



Report on Activities of UNISEC India

(Since, September 2022 to October 2023)

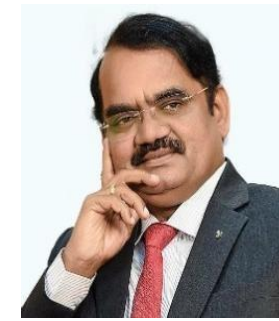
UNISEC India (Key Executives/Core Team)



Mentors: **Padma Shri Prof. R. M. Vasagam**
(vasagam@gmail.com)



Padma Shri **Dr. Y. S. Rajan**
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Padma Shri **Dr. Mylswamy Annadurai**
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President: Dr. L. V. Muralikrishna Reddy
President, ITCA & 75 Satellites Mission
(mlingireddy@yahoo.com)



Secretary General: Dr. K. Gopalakrishnan
Professor Emeritus, Cambridge Institute of Technology
(profgoki@yahoo.com)



Students' Representative: Ms. Inbisat Yousuf Nath
Central University of Kashmir
(inbisatyousufnath@gmail.com)

List of UNISEC India Chapters Established/Conducted Events during 2022-23:

1. Cambridge Institute of Technology, Bangalore
2. Marwadi University, Rajkot, Gujarat
3. Hindustan Institute of Science and Technology University, Chennai, Tamilnadu
4. Sri Shakthi Institute of Engineering & Technology, Coimbatore, Tamilnadu
5. Jeppiaar Institute of Technology, Sriperumpudur, Tamilnadu
6. GH Raison College of Engineering, Nagpur, Maharashtra
7. Vardhaman College of Engineering, Hyderabad, Telangana
8. Sona College of Technology, Salem, Tamilnadu
9. ACS College of Engineering, Bangalore, Karnataka
10. Chandigarh University, Chandigarh
11. Noorul Islam Centre for Higher Education University, Nagercoil, Tamilnadu
12. Nagarjuna College of Engineering & Technology, Bangalore, Karnataka
13. Galgotias University, Noida, Uttar Pradesh
14. Karpagam University, Coimbatore, Tamilnadu
15. M.S. Ramaiah University of Applied Sciences, Bangalore, Karnataka
16. Nettur Technical Training Foundation, Bangalore, Karnataka
17. Arjun College of Technology, Coimbatore, Tamilnadu
18. Indian Institute of Technology-Guwahati, Assam
19. Manipur Technical University, Imphal, Manipur
20. Seshadripuram Group of Institutions, Bangalore, Karnataka
21. MP Birla Group of Institutions-South Point, Kolkata, West Bengal
22. KSTePS-Govt of Karnataka
23. Central University of Kashmir, Kashmir
24. Islamic University of Science and Technology, Awantipora, Jammu & Kashmir

UNISEC India Chapter has been formally established on **18th October 2018** and communicated by **Ms. Rei Kawashima**, Secretary General, UNISEC Global, Japan. Established UNISEC India Local Chapters at more than 100+ Universities/Engineering Educational Institutions (EEIs) in India, since 2018!

International Space University, Strasburg, France

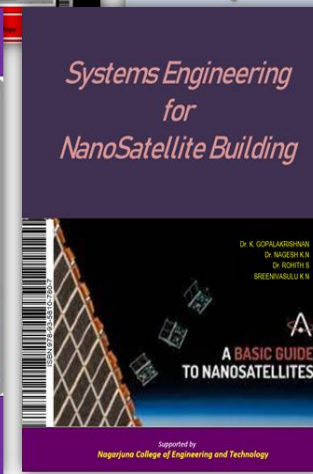
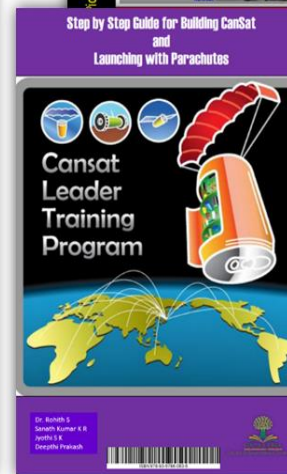
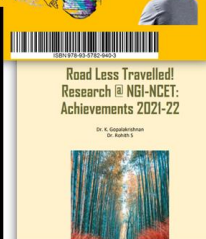
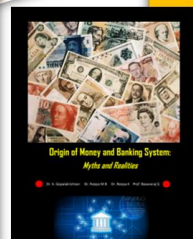
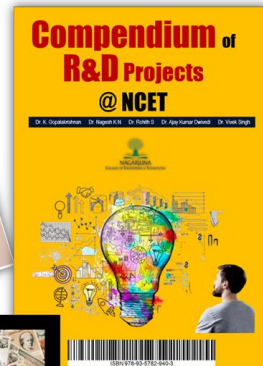
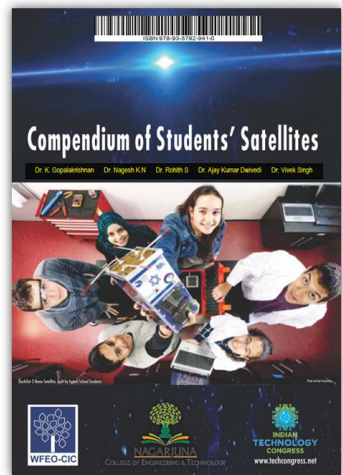


UNISEC India has been actively involved in the process of Implementing **Indian National Initiative on 75 Students' Satellite Consortium Mission** (Link to <http://itca.org.in/satellite>). Universities/Institutions associated with UNISEC India has been given priority in participation during the Mission. 2

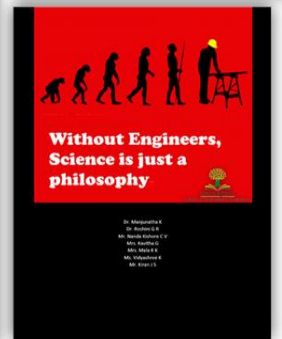
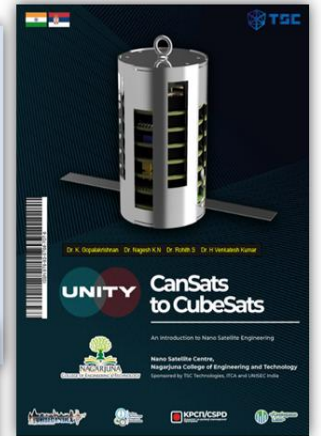
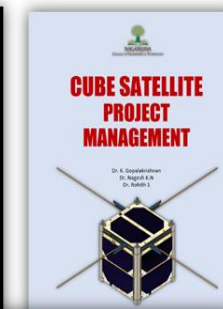
UNISEC has supported the following publications with the Support of Indian Technology Congress Association (ITCA) in association with BRICS Federation of Engineering Organisations (BRICS FEO):

List of Publications Supported by UNISEC India at Local Chapters

1. Slim Satellites and Cube Satellites for New Space Era
2. New Space Era: Small Satellites-Big Applications
3. CanSats to CubeSats: An Introduction to Nano Satellites
4. Compendium of Students' Satellites
5. Compendium of R&D Projects @ CIT
6. Step by Step Guide for Building CanSat and Launching with Parachutes
7. Step by Step Guide for Building Rocket for CanSat Launching
8. Road Less Travelled! Research @ CIT: Achievements 2022-23
9. Era of Small Satellites: Pico, Nano and Micro Satellites (PNM Sat)
10. Systems Engineering for NanoSatellite Building
11. Wire Rope Vibration Isolators for Applications in Space Engineering
12. R&D Policy and Vision of CIT: R&D Performance Evaluation Matrix at CIT



Books Published by ITCA/CITech/NCET Faculty Members with ISBN



- Hand Book on Opportunities of R&D Funding
- Need for R&D and IPR Activities at Engg Colleges
- Evolution of 75 Students' Satellites Mission: Lessons Learned
- Nano Cube Satellite Project Management
- Myths and Realities of Creativity and Innovation
- Origin of Family, Private Property and Banking System
- Origin of Money and Banking System: Myths and Realities
- War Crimes or War Itself a Crime! Whither Armed Forces?!
- Compendium on Technology Business Incubation @ CIT: Success Stories
- Business Incubation Policy of CIT: Trends & Technology Timeline 2010-2050
- Business Incubation Policy of CIT: Incubator Services Provided at CIT for Start-ups
- IPR Activities @ EEs: Myths and Realities! Opportunities and Challenges! How you Can Grow Vertically!

List of Major Events held at UNISEC India Local Chapters

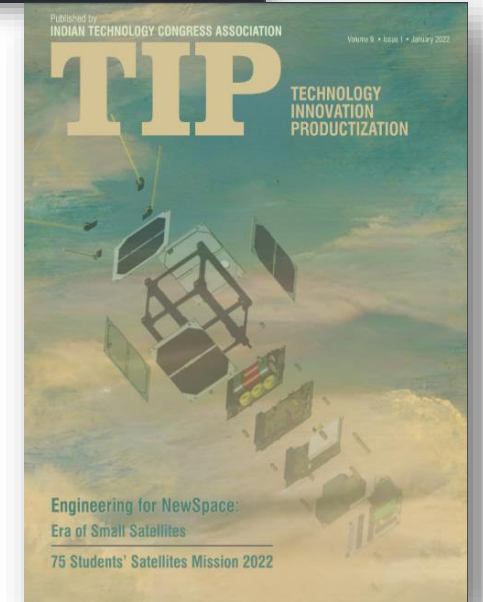
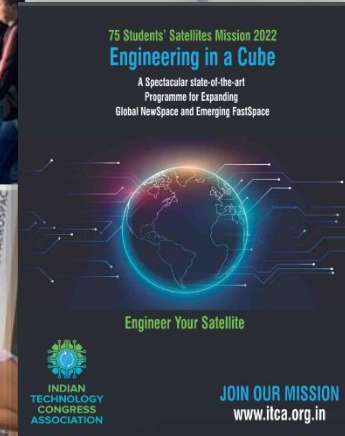
1. IAU 2022 held at Paris, France
2. UNOOSA Meeting at Vienna, Austria
3. World CanSat Rocketry Championship held at Novisad, Serbia
4. 7th Bangalore Space Expo 2022 (BSX)
5. Witnessing ISRO's Chandrayaan 3 Launching Events and Soft Landing Events
6. Mission Idea Contests at Local Chapters
7. Online Space Tech Competitions (Quiz/Essay Writing/Modelling/Poster Design/Payload etc)
8. Establishing Satellite Ground Stations at EELs
9. Workshops on Orbital Mechanics and Analysis
10. Workshops on CFD and Multi Physics for Satellite Orbital Simulations/Analysis
11. Workshops on Satellite System Engineering and Launch Qualification Testing
12. Class Room Satellite-Hands-on Trainings
13. CanSat Workshops-Hands-on Trainings
14. CanSat/CubeSat Launch Events at Local Chapters
15. HAM Clubs at Local Chapters
16. International Seminar on Small Satellites-BIG Applications
17. IAU 2023 held at Baku, Azerbaijan
18. Established Southeast European Space Association (SESA) with CSPD, Serbia



*Indo-Europe
Space Tech
Delegation
with Mr
Nikolas
Hedman,
Director,
United
Nations for
Outer Space
Affairs*

Indo-Europe Space Tech Leadership Delegation at International Astronautical Congress (IAC) 2022 held at Paris Convention Centre, France

UNISEC India Team at International Astronautical Congress 2022 at Paris, France



UNISEC India Team at UNOOSA HQ, Vienna, Austria



Dr. K. Gopalakrishnan, Advisor-R&D, NGI/NCET, Project Director, 75 Students' Satellites Mission and Secretary General, Indian Technology Congress Association (ITCA) has also led Indo-Europe Space Tech Leadership Delegation, which has held interactions with United Nations Office for Outer Space Affairs (UNOOSA) at Vienna, Austria on 22 Sept 2022. He was the Founder of World CanSat/Rocketry Consortium/Championship (WCRC) consist of 70+ Countries where there was no formal National Space Agency! He was also part of South East Europe Space Association as well! In line with UN Goal of "Space for Everyone and Satellites for Everyone" he and his team from ITCA/UNISEC India along with Committee for Space Programme Development (CSPD), Serbia strengthening collaborative research projects in East European Nations and Member Countries of WCRC! Successfully Organised First World CanSat/Rocketry Championship Finals at Novi Sad, Serbia!



UNOOSA

**United Nations
Office of Outer
Space Affairs
(UNOOSA)**

HQ: Vienna, Austria



UNISEC India Team at Serbia-Eastern European Countries



Indo-Serbia

Collaborations on Space Tech and Healthcare Sectors has been agreed with Dr. Nenad Ivanišević, Provincial Secretary for Economy and Tourism, Vojvodinian Secretariat, Vojvodinian Region, Republic of Serbia on 26 Sept 2022 at his office!

Interactions held with Ambassadors of India in Serbia, Austria and Bulgaria



UNISEC India-ITCA has Signed MoU for the Launch of 75 Students' Satellites with IN-SPaCe in Presence of PM of India

An Expanding Landscape of Synergy and Cooperation



WORLD CANSAT/ROCKETRY CHAMPIONSHIP (WCRC) WORLD FINALS
 25 -27 September 2022
 Novi Sad, Serbia

Entries from 62 Countries
 15 Countries are Qualified
 4 Teams from India are competing
 Large Delegation from India participating

ITCA's Indo-Serbia Co-operation
 Space Association of Southeast Europe (SSEA)
 Indo-SESA Satellite
www.wcrc.world




UNITYSat Team with 16 members' from India participated in International CanSat/Rocketry Championship 2019 held at Serbia and Won 1st & 2nd Place





CANSAT LAUNCH EVENT
 FOR TECHNICAL TRAINING FOUNDATION
 SELF ROMANIAN COUNCIL

CANSAT LAUNCH E
 HIGH SCHOOL TRAINING
 COUNCIL






CanSat Launched at Nagarijuna Vidyaniketan

CanSat Launched Successfully at NCET Campus

On April 22, 2022, at 11:00 AM CEST, the CanSat (Satellite built by 250+ young people) will be launched. It has been developed by young CanSat enthusiasts from all over the world. The launch ceremony will be held on the main stage of the school.

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Dr. K Gopalakrishnan, Secretary General, ITCA signed and exchanged an MoU with Dr P K Jain, Director-PMA, IN-SPaCe in the presence of the Hon'ble Prime Minister Shri Narendra Modi Ji



ITCA Leadership Team with Her Excellency Lt Governor of Puducherry Dr (Smt) Tamilzai Soundararajan



ITCA Leadership Team with His Excellency Governor of Karnataka Shri Thawar Chand Gehlot



Gujarat Technological University



Gujarat University



Marwadi University, Rajkot



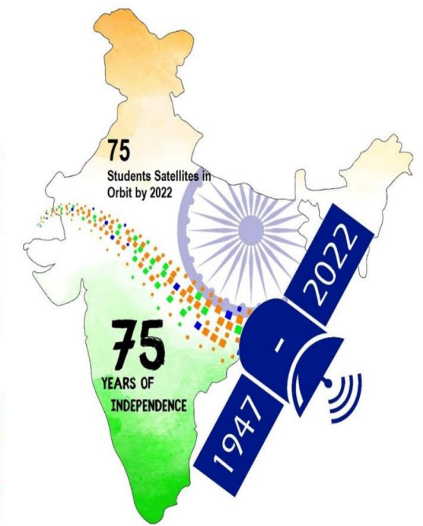
M.S. Ramaiah University of Applied Sciences, Bangalore



South Point High School, Kolkata



Seshadripuram Educational Trust, Bangalore



UNISEC India-ITCA Team Realizing 75 Satellites Mission.....

PUNEETH SATELLITE INDIA'S FIRST Government School Students Satellite by Govt. of Karnataka



As a part of 75 Students' Satellites Mission initiated by ITCA to Celebrate India's Freedom 75 Years as endorsed and highlighted by our Hon'ble Prime Minister of India Shri. Narendra Modi at UN General Assembly on 26 Sept 2021 among World Leaders, Our Hon'ble Minister for Higher Education, S&T, IT-BT, Skill Development Dr. C.N. Ashwath Narayan, Government of Karnataka, KSTePS has announced Karnataka Government School Students Satellite (KGS3Sat)! It was then named as "Puneeth Satellite" on National Science Day held at 18th Cross Malleshwaram Government School premises! ITCA-KSTePS-KSCST has initiated State Level Space Tech Competitions under various categories across Karnataka covering all High Schools and PU Colleges in such a way to create awareness about space science and technology and also to sensitize the students about "New Space Era" or "Space 2.0" which offers future career opportunities and prospects on near future.



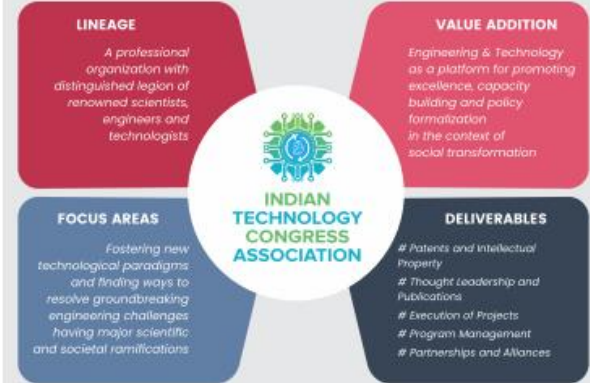
Historical Response to Puneeth Satellite - Karnataka State Level Space Tech Competitions for Schools' and PU Colleges' Participation through Registration is now touching 4.7 Lakhs of Students! It is expected to reach 2.0 Lakhs* by the end of closing date (20 Sept 2022). The event has been organized by 75 Satellites Mission of ITCA-KSTePS- KSCST-Govt of Karnataka to sensitize younger generations of students to strengthen STEM Education! It is a timely intervention by ITCA and GOK!



ITCA's 75 Satellite Technology Center



ITCA has emerged as a prominent professional organization in the nation for technological competence with significant global reach. Since its foundation, ITCA has enjoyed the unique distinction of influencing large numbers of technology professionals. Individual projects with State Governments for CubeSat development are transforming more than one hundred thousand budding students. ITCA, over the last five years is focused on equipping students with contemporary scientific and engineering abilities to participate in the burgeoning space sector, and adapt to recent scientific, economic, and social changes.



We welcome the brightest students from across the globe and are committed to preparing them to be responsible future leaders who will drive the growth of our society while also contributing to technical innovation in New-Space. The 75 Students' Satellites Mission is one of the feathers in ITCA's crown, with its focus on creating capacity amongst the future workforce to address the needs of the global space arena.

Located in the vibrant city of Bengaluru, the focus of the Indian space industry and the hub of a contributing aerospace higher education and research, ITCA is committed to driving innovation and building capacity for realizing the vision of expanding "Space-for-Earth" economy.



<https://75satellites.org/downloads>

Supported Agencies/ Countries



Powerhouse of Technological Expertise and Innovation



UNISEC India Strengthen Ties with Southeast European Space Association

Indo-Serbia Collaborations: Looking for Stronger Ties!



COMMITTEE FOR SPACE PROGRAMME DEVELOPMENT

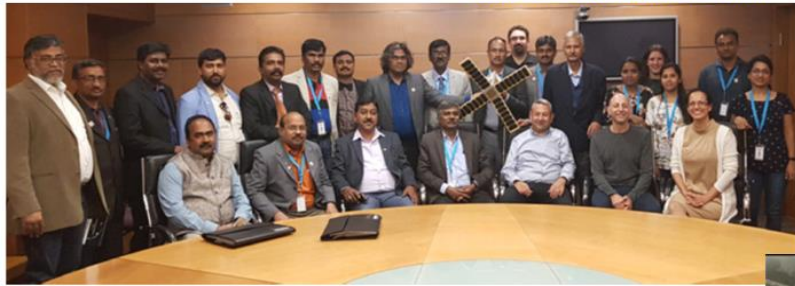
Комитет за развој свемирског програма
Републике Србије
21000 Нови Сад
M.B. 28104294
Domenik@obrn.gov.rs



Committee for Space Programme Development
Republic of Serbia
21000 Novi Sad
M.B. 28104294
Domenik@obrn.gov.rs



31 Aug 2022: South Europe Space Association Press Meet held for WCRC Finals at Serbia



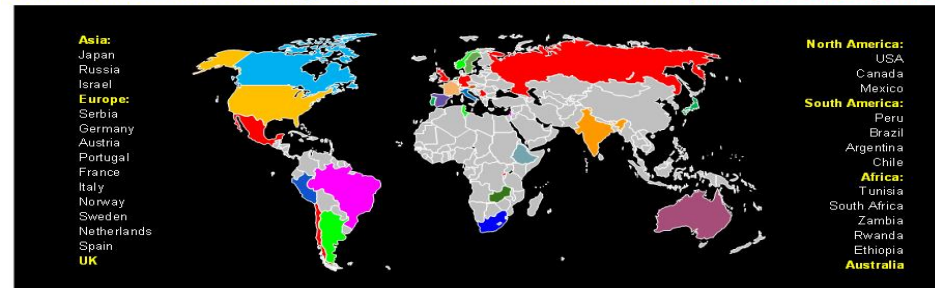
Dr. Blumberg Presented Certificates of Award to the Successful Delegates from ITCA SpaceTech Institutional Consortia



UNISEC India and ITCA-75 Satellites Consortium Supports CANSAT INDIA 2023



Possible Global Networking/Exposures of UNISEC India Team (Russia/Israel/Japan/Canada/Europe/USA etc)



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



Skoltech

Skolkovo Institute of Science and Technology



Skoltech was founded in 2011 in a partnership with MIT in Moscow, Russia with the vision of being a world-leading academic institute of science and technology. As an academic institution, Skoltech primary mission is academic excellence in target domains. This includes performing cutting-edge basic and applied research and educating next generation of science, technology and business leaders. Also, as a leading academic institution, Skoltech generates value in a form of professional education, advisory services, industry-funded research and results implementation, services of shared facilities, technology licensing and new companies established by the Institute's scholars, engineers, students and alumni. Therefore, Skoltech reinforces Russia's technology excellence in target domains and bridges the gap between research and industry. Skoltech is open and encourage opportunities for collaboration, including organizing scientific discussions, competitions or other events to promote the scientific and academic world within Russia and abroad.

UNISEC India Team at Bangalore Space Expo (BSX).....

Bengaluru Space Expo Confluence of SpaceTech Expertise

ITCA Consortium showcased the range of space-tech capabilities at the Expo including:

- Design of CubeSats in partnership with the Academia
- New Product Development including GNSS Simulators and ADS-B Solutions
- Design, Development and manufacture of Ground Stations
- Fabrication and Realization of Student-built CubeSats
- Training and Human-in-Space Flight Simulation Solutions

The 1st Edition of Bengaluru Space Expo 2022 (BSX) was successful in demonstrating the products of 145 private, public sector companies and academia. Several Agreements have been signed at the BSX, organised in association with the Indian Space Research Organisation (ISRO), the Indian National Space Promotion and Authorisation Centre (IN-SPACe) and NewSpace India Limited (NSIL). In the context of India opening up the space sector to private entities, the expo has served as the meeting ground for all stakeholders from India and abroad to engage and explore opportunities for synergy.

In a significant milestone establishing India's new growth trajectory as a global space hub, Hindustan Aeronautics Limited (HAL) and the L&T Consortium signed an agreement with NSIL to manufacture five Polar Satellite Launch Vehicle rockets. The first one would be delivered in 24 months, and the remaining 4 in the following 6 months. The successful demonstration of the initial orders would result in follow-on orders of 14-15 rockets for the consortium. The expo had a booth by the Indian Technology Congress Association (ITCA) to highlight student-built CubeSat development activities being progressed in partnership with academia including schools, engineering institutions, and universities.



Shri S Somanath, Chairman, ISRO



Dr Pawan Goenka, Chairman, IN-SPACe



ITCA Leadership Team with Roscosmos



ITCA Leadership Team with IN-SPACe





7th Bengaluru Space Expo (BSX) 2022

5-7 September 2022, BIEC, Bengaluru

- ITCA Consortium showcased the range of space-tech capabilities in:
 - Design of CubeSats in partnership with Academia
 - GNSS New Product Development including Simulators and ADS-B Solutions
 - Design, Development and Manufacture of Ground Stations
 - Fabrication and Realization of Student-built CubeSats
 - Training and Human-in-Space Flight Simulation Solutions

The seventh edition of the Bengaluru Space Expo 2022 (BSX) was successful in showcasing the products of 145 private and public sector companies in the space sector. Several Memorandum of Understandings (MoU) have been signed at the BSX, organised in association with the Indian Space Research Organisation (ISRO), the Indian National Space Promotion and Authorisation Centre (IN-SPACE) and NewSpace India Limited (NSIL). In the context of India opening up the space sector to private entities, the expo has been the meeting ground for private players to network and explore partnership opportunities with organizations from the public sector and abroad.

The Hindustan Aeronautics-L&T consortium signed an agreement with NSIL to manufacture five Polar Satellite Launch Vehicles. The first rocket is to be ready within 24 months, with the rest delivered six months after that. Following the successful demonstration of the initial orders, NSIL is likely to order of 14-15 rockets from the consortium.

The expo had a stall by the Indian Technology Congress Association to highlight student-built CubeSat development activities being progressed in partnership with academia including schools, engineering institutions, and universities.



Space Machines Company and Ananth Technologies will collaborate on product integration, testing, technology development and joint space missions. SABRN Health and DCube will work together on the development and integration of hardware, sensor technology and software to provide health support to astronauts. Australian start-up HEX20 will join forces with Skyroot Aerospace

to provide launch services, spacecraft avionics and components to Australian space initiatives. QL Space and Skyroot Aerospace will further develop Australian launch facilities as well as support joint space mineral exploration missions. QL Space and GalaxEye will develop a hybrid optic and radar payload together to reduce the environmental impact of critical mineral exploration. QL Space and SatSure will

cooperate to build satellite and AI-based solutions supporting agriculture, mining and defence industries.

Other start-ups like Dhruva Space Pvt Ltd have showcased small satellite systems that are currently under development and authorized by ISRO and other government agencies including IN-SPACE.



UNISEC India Local Chapters have Visited India's Spaceport, Sriharikota during the Launch of GSLV LVM3

NCET Students at India's Spaceport of ISRO, Sriharikota Witnessing LVM3 GSLV Launch on 26 March 2023



NCET's 8th Semester, Civil Engg Students at Sriharikota ISRO to Witness One Web Satellites Launch of LVM3 GSLV on 26th March 2023



Visvesvaraya Industrial and Technological Space Museum, Bangalore (VITM): Space Pavilion and ISRO Approved Facilities have been Visited by Nagarjuna UNITY Sat Teams and CITech Sat Teams!

Dr. S. Rohith has Coordinated the Visits of UNISEC India Chapter Members/ Students and Interested Faculty Members of NCET/NGII/CITech!





14
JULY
2023



We Salute and
Wish ISRO for the
Successful
Chandrayaan 3
Moon Mission!!!

INTERNATIONAL
SEMINAR ON
SMALL SATELLITES:
BIG APPLICATIONS

10:00 - 16:30 Hrs At Sir MV Auditorium
Cambridge Institute of Technology

BANGALORE



INTERNATIONAL SEMINAR on Small Satellites : Big Applications

&
INAUGURATION of UNISEC India Chapter, WCRC Chapter &
Demonstration: Launching of CanSats by Drone

Friday, 14th July 2023 10:00 AM Sir. M.V. Auditorium,
Cambridge Institute of Technology



CHIEF GUEST
Padma Shri Dr. Y. S. Rajan
Distinguished Professor
in Indian Space Research Organisation

GUESTS OF HONOUR



Dr. L.V. Muralikrishna Reddy
President, UNISEC India and Indian
Technology Congress Association



Mr. Chetan Dixit
General Manager - Strategic Initiatives
Karnataka Digital Economy Mission (KDEM)



Dr. K. Gopalakrishnan
Project Director, 75 Satellite Consortium,
Secretary General, UNISEC India



Ms. Rei Kawashima
Secretary General, University Space
Engineering Consortium
(UNISEC) Global, Japan



Mr. Dušan Radosavljević
Founder and Head, Committee for Space
Programme Development (CSPD), Serbia;
World CanSat/Rocketry Consortium/SESA



Dr. Alejandro Roman
General Director,
Aerospace Development,
Paraguayan Space Agency



Mr. B.A. Subramani
Former Director, Educational
Relations, ISRO Satellite Centre



Dr. Jayakumar Venkatesan
CEO,
Valles Marineris International P Ltd



Ms. Pramitha
Founder CEO, Transcend
Satellite Technology



Ms. Bhavana Savanth
Co-Founder, TSC Tech,
Carnegie Mellon University, USA



Ms. Rei Kawashima, Japan
has Inaugurated the
UNISEC India Chapter at CIT
on 14 July 2023



UNISEC INDIA CHAPTER INAUGURATED
ON 14 JULY 2023 AT
CAMBRIDGE INSTITUTE OF TECHNOLOGY

Welcome to UNISEC-Global Community

Cambridge Institute of Technology,
Bangalore, Karnataka, INDIA

New member university of UNISEC-India



UNISEC-Global Overview

- UNISEC-Global is an **international, nonprofit, non-governmental organization, consisting of local-chapters** across the world. (Local Chapter's members are universities that have a responsible professor and a student representative and student members.)
- Since its **establishment in November 2013**, it has provided an annual forum, training programs, competitions.
- In 2017, it was accepted as **permanent observer by UN Committee on the Peaceful Uses of Outer Space (COPUOS)**.
- Its **primary objective** is to help create a world where space science and technology is used by individuals and institutions in every country, rich or poor for peaceful purposes and for the benefit of humankind.

24 Local Chapters, 65 Points of Contact, 214 university members

UNISEC India-ITCA-75 Satellites Consortium Mission Projects- Intervention Model in India

UNISEC-Global "Vision 2030-ALL"

"By the end of 2030, let's create a world where university students can participate in practical space projects in **all** countries/regions."

Changed from the original "Vision 2020-100"

In every country, there must exist some space-related experts as they need to at least purchase some space-related products, such as communication satellites, GPS or earth observation services etc.

The 2030 Agenda for Sustainable Development
Key principle: **No one will be left behind.**

HEPTA-Sat Training

Host countries: **10**

Participating countries: **53**

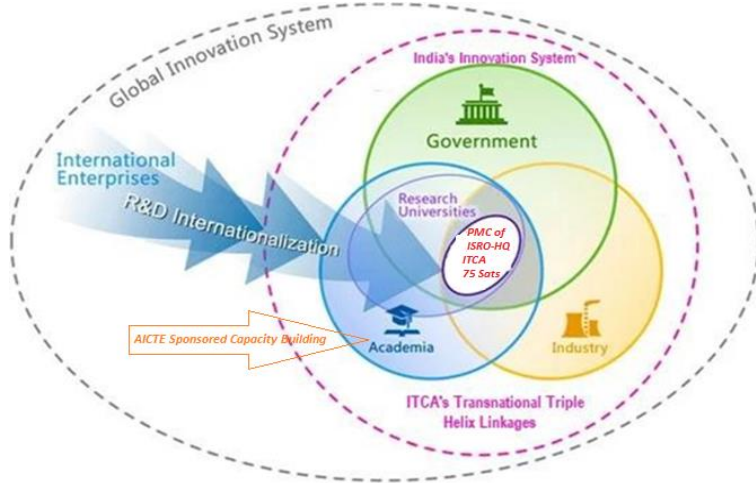
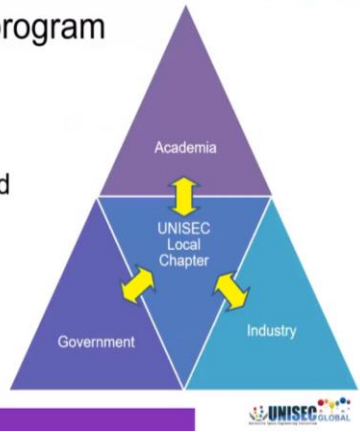
Trainees: **800+**
During 2017-10-2022-12

- Ghana, Feb. 2015.
- Angola, Oct. 2015.
- Japan (CLTPB), Sep. 2017.
- Bulgaria, Oct. 2017.
- Nepal, Nov. 2017.
- South Africa, UN Workshop, Dec. 2017.
- UAE, March 2018
- Japan (CLTPB), Sep. 2018
- France (ISU-SHSSP), Nov. 2018
- Oman, Dec 2018
- Australia (ISU-SHSSP), Jan 2019
- Japan (CLTPB), Sep. 2019
- Kenya, Nov 2019
- Australia (ISU-SHSSP), Jan 2020
- Japan (Kyoto Univ), May 2020
- Japan (Clark Memorial International High School), Dec 2021
- Japan (Nihonbashi Space week) - one day course, Dec 2022

UNISEC Triangle Congruent systems program

UNISEC Local Chapter can contribute to Academia, Government, and Industry by providing training, education, and R&D in the space field with UNISEC-Global network.

Common language to communicate among different stakeholders/people is necessary.



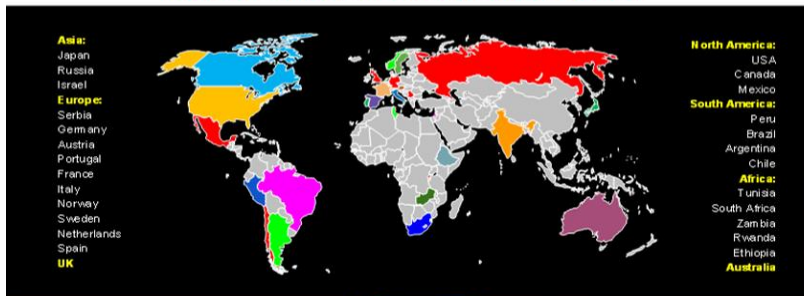
Very Well Attended UNISEC India Event at Cambridge Institute of Technology, Bangalore, INDIA





**WCRC CHAPTER INAUGURATED ON 14 JULY 2023 AT
CAMBRIDGE INSTITUTE OF TECHNOLOGY**

**Possible Global Networking of WCRC/Exposures of CIT Students' Sat Team
(Russia/Israel/Japan/Canada/Europe/USA etc)**



**UNISEC India-ITCA-75 Satellites Consortium-International Seminar on
Space 2.0-Small Satellites: BIG Applications Inaugurated on 14 July 2023**



UNISEC India & WCRC Chapters Inaugurated during International Seminar at CIT



CanSats/CubeSats Launched with Drones at Cambridge Grounds



CanSats/CubeSats Launched with Drones at Cambridge Grounds



MoU Signed at CBPO, ISRO-HQ with ITCA/75 Satellites Consortium



Capacity Building & Public Outreach (CBPO), Indian Space Research Organisation HQ, Department of Space, Government of India



UNISEC India Team at IAU 2023, Baku, Azerbaijan with UNISEC Global Secretary General Ms. Rei Kawashima



UNISEC India Team at IAU 2023, Baku, Azerbaijan with UAE Astronaut & Other Delegates...



UNISEC India-ITCA-CSPD, Serbia has Initiated WCRC Program for Everyone



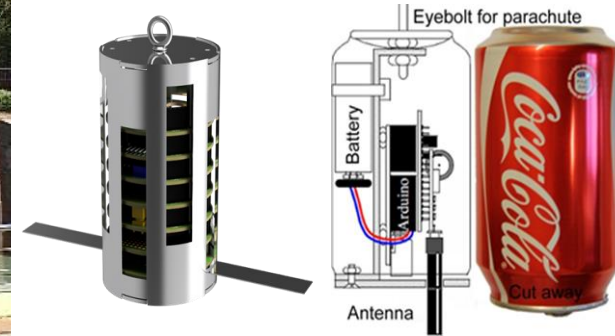
Launch of ISRO's PSLV C51
 UNITYsat Core Team @ SDSC – SHAR, Spaceport of India, Sriharikota

Space for Everyone! Satellites for Everyone!

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



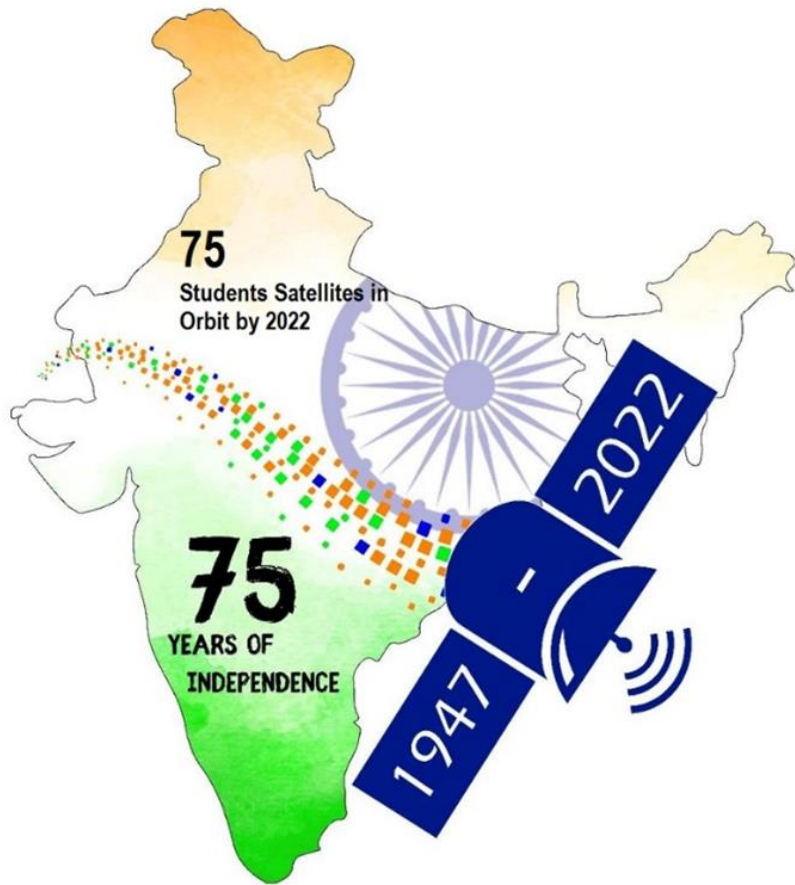
CanSat (350 ml Satellite)



Any Institution can
 Participate in WCRC
 Activities! Globally!

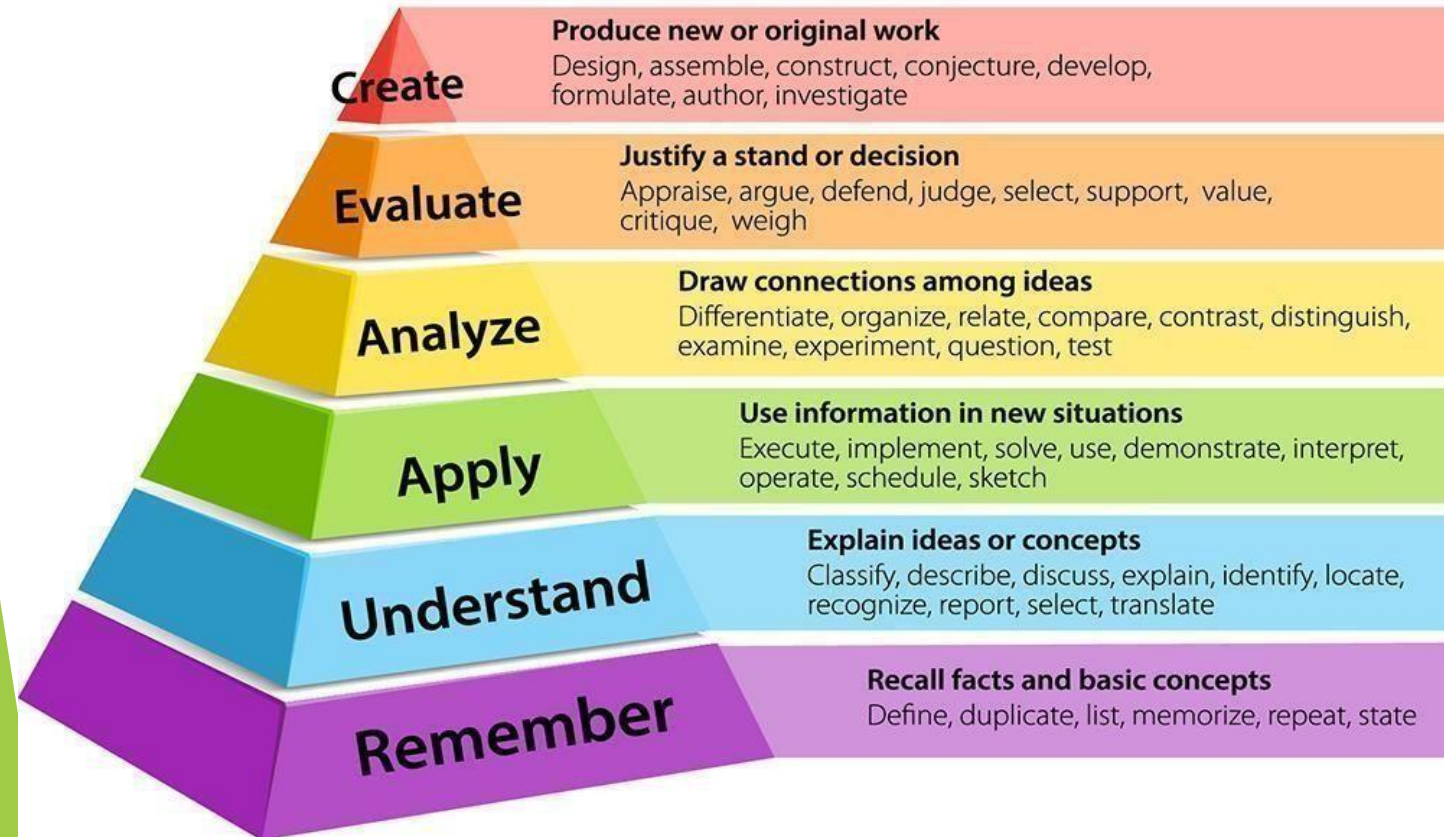
75 Students' Satellites Consortium: Mission UNISEC India and Indian Technology Congress Association Initiative

*To Commemorate the “75 Years of Indian Independence” (1947-2022) by
Launching 75 Students’-built Satellites into Low Earth Orbit!*



Learning by Doing; “Creating” is Higher Level of Learning Pedagogy!

CanSat to CubeSat: Interdisciplinary Project & Best way to Lean Systems Engineering



Revised Bloom's Taxonomy (RBT Level: Low Order to Higher Order Thinking Levels)

Padma Shri Dr. Mylswamy Annadurai, Chief Advisor on the 75 Students' Satellites Mission!
Mentor of UNISEC India Initiatives!!



75 Students' Satellites Mission

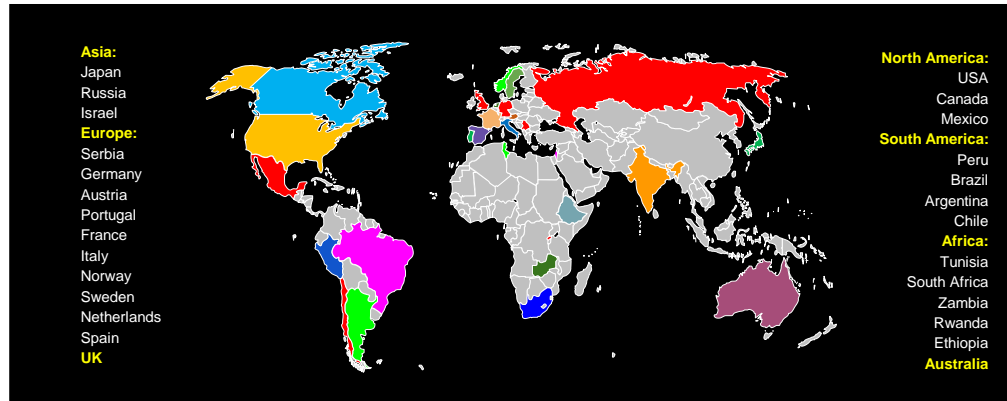
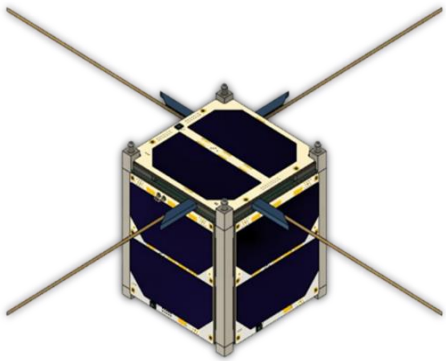


75 Students' Satellites Consortium-ITCA Team at CIT- Initiatives of Cambridge Satellite!

Supported by



Possible Global Networking/Exposures of Students' Sat Team (Russia/Israel/Japan/Canada/Europe/USA etc)

























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



UNISEC India-ITCA-75 Students' Satellites Mission-Collaborative Industry Partners

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

OBC/EPS/CS: Telemetry/ Subsystems/ Mother Board & Daughter Boards Assembly and Integration/Testing/Documentation etc including Satellite Space Qualification Testing Services	   Centum Electronics Limited 
Space Qualification Tests: Shock, Random Vibration and Sinusoidal Vibration	
Solar Cells/Panels Integration	
Beacon (Proof of Life Sensor)/GNSS Module/Subsystems	 
Space Grade 4 Layer PCBs and 2Layer PCBs for OBC/EPS/CS Solar Panels PCBs	  
Space Grade Satellite Structure Machining and Anodising	 
1U/3U Deployer for 3-in-1 SlimSatellites	 
Design, Development, Validation, Integration, Testing, Fabrication, Launch Integration, Programming, Firmware Coding etc; Ground Station, Antennas, Receiver, Mobile App etc.	 <p><i>UNITYsat Students Team's Start-up</i></p>
Conceptual Support for UNITYsat and SATNOGS Global Network of Ground Stations Soft Loan/Funding Support/Coordination etc	 
Registration of Satellite, Frequency Allocation, Thermovac Test and Launch Support with Deployer: IN-SPACE; ISRO PSLV C 54/SSLVs	  U R Rao Satellite Centre  

Cambridge Satellite Becomes Reality! It will be in Orbit Soon!
Sky is not the Limit for Cambrians!! We will Explore Beyond Horizons!!!



Cambridge Satellite Becomes Reality! It will be in Orbit Soon!
Sky is not the Limit for Cambrians!! We will Explore Beyond Horizons!!!

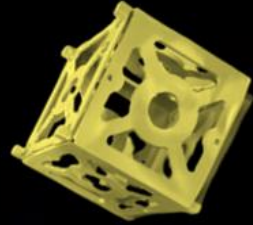
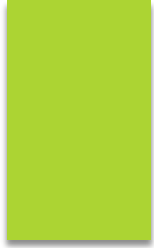


WCRC

UNISEC INDIA

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





Cubes in Space™

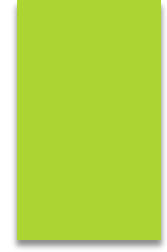
ingenuity taking flight

The Only Global STEM Program for Students 11-18 years of Age
Providing Two Suborbital Flight Opportunities on NASA Missions.



Cubes in Space™

**NASA Space Experiments: Cambridge School, KR Puram
has been Selected based on Intent to Fly Form (IFF)**



International Network of Cambridge IT

Compendium of Students' Satellites

Dr. K. Gopalakrishnan Dr. Cyril Prasanna Dr. Girish Dr. Antony Louis Dr. Indumathi G



On the left: 2 Nano Satellites, built by Israeli School Students

Photo by Harit Sankar



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





Cambridge Satellite Becomes Reality! It will be in Orbit Soon!
Sky is not the Limit for Cambrians!! We will Explore Beyond Horizons!!!

Supporting Organisations: 75 Students' Satellites Consortium: Mission and CoE in "Space Technology"



Cambridge Nano Satellite Centre:
Realization of
"Cambridge Satellite"





UNISEC India-ITCA Students' Satellite Mission @ Campus

Mini Projects/Major/Final Year Projects/Startups/Patents of BE/BTech/PG/PhD Students: Ongoing

- 1. On Board Computer (OBC):** Various Designs of OBC including Arduino and Raspberry Pi etc as OBC can be designed. Coding can be done in various ways to optimise the process!
- 2. Electronic Power Supply (EPS):** Various Designs of EPS with redundancy
- 3. Telemetry:** Design of Different Types of Antennas and Receivers for Cube Satellites [UHF/VHF, S-band (2–4 GHz), C-band (4–8 GHz), X-band (8–12 GHz), Ku-band (12–18 GHz), and Ka-band (26.5–40 GHz)]
- 4. Antenna Deployment Mechanism for Cube Satellites:** Different Designs based on mass and volume available/constraints
- 5. Power Budget:** Design of Power Supply with Different Solar Cells/Panels Integration/Deployable Panels etc
- 6. Beacon (Proof of Life Sensor/Transmitter):** Different Designs based on mass and volume available/constraints
- 7. Global Navigation Satellite System (GNSS) Module:** Different Designs based on mass and volume available/constraints
- 8. Payloads/Secondary Payloads/Subsystems:** Different Designs based on mass and volume available/constraints and also based on different kinds of real life applications
- 9. Design of Multi-layer PC Boards (PCBs):** Space Grade 4 Layer PCBs and 2 Layer PCBs for OBC/EPS/CS Solar Panels PCBs
- 10. Satellite Structure:** Space Grade Satellite Structure Machining and Anodising
- 11. Ground Station:** Antennas- Different Designs based on frequency and link margins
- 12. Ground Station:** Rotators for Antenna- Different Designs based on requirements
- 13. Ground Station:** Receiver- Different Designs based on frequency and link margins, Mobile App etc.
- 14. Deployer for Cube Satellites:** Design and Development of Deployer for Cube Satellites
- 15. Space Qualification Testing of CubeSats:** 1U/2U/3U Satellite Testing Jigs/Fixtures for Satellite
- 16. Deployer for Cube Satellites:** Deployer for Slim Satellites (in 1U Volume 3 Satellites @ 0.35U Sat)
- 17. Orbital Analysis:** Orbital Mechanics/Orbital Analysis for Satellites at LEO/MEO/GEO
- 18. Space Situational Awareness:** Conjunction Assessment Study of Satellites at Orbits
- 19. Design and Development:** Design, Development, Validation, Integration, Testing, Fabrication, Launch Integration, Programming, Firmware Coding etc;
- 20. Subsystems of Satellites/Modules:** Mother Board & Daughter Boards Assembly and Integration/Testing/Documentation etc
- 21. Class Room Satellites:** Design of Class Room Satellites with Testing Protocols/ Software etc
- 22. CanSats/Tube Sats:** CanSat Design for Competitions with Parachute (PDR/CDR) etc
- 23. Pocket Cube Satellite/Femto Satellite:** Design and Development of Pocket Cube (Qube) Satellites
- 24. Satellite Space Qualification Testing** Requirements/Services
- 25. Space Qualification Tests:** Shock Test, Random Vibration Test and Sinusoidal Vibration Test and Thermovac Test
- 26. Systems Engineering:** Quality Assurance and Reliability of Satellite Systems
- 27. Space Debris Management:** Space Debris Management Systems and Methods etc
- 28. Deorbiting Mechanisms:** Different Types of Deorbiting Mechanisms
- 29. SATNOGS Global Network of Ground Stations** Soft Loan/Funding Support/ Coordination etc
- 30. Registration of Satellite:** Study on the Procedures of Registration of Satellite and Frequency Allocation by ITU including How to get Insurance for Satellites!

UNISEC India-ITCA Students' Satellite Mission @ Campus

Road Map to Realize and Get Maximum benefits of **Students' Satellite Project** at Your Campus/Chapters

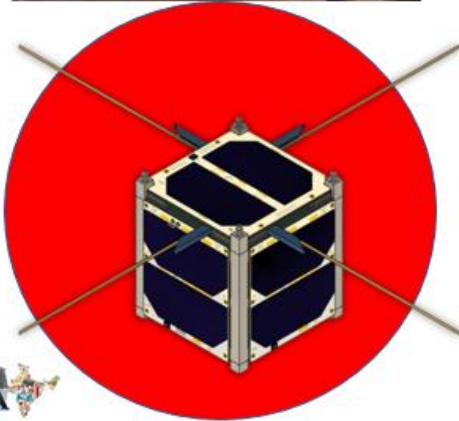
The following Contest/Competitions for PUC/School Students and Degree Students (THREE Categories)

- I. Quiz
- II. Essay Writing
- III. Painting
- IV. Model Making
- V. Space Technology Awareness Multiple Choice Questions/Tests etc

*Winners from Each Category will be given Opportunity to Visit Space Museum in Bangalore (as per the convenience and budget of students/teachers) and Interactions with Eminent Space Scientists and also Witness the Launch of **Students' Satellite** at Sriharikota! Passionate Students will get opportunity to work with the Students' Satellite Project and will be given allied Trainings as well!*

1. Introductory Training Programmes in English (On-line/Offline/Hands-on/Tutorials/Assignments)
2. Awareness Programmes with Reading Materials on Space, Launch Vehicles and satellites in English (soft copy/web links etc) will be shared among selected students of **Your Group of Institutions**.
3. Selection of Students from online/offline interactions/registering voluntarily by the individual students/direct expressions of interest etc from the students of **Your Group of Institutions**.
4. Training the Trainers' Programmes for Core Team Teachers and mentors from **Your Group of Institutions**.
5. Intensive Trainings during Evenings/Weekends (*On-line/Offline/Hands-on/Tutorials/Assignments*)
6. Introduction to Nano Satellites: CanSat to CubeSat
7. Orientation Programmes: Periodic Tests/Evaluation to Assess the Training Effectiveness
8. Satellites and Space Technologies: Learning Management System (LMS) for PUC/School/Degree Students
9. Payload Idea Contest/Competitions for +2/PUC/School Students and UG/PG Degree Students (*THREE Categories*)
10. Visit to Space Museums/ISRO Approved Satellite Development Centres/Facilities/Space Industries in Bangalore (*Organised Independently*)
11. Interactions with Eminent Space Scientists/Boot Camps (*Organised Independently at respective Campuses as per their Requirements*)
12. CanSat/Rocketry Championships for Schools/Colleges/Universities (*in India and Abroad-Serbia/Russia*) **Self-Supporting Events**
13. Introduction to Engineering Model/Qualification Models/Class Room Satellite/Flight Model: Testing of Satellite/ Balloon Tests/Qualification Tests
14. Training at Satellite Ground Station at "75 Students' Satellites: NTTF, Electronics City/Project Office", Bangalore
15. TSC SatNAV MobileApp for Amateur Radio and Weather Satellite Tracker and Passes Predictor for Android
16. One day/Two Days Workshops/Seminars/Symposia on Space Technology (Organised Independently/Jointly)
17. Joint Development of Books, Posters and Publications in English for School Students
18. Visit to India's Spaceport, Sriharikota during Launch (*Selected/Interested/Passionate Students with the consent of their Parents*)
19. Multiple Participation Certificates/Award of Appreciation Certificates as per the various interactions/ competitions/contests etc as applicable to all the Participants/Students/Teachers/Coordinators/Mentors of **Your Group of Institutions**.

PUNEETH SATELLITE



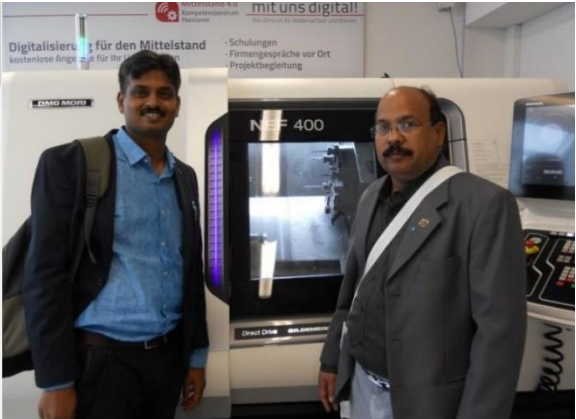
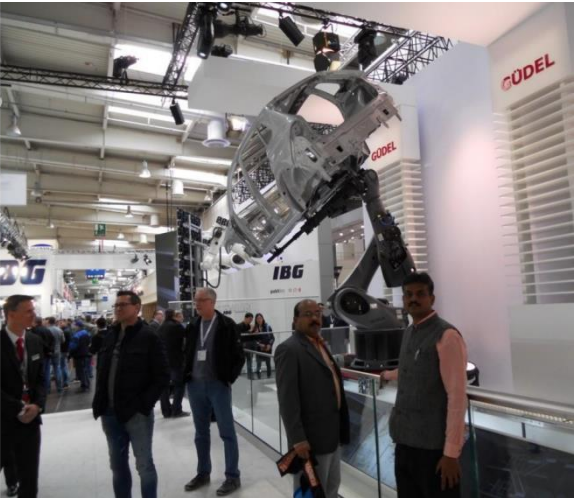
Karnataka Government School Students' Satellite Team at 18th Cross Malleshwaram, Bangalore Government School Premises!



Hon'ble Chief Minister of Karnataka **Shri. Basavaraj Bommai** on 29 October 2022 inaugurated the **Puneeth Satellite Workstation** established by the Department of Science and Technology and the ITCA at Malleshwaram Government High School. Hon'ble Minister for IT, BT and Science and Technology, Higher Education and Skill Development **Dr. CN Aswathnarayan**, **Mr. A.B. Basavaraju**, IAS, Director (Technical), Dept. of Electronics, Information Technology, Biotechnology and Science & Technology, GoK and MD, KSTePS, President, ITCA & Secretary General, Dignitaries from various government departments, Teachers & Students also participated.



Hannover Trade Fair, Germany



UNISEC India Team at Moscow State University, Russia



Indo-Russian Technovation Delegation of National Design & Research Forum of the Institution of Engineers (India) led by Dr. L. V. Muralikrishna Reddy, President, UNISEC India before the Moscow State University in Moscow. 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.



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

Glimpses of Noteworthy Initiatives of UNISEC India Team.....



UNISEC India Team at Hannover Trade Fair, Germany, France, Italy, Spain, Portugal & Serbia

Glimpses of Noteworthy Initiatives of UNISEC India Team.....



UNISEC India Team at International Internships for Students @ Samara, Russia, France, Israel and Netherlands



UNISEC Global Meeting held at Japan



UNISEC India Delegation Visited Sapienza University, Rome: Interaction with Prof. Fabio, PoC, Italy



UNISEC India Team at Samara, Russia, Hannover Trade Fair, Germany, France, Italy, Spain, Portugal & Serbia





UNISEC India-ITCA Initiatives: Near Space Launch of CanSats @ JIT/TCE



Hindustan University's KCG Satellite MoU Signed with 75 Satellites Mission 2022-23



Nagarjuna UNITY Satellite Inaugurated



Nagarjuna Group of Institutions (NGI) has signed an MoU for building its own 2nd Satellite “**Nagarjuna UNITY Satellite**” with 75 Students Satellites Mission 2022 promoted by Indian Technology Congress Association (ITCA) and TSC Technologies on 26 March 2022 at Nagarjuna College of Engineering and Technology (NCET) Campus.

Karnataka Government School Students Satellite (KGS3Sat) named PUNEETHSat

Design, Development,
Fabrication, Integration, Testing,
Launching and Operation of
KGS3SAT

Adequate training to at least
200 students

Establishing Nano Satellite
Centre

Establishing Ground Control
Station

SatNav Software (Mobile App)
for Satellite Communication Lab



Coverage of
Educational Institutions in
Karnataka

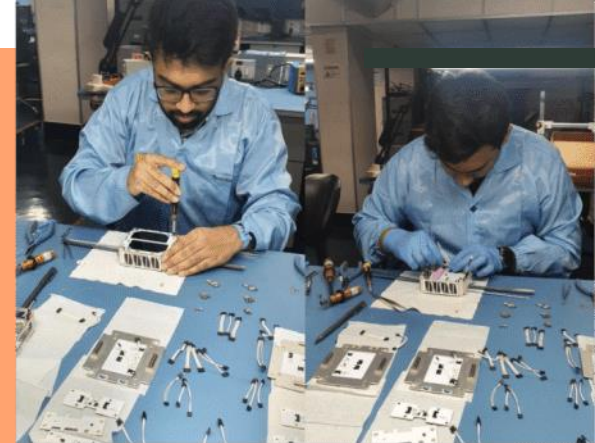
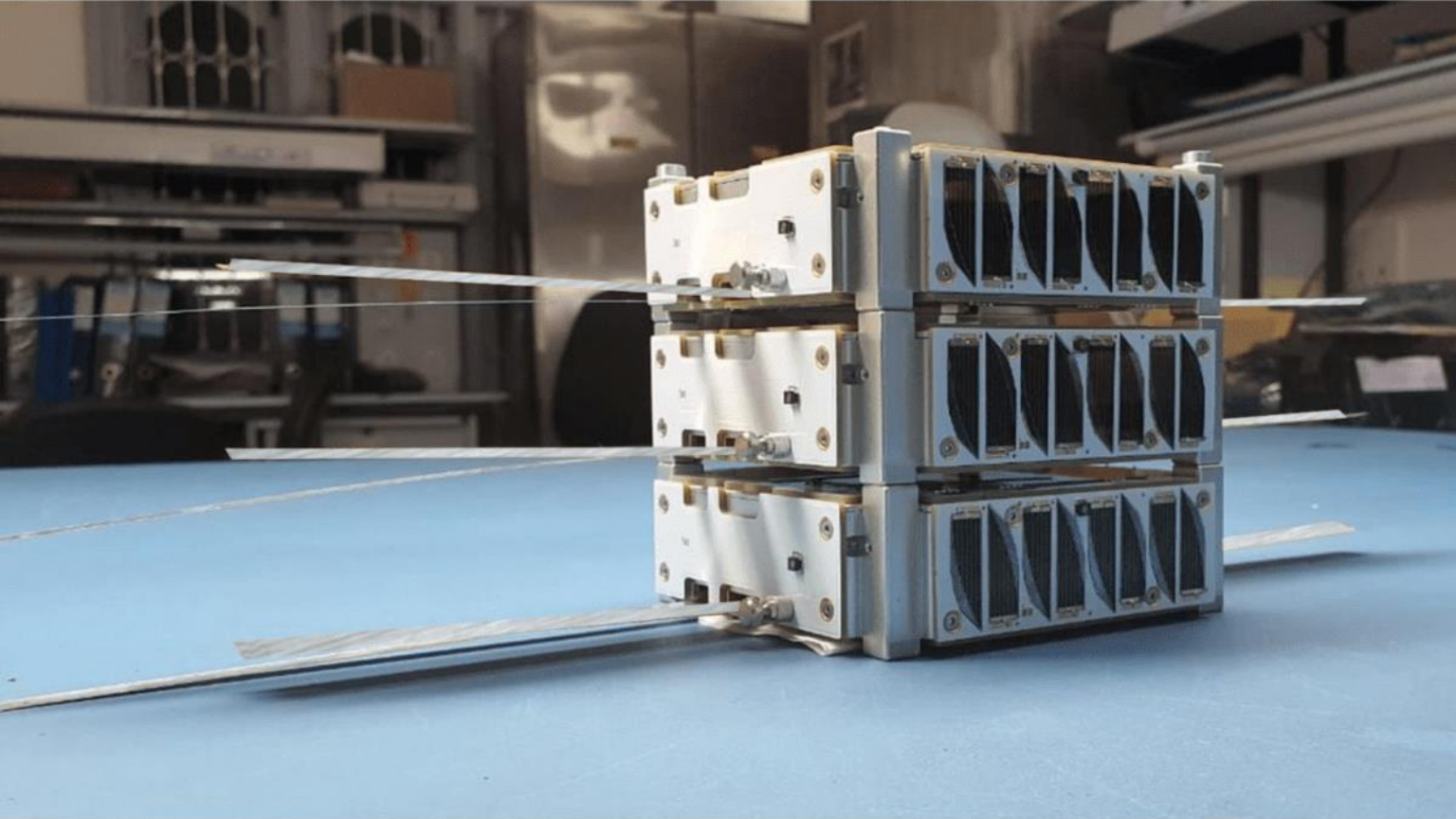
Focus of Influence for Impact in
Educational Institutions in Karnataka





UNISEC India - ITCA – TMISAT Students' Satellites Programmes





INDIAN
TECHNOLOGY
CONGRESS
ASSOCIATION

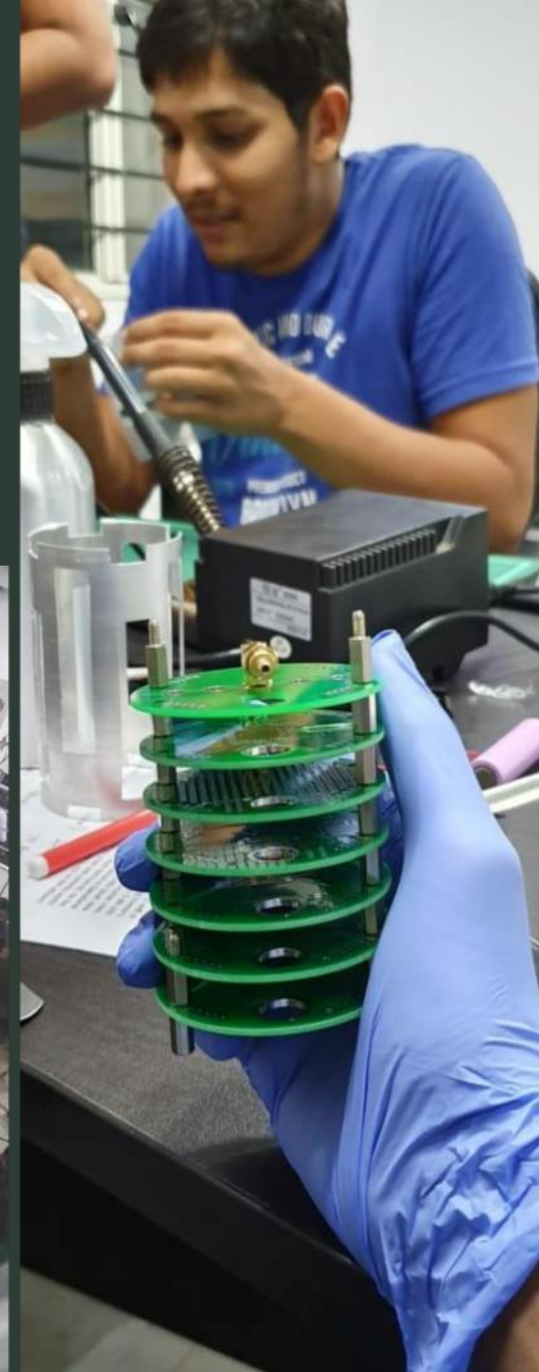


*Celebrated 3rd Anniversary of Successful Launch of UNITYsat (3-in-1 Sat)
JITsat, GHRCEsat and SriShakthiSat at UNISEC India Local Chapters*

Launched by ISRO's PSLV C-51 Amazonia Mission on 28 February 2021.

Rigorous Hands-on Learning for ITCA Team...

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



SriShakthiSat Programme Launched at SIET, Coimbatore and Online Events for Central University of Kashmir



Sri Shakthi Institute of Engineering and Technology, Coimbatore, Tamil Nadu

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



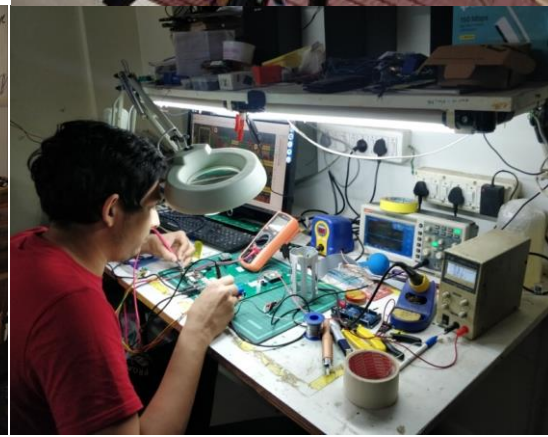
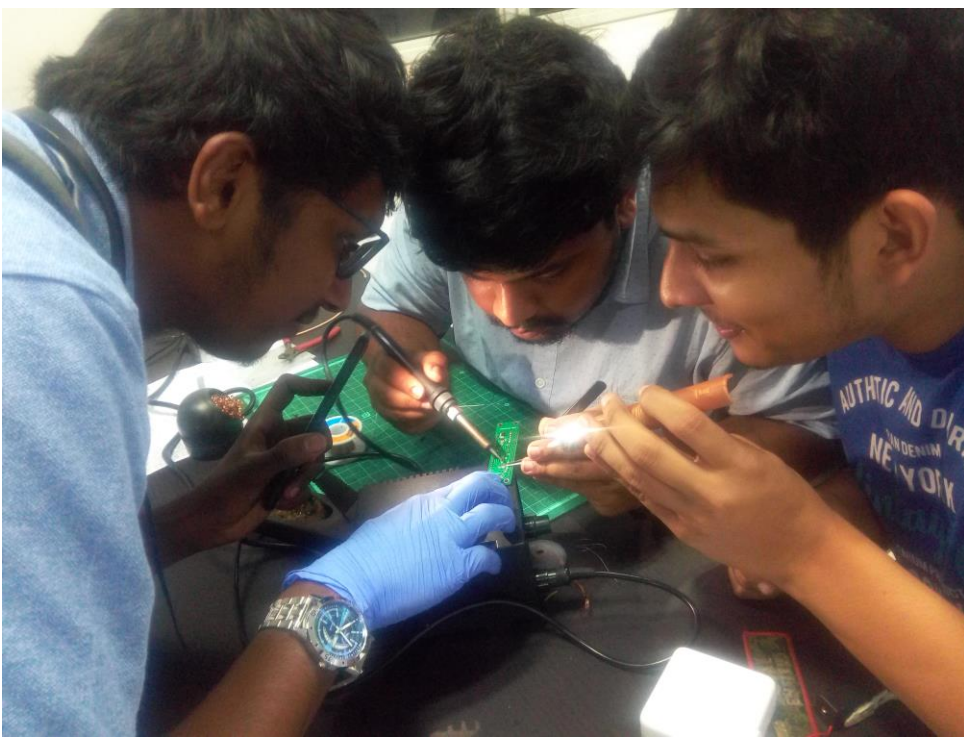
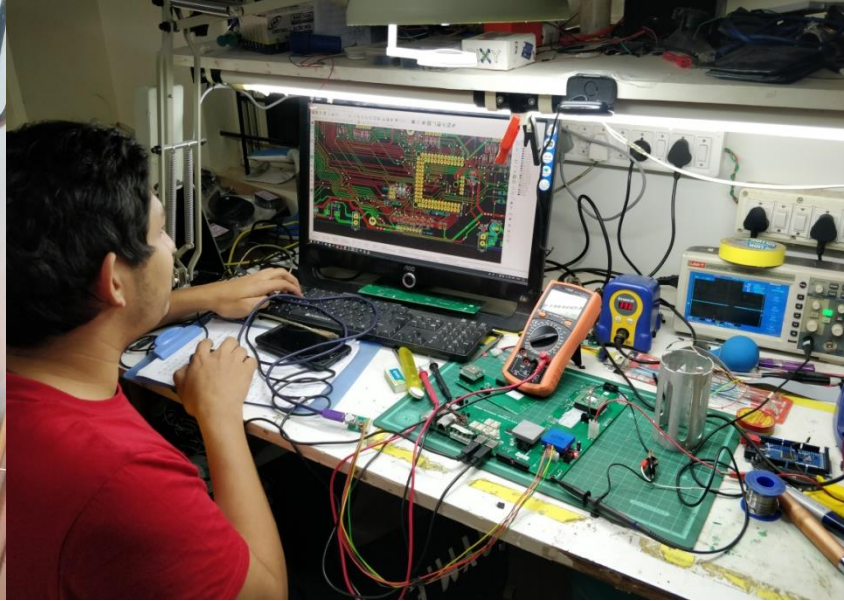
UNITYsat Team's CanSat Launched by OctoCopter at New Horizon Knowledge Park, Bangalore, INDIA



UNISEC India Team has Launched CanSat by OctoCopter at Bangalore, INDIA



Real Co-working Space: Home Labs of UNITYsat Passionate Team/UNISEC India



Open for Discussions

► *Now the Floor is Open for Questions.....*

For more details, feel free to contact:

University Space Engineering Consortium (UNISEC)- India

Secretariat and 75 Students' Satellites Mission Projects

#3, First Main, BDA Layout, HAL 2nd Stage

Bengaluru -560 008, Karnataka, INDIA

Website: <https://unisec-india.in/> www.itca.org.in www.75satellites.org

THANK YOU



UNISEC India Students' Representative:

Ms. Inbisat Yousuf Nath

Central University of Kashmir

Email: inbisatyoufath@gmail.com