia, Canada** and **Peru**. Then, **Portugal** has been added. WCRC is open for adding many more countries in this process! This event is an international competition open to elite competitors from around the world, representing their nations (as university student Teams or as independent student Teams), and winning this event will be considered the highest or near highest achievement in this field!

Website: www.wcrc.world

This event is important as it boosts students in a vertical type of education as compared to horizontal. It aims to give an insight and build ambience of a practical space mission. The WCRC originally consists of 3 phases, hence, the formal inauguration of **International Webinar** has been marked as **Phase 0** held from **22-26 June 2020!**

Phase 0 - Online International Webinar + Quiz Assessment

Video 2020-06-15 to 2020-07-13 World CanSat & Rocketry Championship:

Video	Video Title	Video Publish Time	Views	Watch Time (hours)	Impressions
		Date/Total	8616	427.4617	23973
8psx5vsFwEc	Introduction to CubeSats	Jun 24, 2020	1681	62.7025	1651
vPqH0jucgXo	WCRC Inauguration - Phase 0	Jun 22, 2020	1536	59.0997	1878
wF-w3TZmrFQ	Official Introduction to World CanSat/Rocketry Championship	Jun 21, 2020	1065	18.5896	1399
9byaNtKHEag	About UNITY Program - A Cost Effective Frugal Innovative Way to Reach Orbit and Smartly with WCRC	Jun 25, 2020	921	34.7634	1345
58FTV8N91_8	What is a CanSat? Importance of Existence and Education	Jun 22, 2020	744	70.5977	1878
sQO45Cx_gEo	CanSat, A CubeSat learning kit Made in India [TSC]	Jun 23, 2020	473	47.3037	1557
-cJx7FrK9lg	About WCRC - Existence, Mission & Contest	Jun 22, 2020	435	19.5206	1671
Uke6YK-J4f8	Introduction to PocketQube	Jun 24, 2020	301	32.446	1499
5uuTMREtobM	WCRC Basic Rules- INDIA	Jun 23, 2020	287	6.1633	1359
n3W7bODee0Y	Organize Regional WCRC (Promoters)	Jun 26, 2020	230	8.5572	1410
9aUdDPiKN9E	Introduction to Amateur Radio, Ground Stations Systems and ICAS Command	Jun 25, 2020	213	19.8628	1516
aqEYwE4MGds	About Space Debris	Jun 26, 2020	188	28.7096	1292
rsm2gYCdywk	WCRC Basic Rules- ITALY	Jun 23, 2020	159	1.5806	1472
333cjgNfefM	Real Space Missions	Jun 26, 2020	142	11.6432	1342
UdM6kTgDyx4	WCRC Basic Rules- TUNISIA	Jun 23, 2020	123	2.9622	1265
muB5TVTA7bo	WCRC Basic Rules- PERU	Jun 23, 2020	83	2.6374	1283

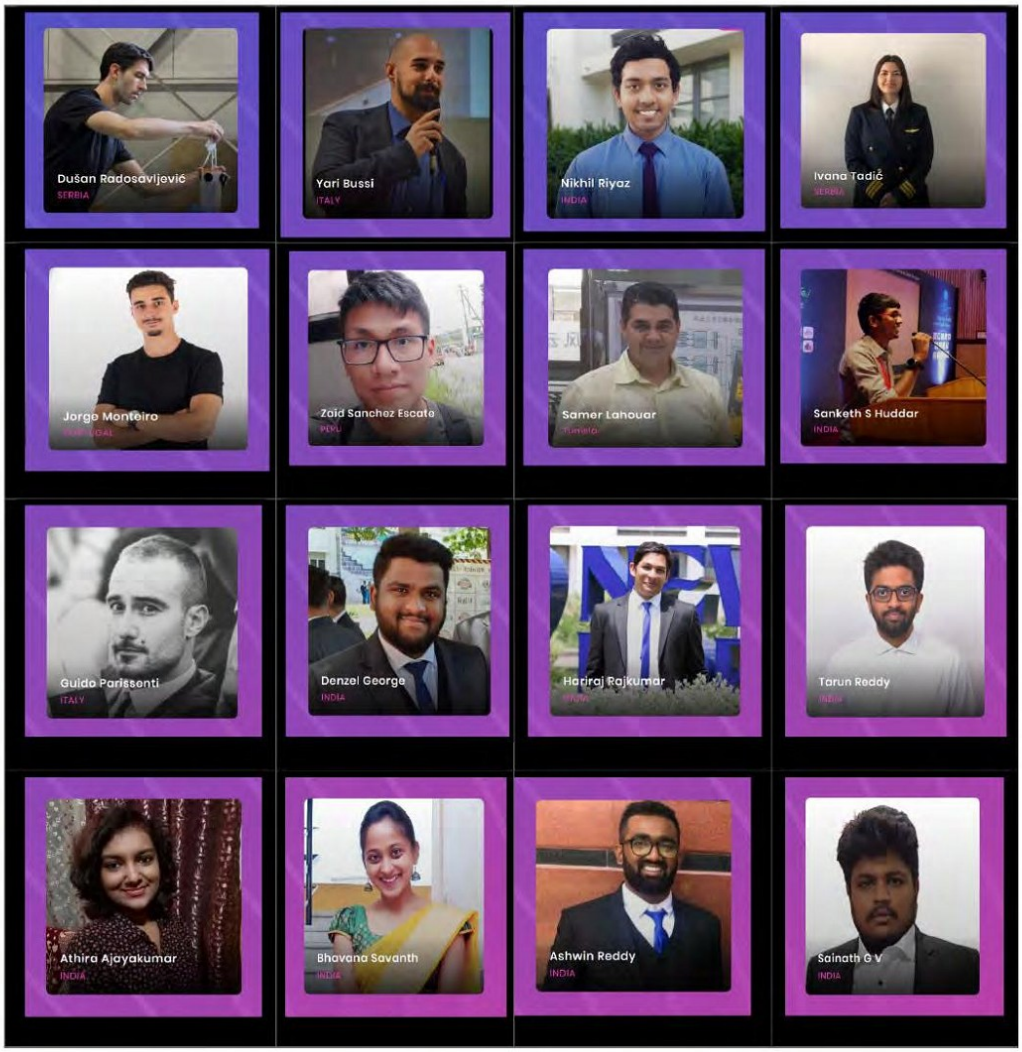
Video 2020-06-15 to 2020-07-13 World CanSat & Rocketry Championship

Phase 0: International Webinar + Quiz Assessment

Sl. No.	Geography	Views	Watch Time (Hours)
	Total	**8623**	**427.6238**
1.	India	4661	194.2838
2.	Serbia	374	11.6329
3.	Colombia	276	38.2637
4.	Turkey	153	7.201
5.	Mexico	143	13.6103
6.	Japan	117	6.6791
7.	Germany	94	3.4771
8.	Lebanon	89	5.6248
9.	Egypt	69	1.6462
10.	Bahrain	61	8.377
11.	Peru	61	8.0418
12.	France	60	2.3527
13.	Russia	55	0.4178
14.	Philippines	52	1.6588
15.	United Kingdom	49	3.1913
16.	Algeria	49	1.2063
17.	Argentina	46	7.8581
18.	Portugal	44	2.9003
19.	Thailand	43	0.9169
20.	Brazil	39	0.8181
21.	Bangladesh	36	2.5298
22.	Rwanda	36	0.383
23.	Pakistan	36	0.0732
24.	Poland	34	0.6378
25.	Malaysia	34	0.628
26.	United States	33	1.9166
27.	Romania	32	3.7608
28.	Spain	32	0.609
29.	Ukraine	31	1.2864
30.	Chile	28	3.1044
31.	South Korea	25	1.8508
32.	Iraq	24	0.9021
33.	Tunisia	22	0.3537
34.	Indonesia	15	0.0408
35.	Vietnam	14	1.1498
36.	Uzbekistan	11	0.0155
37.	Angola	3	1.1554
38.	Others	37	0.629

WCRC: International Webinar Speakers!

YouTube Visit: WCRC.WORLD



Official Introduction to World CanSat/Rocketry Championship

Speakers: Sanketh S. Huddar (TSC)

Date: 21st June, 2020

YouTube: https://youtu.be/wF-w3TZmrFQ

The Webinar series started off with the first ticket to enter the WCRC Championship, that is Phase 0. This video highlighted the mission and milestones of WCRC and of course, about WCRC.

The presenter also revealed the official logo of WCRC.

The founding countries of WCRC are - Serbia, India, Italy, Tunisia, Canada and Peru. The phases of the WCRC were mentioned, that is:

Phase 1 – National Competition

Phase 2 – Continental Competition

Phase 3 – Grand Finale Championship

There was also an announcement of opportunity! If some universities/ industries/ activists want to organise a CanSat/Rocketry competition in a region, WCRC Secretariat will provide all the support to make sure the event happens!

Speakers: Dr.Mylswamy Annadurai, Mr. M.V Kannan, Padmashri Prof.R.M. Vasagam, Dr. V. Dillibabu Padmashri , Dr. Y.S. Rajan, Dr. L.V.Muralikrishna Reddy, Mr. Rajangam and Prof. Ramkumar J.

Date: 22nd June,2020

YouTube: https://youtu.be/vPqH0jucgXo

WCRC Inauguration – Phase 0

The following eminent personalities, who are known in the field of space and engineering, have inaugurated WCRC and has given their best wishes!

Dr.Mylswamy Annadurai – Former Director ISRO Satellite Centre, Project Director of India's First Moon mission "Chandrayaan 1 and 2", Programme Director of Mars Orbiter Mission "Mangalyaan", Chairman of National Design and Research Forum (NDRF)

M.V Kannan – General Secretary, Planet Aerospace (Association of 300+ Retired Scientists from ISRO)

Padmashri Prof.R.M. Vasagam – Project Director, APPLE – India's First Geostationary Communication Satellite

Dr. V. Dillibabu – Director of National Design Research and Forum.

Padmashri Dr. Y.S. Rajan – Honorary Distinguished Professor and Scientist, ISRO. Author of India 2020: A Vision for New Millenium along with Dr. APJ Abdul Kalam, Former President of India

Dr. L.V.Muralikrishna Reddy – President, BRICS Federation of Engineering Organisation, Indian Technology Congress Association, UNISEC – India

Mr. Rajangam – President, Planet Aerospace

Prof. Ramkumar J. – Indian Institute of Technology, Kanpur

Speaker: Dušan Radosavljević / CSPD

Date: 22nd June, 2020

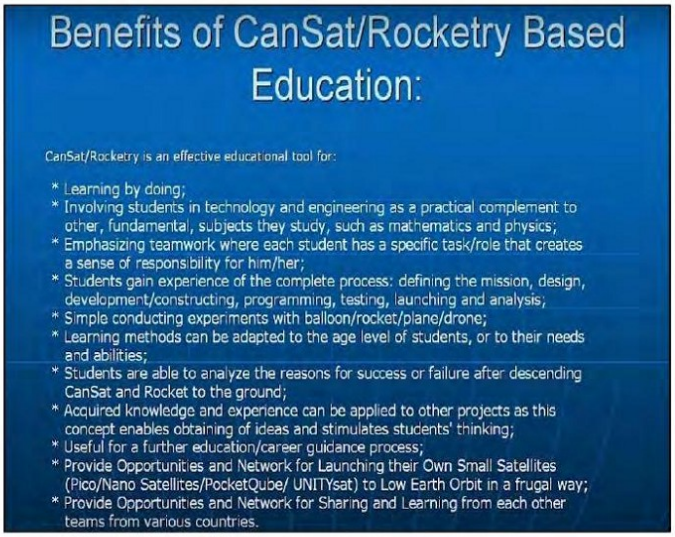
YouTube: https://youtu.be/58FTV8N91_8

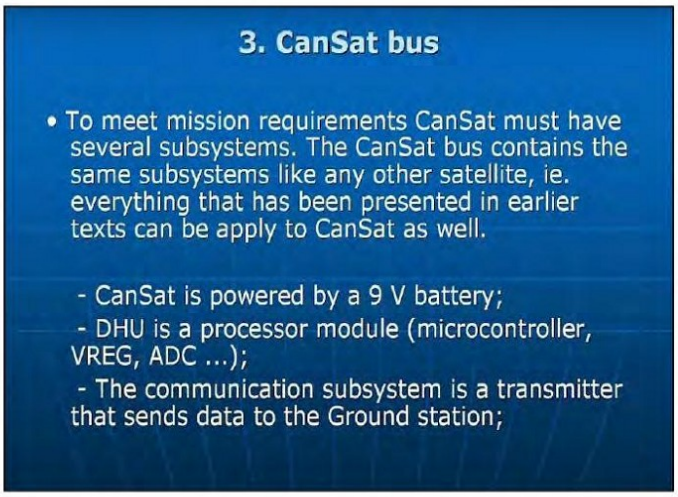
What is a CanSat? Importance of Existence and Education

The presentation started with CanSat History, CanSat/Rocketry building and it covered the explanation of the advantages of building one for Space Engineering Learning. Then explained about Concept of Operations (CONOPS) which describes the mission operations from Idea to Launch. The CanSat Design, Ground Station and Rocket constraints were given in brief, that was a necessary element while building and launching a CanSat. Few payload components were also presented.

Next section covered the main subsystems and chassis structure of the CanSat. The presenter explained about Satellite and Data Management Subsystem, Power Supply Subsystem, Communication Subsystem, Satellite Attitude Control Subsystem, Satellite bus and finally about the Payload.

Then the CanSat Bus was briefed, keeping the model CanSat DHU. Critical points that are involved when building the CanSat CONOPS in Field/Outdoor and Indoor Operations were listed. Lastly, the presenter motivated the participants by manifesting his resources on Rocketry and The Journey of 2019 CanSat/Rocketry International Competition organized by CSPD.

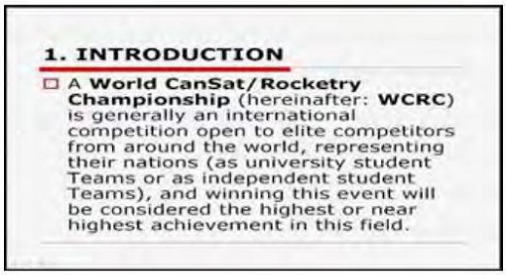


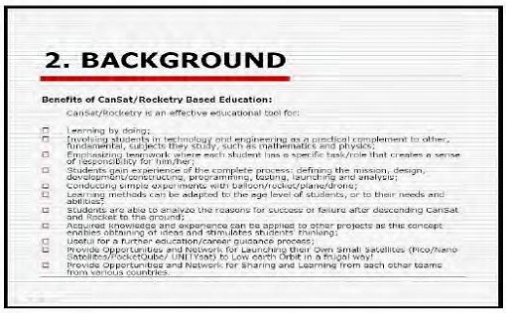


Speakers: Dušan Radosavljević / CSPD

Date: 22nd June, 2020

YouTube: https://www.youtube.com/watch?v=-cJx7FrK9lg





About WCRC

The speaker has begun the presentation talking about how WCRC came into existence, and the motive behind it. After mentioning the founding countries, the benefits and the experience, the World Cansat/Rocketry Championship brings for a nation, institution, and a student is spoken about.

More detail is given upon the roles, responsibilities, of the founding countries and the common rules for the competition. It is also mentioned that, Material for CanSat Assembling (WCRC Standard) is set by India, and will be listed on Amazon for sale. All video manuals and handbooks are prepared by India and will be available for every country.

The following slides cover Championship phases in detail, succeeding which, a detailed explanation about the Jury, how the Evaluation and Scoring will take place, the marking scheme and also about the number of prizes. Lastly, the quotas for the World Finals is shown and spoken about.

Speakers: Representatives from ***India, Italy, Tunisia*** and ***Peru***

Date: 23rd June, 2020

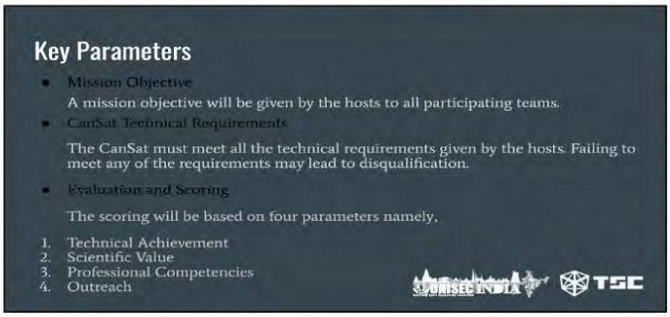
YouTube:

https://www.youtube.com/watch?v=5uuTMREtobM&t=113s (INDIA)

https://www.youtube.com/watch?v=rsm2gYCdywk (ITALY)

https://www.youtube.com/watch?v=muB5TVTA7bo (PERU)

https://www.youtube.com/watch?v=UdM6kTgDyx4 (TUNISIA)



Basic Rules of WCRC – India, Italy, Peru and Tunisia

A presentation of the Basic rules and Regulations for WCRC were made by representatives of 4 countries, India, Italy, Peru and Tunisia. Each of the videos contains a basic description of the hosts and a brief introduction about the country.

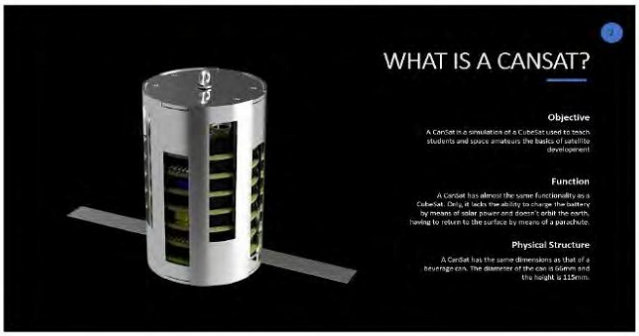
Following which, the representatives brief the Key Parameters like the mission objective, CanSat Technical Requirements, Evaluation and Scoring, and the Basic Rules for WCRC in their respective countries. Representative from Tunisia has also included the flow of the event in his presentation. However, a detailed list of all the Rules and Important Regulations to keep in mind during the participation will be shared at the time of the competition.

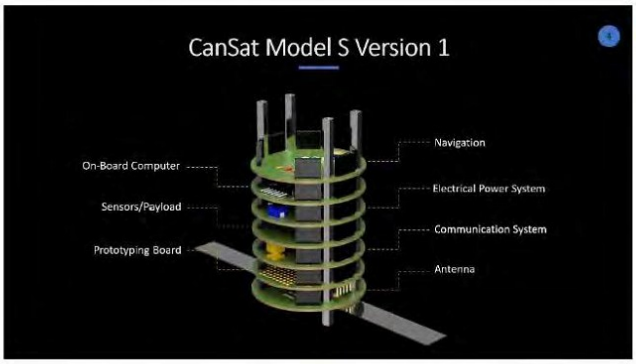
Each member country has an unique and wide range of expertise in the Space Sector, which has been shown in the presentations in short.

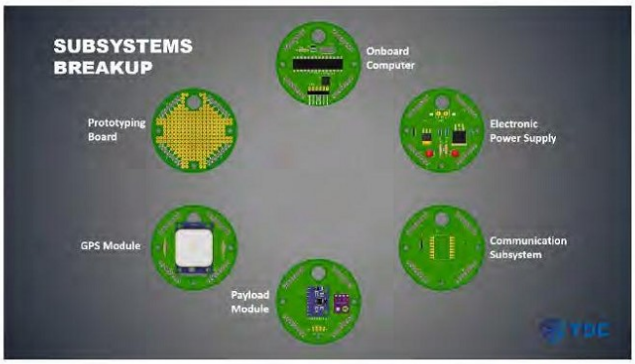
Speakers: Nikhil Riyaz /TSC and Tarun Sai Reddy/TSC

Date: 23rd June 2020

YouTube: https://www.youtube.com/watch?v=sQO45Cx_gEo







Nikhil

CanSat Kit Made in India

The presentation starts with Nikhil describing the CanSat. He describes the different areas CanSats can be used. He also describes the objective, functionality, and the physical characteristics.

Further into the presentation Nikhil talks about the various subsystems present in the advanced CanSat kit (CanSat Model S) built by TSC.

Tarun takes over to explain the basic model (CanSat Model E) In detail. He lays emphasis on the simplicity of the kit. Giving users the ability to experiment with this kit without having deep knowledge in the working of electronic systems was the object with which this kit was designed.

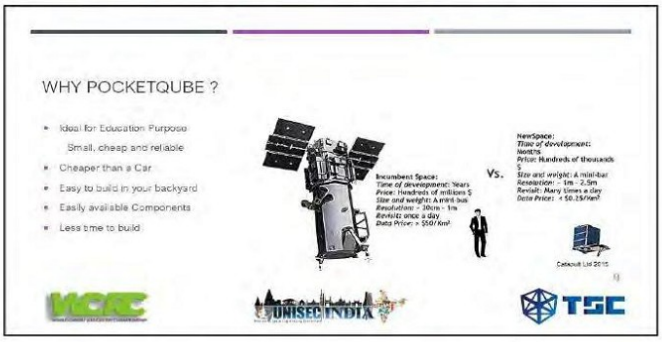
Tarun later goes throws light on the different software development tools used to program the CanSat. He mentions that the design of the OBC is based on Arduino UNO which is among the top most used Arduino boards, giving users access to a plethora of online learning resources.

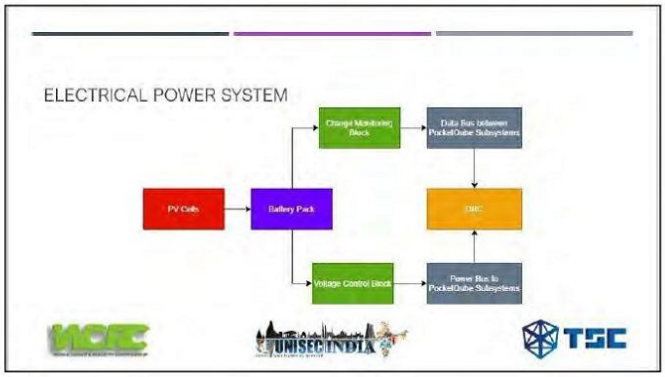
Tarun

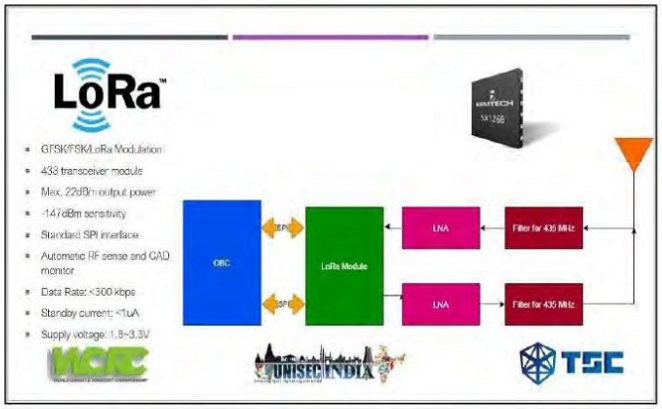
Speakers: Denzel George / TSC and Hariraj R / TSC

Date: 24th June 2020

YouTube: https://www.youtube.com/watch?v=Uke6YK-J4f8&t=1382s







Denzel

Introduction to PocketQube

The presenters, Denzel George and Hariraj R, gave an overview of PocketQube. The main goal is to give an insight into how PocketQube has evolved and also to give a few technical pointers to take account into when developing one. The takeaway here is to give intuition on the basics of a PocketQube.

The presentation started with the miniaturizing of technologies in day-to-day life with respective to Satellites and it covered the explanation of the advantages of building one. Then the practical general, mechanical requirements and design constraints were given in brief, that was a necessary element while building a PocketQube. Some payload ideas were also presented.

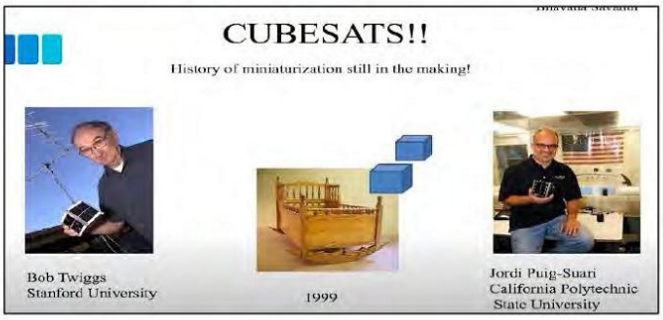
The next section covered the popularity behind PocketQube. The main popular reasons were mentioned. Then the main subsystems of the PocketQube were explained in brief: On-Board Computer, Electrical Power System, Communication System. The Critical points that are involved when designing the Communication and Electrical Power systems were listed. Lastly, the Conclusion and Usages of the PocektQube was given.

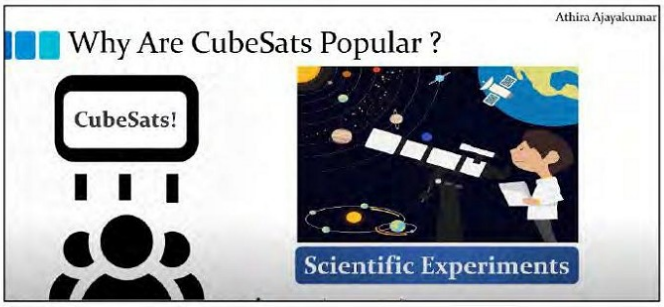
Hariraj

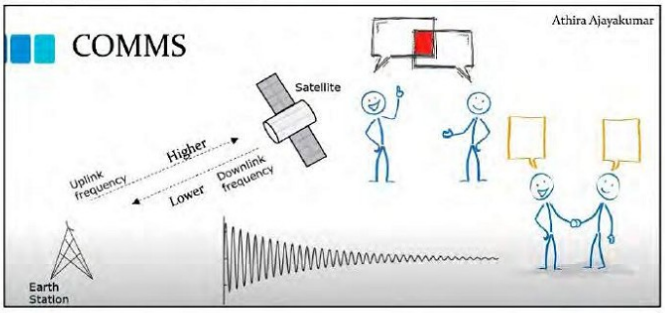
Speakers: Athira Ajayakumar /TSC and Bhavana Savanth /TSC

Date: 24TH June, 2020

YouTube: https://youtu.be/8psx5vsFwEc







Athira

Introduction to CubeSats

The presenters, Athira and Bhavana, gave an overview of CubeSats. The main goal is to give an insight into how CubeSat has evolved and also to give a few technical pointers to take account into when developing one. The takeaway here is to give intuition on the basics of a CubeSat.

The presentation started with the evolution of satellites and the revolution that led to the birth of CubeSats. It covered the various space travellers that has pinned down their achievements in space history. Then the practical missions were given in brief, that was carried out by various CubeSats.

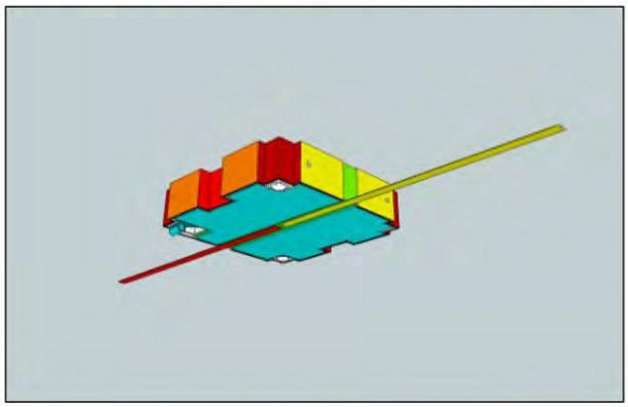
The next section covered the popularity behind CubeSats. The main popular reasons were mentioned. Then the main subsystems of the CubeSat were explained in brief: On-Board Computer, Electrical Power System, Communication System. The key factors that are involved when designing the systems were listed for each subsystem. Lastly, the overview of the CubeSat Design Process was given.

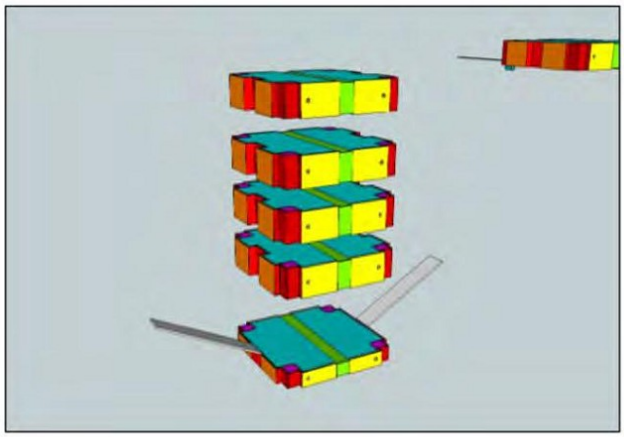
Bhavana

Speaker: Dusan Radosavljevic /CSPD

Date: 25TH June, 2020

YouTube: https://youtu.be/9byaNtKHEag





About UNITY Program

The UNITY program represents a response to the increasing need of individuals and groups for easier access to Space, in order to achieve sustainable progress in their work and development of this area.

The presentation started with the identifying the problems that contribute to the need for such a program. The Unity program is based on CubeSat standards, primarily by dimensions and basic characteristics. The 3U POD deployer carries several small satellites (UNITYsat) which will be delivered in Orbit.

The next section covered the various requirements that are to be met when developing the UNITYsat. These requirements include factors such as the mechanical requirements, electrical requirements, operational and testing requirements. This section detailed how one can use this platform to develop their mission and realize it in a frugal and cost-effective manner in situations where funding sources are limited. It also provides an opportunity to develop multiple linked satellite systems without the large cost of developing full-scale nanosatellites.

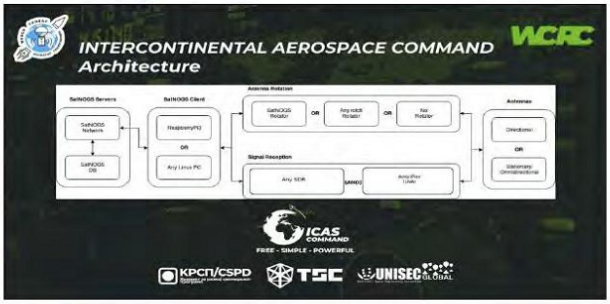
It concluded by highlighting the collaborative opportunities that are available through the UNITY program.

Ground Station – ICAS, SATNOGS

Speakers: Sainath Vamshi (VU3HJT) /TSC

Date: 25TH June, 2020.

YouTube: https://www.youtube.com/watch?v=9aUdDPiKN9E&t=686s



The current presentation is an introduction to Ground Station, ICAS Command and Amateur Radio. The speaker starts off by describing Amateur Radio and its applications.

The Speaker, does a live demonstration on how they communicate using HAM Radio. Moving ahead, he talks about the applications in slightly more detail and how they can be beneficial apart from being just a hobby. He has also mentioned some software to track Satellites.

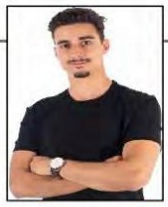
Later, he covers some basic topics about satellite communication, like the Principle of Satellite Communication, Footprint of a Satellite, and some orbits.

He continues by speaking about the Intercontinental Aerospace Command(ICAS) in detail and its architecture. The presentation is concluded by discussing and showing the ICAS Ground Station Kit.

Speakers: Jorge Monteiro / Spaceway.pt

Date: 26th June, 2020

YouTube: https://www.youtube.com/watch?v=aqEYwE4MGds&t=1314s



About Space Debris

Since the beginning of space flight, the collision hazard in Earth orbit has increased as the number of artificial objects orbiting the Earth has grown. The presenter Jorge Monteiro gives an insight into the present situation of the orbital debris and assesses the hazard that this population of debris poses.

Active and passive debris removal. The presentation started with a 3D overview of the stuff in space. How space debris has increased exponentially over the past two decades. Challenges with tracking debris to avoid collisions. Analysing density and mass distributions of orbital debris.

Further in the presentation, Jorge explains the impacts of space debris, the damages they cause like colliding with other satellites, uncontrolled re-entry, and how space surveillance and tracking (SST) monitors and analyses the trajectory of space objects to issuing adequate warnings in case of potential threats of collision.

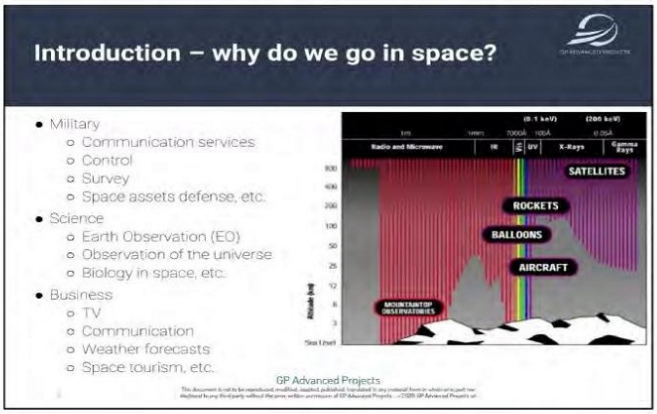
Lastly concludes by giving an overview of mitigation and protection by passive or active debris removal, in-orbit servicing.

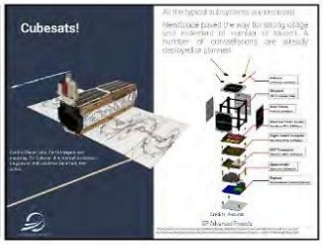
Real Space Mission

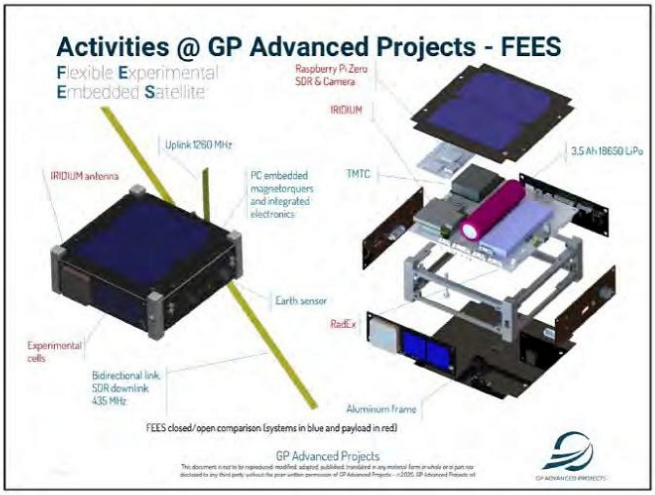
Speakers: Guido Parissenti / GP Advanced Project

Date: 26TH June, 2020

YouTube: https://www.youtube.com/watch?v=333cjgNfefM&t=19s







The presenter, Guido Parissenti started by giving an introduction to why space is explored and a brief history of the early days of the space age. The main goal is to give an overview of the real space missions and how space explorations have an impact on our day to day lives.

He also gives an insight into how new space is movement is revolutionizing the space sector, how privatizing the space sector has pushed the industry to the brink of innovation making it faster, better, and cheaper access to space.

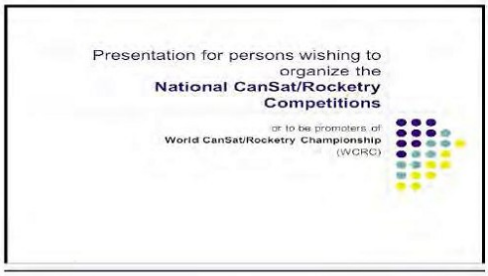
The presentation also covers the space environment and its effects on space systems, an overview of the CubeSats, and its subsystems.

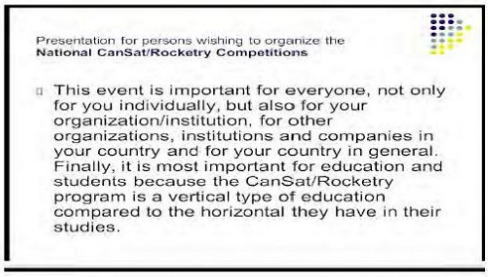
Lastly, an insight into the GP Advanced projects. How they are empowering and collaborating with universities and organizations to help non-space companies in entering the space field. And concludes with a brief introduction of GP Advanced projects soon to be launched Flexible Experimental Embedded Satellite.

Speakers: Ivana Tadić /CSPD

Date: 26th June, 2020.

YouTube: https://www.youtube.com/watch?v=n3W7bODee0Y



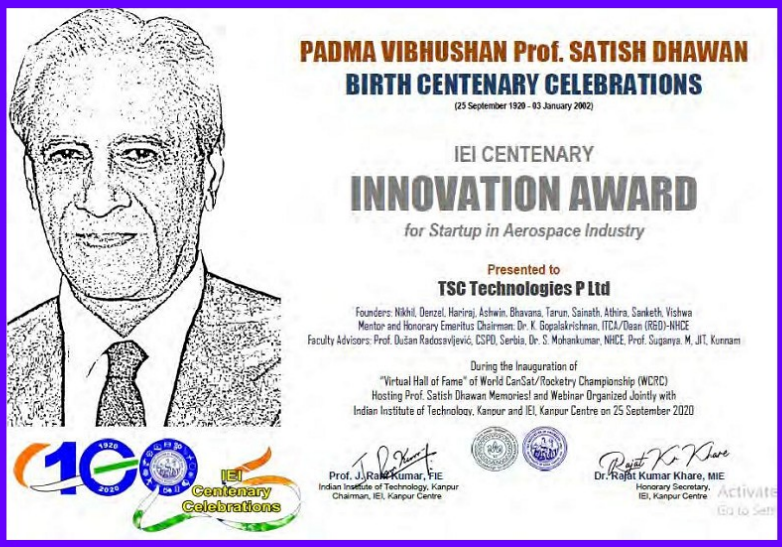


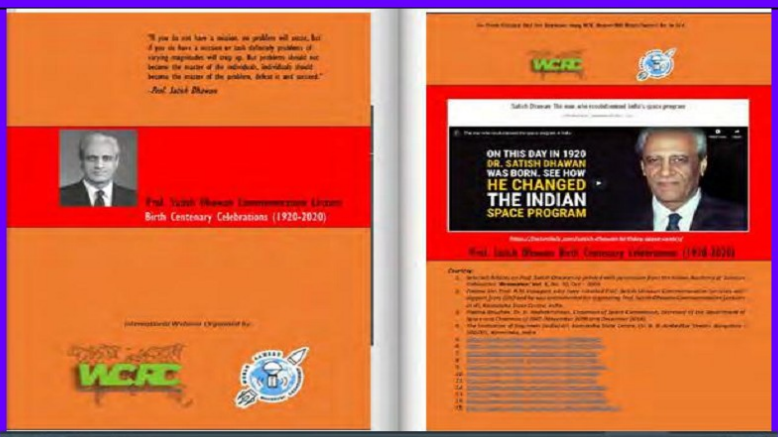
Organise Regional WCRC

Ivana Tadić, a commercial pilot, who is a part of Committee for Space Programme Development, Serbia presents the opportunity to organize WCRC in the national and continental level.

She then mentions about the role of the host country in brief. A lot of detailed information is given as to which permissions need to be taken, and what kind of precautionary measures have to be taken.

A brief outline is given upon how the competition can be held, and what parts of the competition can be outdoors and what can be indoors with reference to the International competition held in Serbia in 2019. Following which, the speaker talks about the phases in a detailed manner, and also throws light upon the jury, evaluation scheme, and how people will be awarded. To wrap it up, anyone who wishes to be a host and organize the national and continental phases of WCRC, can get in touch with Committee for Space Programme Development (CSPD) at cspd.office@gmail.com


PADMA VIBHUSHAN Prof. SATISH DHAWAN
BIRTH CENTENARY CELEBRATIONS
(25 September 1920 - 03 January 2002)
IEI CENTENARY
INNOVATION AWARD
for Startup in Aerospace Industry
Presented to
TSC Technologies P Ltd
Founders: Nikhil, Denzel, Haniraj, Ashwin, Bhavana, Tarun, Sainath, Athira, Sanketh, Vishwa
Mentor and Honorary Emeritus Chairman: Dr. K. Gopalakrishnan, ITCA/Dean (RGD)-NHCE
Faculty Advisors: Prof. Dušan Radosavljević, CSPD, Serbia, Dr. S. Mohankumar, NHCE, Prof. Suganya. M, JIT, Kunnam
During the Inauguration of
"Virtual Hall of Fame" of World CanSat/Rocketry Championship (WCRC)
Hosting Prof. Satish Dhawan Memories! and Webinar Organized Jointly with
Indian Institute of Technology, Kanpur and IEI, Kanpur Centre on 25 September 2020
Prof. J. Ravi Kumar, FIE
Indian Institute of Technology, Kanpur
Chairman, IEI, Kanpur Centre
Dr. Rajat Kumar Khare, MIE
Honorary Secretary,
IEI, Kanpur Centre
IEI Centenary Celebrations


Birth Centenary Celebrations (1920-2020)
WCRC
ON THIS DAY IN 1920
DR. SATISH DHAWAN
WAS BORN. SEE HOW
HE CHANGED
THE INDIAN
SPACE PROGRAM


wcrc.world/vhof.html
WCRC
HOME
ABOUT US
HALL OF FAME
EVENTS
CONTACT
FOUNDING ACT →
ABOUT PROF. SATISH DHAWAN
PIONEER OF INDIA'S SPACE JOURNEY
Satish Dhawan was an Indian mathematician and aerospace engineer, widely regarded as the father of experimental fluid dynamics research in India. Born in Srinagar, Dhawan was educated in India and further on in United StatesDhawan's visionary leadership as Director of the Indian Institute of Science, and as Head of the Indian Space Programme has been most noteworthy in the histories of these two institutions. Srinivas Bhogle has provided a life-sketch of Dhawan. Satish Dhawan was an extraordinary teacher. His guidance and leadership have made many of his students prominent leaders in science, technology and academia. Roddam Narasimha, one of the most successful of his students, pays tributes to and recounts his association with Dhawan in the article, "Doing Little Science with Dhawan"
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Prof. Satish Dhawan Commemoration Lecture Birth Centenary Celebrations (1920-2020)
Pictures
Rare Prof. Satish Dhawan Images at interaction, professional and personal life
Videos
Satish Dhawan Centenary this year provides multiple videos of his life
Event
Prof. Satish Dhawan Centenary Event:
IST 1830 Hrs