UNISEC-Global The 63rd Virtual Meeting

December 20th, 2025, 22:00-24:00
(Standard Japan time GMT +9)

The following report was prepared by UNISEC-Global Secretariat
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1 Opening Remarks

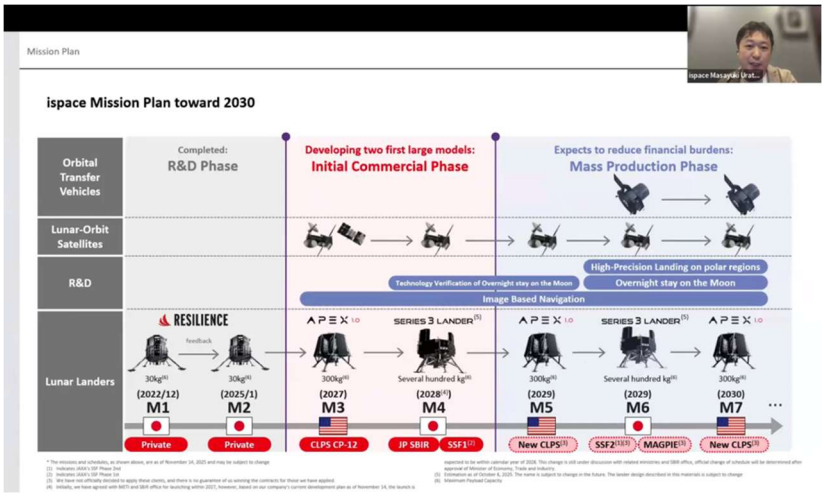
Masayuki Urata, ispace, inc.

Mr. Masayuki Urata is the Division Senior Manager, Business Development at ispace, inc., a company in the aerospace and defense sector. In this role, he contributes to the company's business development activities. Prior to this, Masayuki held the position of Manager, Indo-Pacific Sales, and before that, served as Sales Officer, Indo-Pacific Sales, both within ispace. These roles reflect a focus on client acquisition and revenue generation within the aerospace sector. Earlier in his career, Masayuki was a Project Manager at Mitsubishi Corporation, a global integrated business enterprise. During their tenure at Mitsubishi Corporation, they also held the role of Project Coordinator. These experiences demonstrate capabilities in project execution and resource allocation within a global business environment. Mr. Masayuki graduated from The University of Tokyo with a Bachelor's degree.

Pictured: Mr. Urata seen during his presentation about ispace

Highlights:

- **ispace, inc. was sponsor of MIC9**
- Theme this year was regarding lunar CubeSat and rover, formulated in discussion with Rei-san
- Lunar Surface Rover Mission (LSRM) that places rovers on the surface of moon
- When the theme was set toward the moon, Mr. Urata was initially anxious about the number of ideas
- However, many teams participated and gave good presentations
- The Mission Idea Contest may not lead to an actual mission, but ispace wants to help
- The moon is currently far away, especially compared to Low Earth Orbit (LEO)
- **Which makes planning lunar CubeSat or rover missions difficult right now**
- **Ispace, inc. has vision to increase accessibility of Moon by launching series of lunar landers**
- The company has completed two R&D missions (Mission 1 and Mission 2)
- Now moving into the initial commercial phase
- Lunar landers are being developed in the U.S. and Japan
- After 2027, plans to have multiple lunar missions
- The idea is to have a frequent, stable lunar transportation system for lunar infrastructure
- Two lunar communication satellites are scheduled to launch with Mission 3 in 2027
- More satellites are being planned
- The company has begun targeting the development of Orbital Transfer Vehicles (OTV)
- **ispace aims to help establish a cislunar-related infrastructure**
    - So that accessing the moon, lunar orbit is easier
    - Deep space is easier than the current situation
- In five or ten years, many contest participants will have the chance to be involved in lunar/space missions
- UNISEC participants can plan a future with ispace
    - The company is happy if participants join ispace for their future and work together
- **Affirmed that ispace will continue supporting UNISEC activities**



Pictured: ispace mission plan for 2030

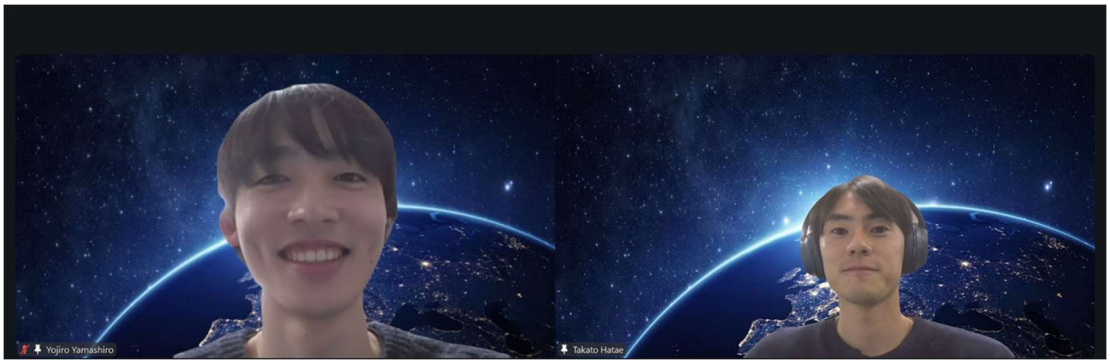
Q&A Session:

Q: **George Maeda: Thank you, Urata-san. I have one question. Can you show this slide? So, in the middle you have image-based navigation. I'm wondering what comes after image-based navigation? Have you thought about future technology?**

A: ***Masayuki Urata:*** *Ah, you mean the descending technology, right? So, image-based navigation means you're using images to figure out where you are. Yes. But in the future, will you have some different navigation system? Uh, so at this moment it is difficult to disclose the more technical information, but when we conducted two missions, Mission One, Mission Two, even we had no image-based navigation system. So, we used a laser range finder in order to detect or measure the altitude of the landers. And then it was the one of the reasons that we couldn't succeed in the soft landing. Then for the future, so we are going to use image-based navigation and also, we are planning to apply LiDAR for the for improving the reliability of the landing system. Yeah. And for the future, maybe even additional redundancy or advanced technology might be applied, but it is still not disclosed yet.*

2 MIC9 1st Place Winner Presentation: TREED

Takato Hatae and Yojiro Yamashiro, The University of Tokyo

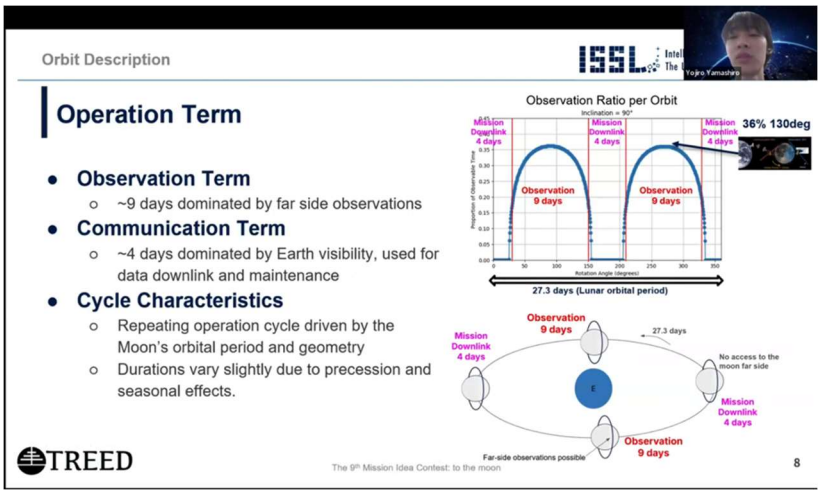


Pictured: Yojiro Yamashiro (left), Takato Hatae (right) during their presentation

Highlights:

- **TREED stands for The Receiver Exploring the Dark-ages**
- This project is a collaboration involving several Japanese institutions, including
    - the University of Tokyo and the National Astronomical Observatory of Japan (NAOJ)

- **The main scientific goal of the mission is to observe the 21-centimeter signal from the lunar far side**
- This signal offers an almost singular way to observe the "cosmic dark ages" and the birth of the first stars
- The signal is emitted or absorbed by neutral hydrogen gas after the Big Bang
- Measuring this faint signal from Earth is extremely difficult due to two main issues:
    - The ionosphere reflects or distorts radio waves, blocking signals from the dark ages
    - Man-made radio interference contaminates the necessary frequency band
    - Examples include FM radio and satellite contamination (like Starlink)
- Earth-based telescopes cannot achieve the required radio cleanness to reliably detect the signal
- The lunar far side offers the most promising solution because
    - It lacks an ionosphere and is naturally shielded from terrestrial radio emissions
- **The TREED mission features three main elements**
    - On-orbit observation: Specifically, observations in low lunar orbit
    - Small satellite: A small satellite the size of a CubeSat
    - Variable-length dipole antenna: An antenna whose length can change depending frequency
- The orbit is designed for both long-term stability and radio quietness
- At 100 km, the spacecraft achieves more than 90 dB of Earth radio shielding over 130° of lunar longitude
- The periloon and apolune are 100 km, with an inclination of 80°, which maintains a quasi-frozen condition
- The full success criterion is to accumulate 1,500 hours of total observation time
- **The designed orbit provides 7,912 hours of total observation over four years**
    - Exceeding the 6,000 hours required for the extra success criteria
- Mission Phase: The mission alternates between two modes every orbit (less than two hours):
    - Observation Mode: Far side pass, collecting low-frequency radio data for about 40 minutes
    - Communication Mode: Near side, involving telemetry downlink, command uplink, and data
- Lunar Revolution Plan:
    - An operation plan was developed based on a full lunar revolution (about 27.3 days)
    - For about 8 days, the satellite cannot access the optimal far side region
    - During these intervals, the mission primarily conducts data downlink and maintenance
    - The 21-cm signal observations are carried out when the spacecraft enters the far side quiet zone
- Sub-mission: A plan to demonstrate an optical navigation method called a **Star Occultation** method
    - uses the precise timing of star disappearances behind the Moon to improve orbit determination
- TREED is designed as an 8U CubeSat, weighing about 13 kilograms, operating in the X-band
- TREED has a mission lifetime of up to four years
- First natural frequency is well above the requirement at 110Hz (should be less than or equal to 40Hz)
- ADCS uses the XACT-100 module, which includes reaction wheels, a star tracker, and sun sensors
- Propulsion: The selection control system uses the PBR-10 water jet; a safe, green propellant system
- Power System (EPS) cconsists of solar paddles, a power control unit, and lithium-ion batteries
- **The solar panels generate 111W at the beginning of life, decreasing to 93 watts at the end of life**
    - The storage capacity is 112Wh
- For communication, using Medium and Low Gain Antenna, GS has 54m and 13.5m antenna
- The thermal analysis used a six-node model, analyzing both worst-cold and hot cases
- A multiple heater with a trip power of 10 watts
    - Maintains the battery temperature between 10- and 45-degrees C



Pictured: Team TREED presenting their MIC-9 winning idea

- **The payload is a variable-length dipole antenna**
    - Made of Beryllium copper with shape memory properties
    - Uses a convex type structure that allows deployment and retraction via motor control
    - Achieves the optimal length for each observation frequency (or cosmic era)
- Issues include EMI interference from the power system could contaminate low-frequency observations
- Antenna deployment failure, this is a critical risk since the antenna is essential for the mission
- If lunar activity increases, the Moon's far side may no longer be completely radio quiet
- The mission relies on a transfer vehicle for lunar injection, requiring careful coordination and flexibility
- The spacecraft uses four reaction LTs thrusters capable of performing small orbital maneuvers
- **The total mission cost is estimated to be around 3 million US dollars** including testing costs
- The project follows a four-year development schedule, progressing from proof of concept to flight model

Q&A Session:

Q: **Fatimah Zaharah Ali: Can you can share with us what kind of software that you use for the simulation for your mission idea?**

A: ***TREED Team:*** *Thank you very much for the question. For the structure design, the CAD used in this the upper figure is SolidWorks. Simulation is used, yeah, Femap. Femap, it's a simulation software called Femap. So, the vibration model and the finite element model is simulated using Femap.*

Q: **Vaseline: It's Vaseline from UNISEC Bulgaria. Very good proposal and work. I was wondering about radiation design. And do you consider any effects on the radiation flying around the moon and having long time of operations? What about that? Thank you.**

A: ***TREED Team:*** *Thank you very much for the question. We have not yet thought about the radiation design. We would like to simulate on that from now and into the future. Thank you very much.*

3 Local Chapter Activity Report: UNISEC-Malaysia

Fatimah Zaharah Ali, Universiti Teknologi MARA

Dr. Fatimah Zaharah Ali is a senior lecturer at College of Engineering, Universiti Teknologi MARA (UiTM), Malaysia since 2012. She obtained her Bachelor of Engineering (Honors) in Electrical and Electronics from Universiti Teknologi Petronas (UTP), Perak, Malaysia in 2009; MSc. in Telecommunication and Information Engineering from Universiti Teknologi MARA (UiTM), Selangor, Malaysia in 2012; and PhD in Electrical Engineering, UiTM, Selangor, Malaysia in 2023. She also had worked as an Assistant Manager in Telekom Malaysia (TM) Berhad in 2010 for a year before she pursued her master's degree. Her study in Communication Engineering has led her to complete research in satellite field for doctorate degree. Her thesis was on the complete process on developing the imaging mission system payload for the application of 1U-sized CubeSat.

Pictured: Dr. Ali seen during her presentation

Highlights:

- The local chapter activities started in 2019, led by Dr. Norilmi Amilia Ismail from USM
- Dr. Ali is currently the POC Malaysia from May 2024
- Malaysia hosted the 46th Virtual UNISEC Global Meeting in July 2024
- Consultant for the CubeSat Salon at the 57th Virtual UNISEC Global meeting
- Member universities are four but the number of other members increased in 2025
- Students increased to 47 from UiTM addition to the 27 students previously reported from USM
- Professors/Lecturers increased to 15
- Two companies are now involved with UNISEC-Malaysia, up from none previously
- **Key activities conducted in 2025 outlined**
- **Mission I: First National Space Imaging Payload (NSIP) Competition**
    - Co-organized by UiTM with Cybernet Systems, a company from Japan
    - Grand Finale on January 16. 2025 held at Malaysian Space Agency
    - Participants had to design a high-resolution camera system or optical lens for a 6U CubeSat
    - Use Ansys Zemax software for development, also used on James Webb Telescope
    - Lot of involvement, specially from the university students who have interest in space field
- **Mission II: Second National Space Imaging Payload (NSIP) Competition**
    - Organized due to the good response to the first competition
    - Held from August 27, 2025 to the grand finale on October 29, 2025
    - Open to academic institutions only
    - Supported the World Space Week, this mission gave participants four specific themes
    - Such as "Compact Space Telescope for LEO" and "White Field Space Survey Telescope"
- **UNISEC-Malaysia UiTM Student Chapter**
    - The chapter was officially established and received its certificate on July 1, 2025
    - Has 47 members, mostly from the Faculty of Electrical Engineering
    - The chapter can be found on popular social media (Facebook and Instagram)
- **Space STEM Education Outreach**
    - “IoT Meets Space" STEM outreach program, funded by IEE TryEngineering Program
    - The program was a first in Malaysia for introducing STEM
    - Also focusing on space and satellite development, specifically a CubeSat prototype
    - Involved 10 lecturers, 6 student facilitators, one company for technical support
    - 50 school students (age 16) from two schools, and 13 teachers (also involved rural schools)
    - The program was divided into three phases
        - Two workshop phases for theoretical and hands-on CanSat development
        - A final competition, the "CanSat Operation Challenge”
        - Students demonstrated and presented their developed CanSat
- **Satellite Launch**
    - UiTMSat-2 satellite was part of the cargo successfully launched by JAXA
    - H3 F7 rocket was launched to ISS on October 26, 2025
- **Other Activities**
    - Promoting the student chapter at the “Engineering Student Societies at School” expo
    - Organizing a talk for final-year students, "Building Engineers to the Future," on October 24
    - To prepare them for a professional engineering career, team-building for new members

Pictured: IoT Meets Space outreach program by UNISEC-Malaysia

- **Future Plans**
    - Space Outreach: using the UITMSat-2 project as a platform to expose students
        - To operate a ground station and receive signal from the CubeSat
    - ASEAN Summit: Organizing an ASEAN-level space summit
        - To strengthen international visibility and student leadership development
    - Visiting other UNISEC chapters, like UNISEC-Thailand, for mutual collaboration
    - 12th UNISEC Global Meeting Participation
        - To expose and motivate student chapter members
        - 11th UNISEC meeting in Japan was canceled due to financial constraints

4 Local Chapter Activity Report: UNISEC-Colombia

Jose Fernando Jimenez, Los Andes University

Dr. Jose Fernando Jimenez was born in Bogota, Colombia in 1958. Dr. Jimenez is an Electric Engineer graduated from University of the Andes (Uniandes), Colombia. He received the Diplôme d'études approfondies in Automatic Control from The Institut Supérieur de l'Aéronautique et de l'Espace (ISAE-SUPAERO), translated as "National Higher French Institute of Aeronautics and Space", in 1983, and the PhD in Industrial Systems from INSA, Toulouse and Uniandes in 2000. Since 1994, he is an associated professor of the Department of Electric and Electronic Engineering at Uniandes. Lastly, he is an IEEE professional member of the Aerospace and Electronics Systems Society.

Pictured: Dr. Jimenez during his presentation for UNISEC-Colombia

<u>Highlights:</u>

- The UNISEC chapter in Colombia is three years old
- Four participants have been trained in the CLTP training course in Tokyo
- The chapter began with six universities, 35 students, six professors, and eight cooperative members
- This year, campaigns began to create UNISEC student chapters in these universities
    - **The chapter officially created the UNISEC student chapter with 24 students**
    - These students also belong to the space tech student initiative at Los Angeles University
    - The plan is to extend these campaigns to the other six universities next year
- **Aerospace activities developed this year included the CANSAT race in 2025**
    - This race saw very high success
- The chapter is promoting the drone community
- The chapter is supporting a mixed team of American and Colombian students
- **Plan to participate in the NASA RASC-AL 2026 competition**
    - This competition seeks disruptive innovations in Mars and lunar exploration
- Outreach activities continue this year, with Giovanna using her influence to achieve great success
    - Especially with young people and children in Colombia
- The chapter organized and participated in a rocketry challenge in Medellin this year

- The chapter is approaching the aviation sector through the Colombian Air Force
    - Including a visit to their logistical infrastructure in Bogota
- Two lectures on satellite subjects were organized this year
- The first lecture was a satellite system course to the whole disciplines of the Los Angeles University
- Developed course for "Collaborative Online International Training on New Space System Concepts"
- This collaborative online training course involved
    - Embry–Riddle Aeronautical University in Daytona, Florida
    - The Uniandes from Bogota
    - The University of Antioquia in Medellin
- The result of the collaborative online training was the participation in the RASC-AL Challenge 2026
- The chapter is also working with the Colombian Air Force on the FarcSat-3 satellite constellation
    - This constellation is intended to be launched in 2028
    - The chapter collaborates on the IoT side of this mission with the Colombian Air Force
- Participated in the first UNISEC Mexico International Congress on Cosmonautical Engineering
    - Took place last October in Nogales, Mexico
- **Collaboration opened with the Mexico chapter to share infrastructure, human capital, and labs**
- **A visit to the Stellenbosch University in South Africa three weeks ago**
    - Resulted in an agreement in Principle of Understanding
    - This agreement is in order to develop a private constellation.
    - This leverages the large industrial ecosystem in Stellenbosch
    - Enterprises like Simera or Dragonfly
- Collaboration will also begin with the Argentina and Chile chapters in Latin America
- **Regarding space research projects, the chapter continues with the ADCS system development**
- This year, work began on certifying the chapter's labs
- Includes an echo camera, a Helmholtz cage, a centrifuge, and a clean room, to be space-level labs
- Developing its own Thermal Vacuum Chamber with funds from the University of Los Angeles
- Continues with the intention to organize an EPA training in Latin America with other chapters
- **From the university space program side, work began on an IoT CubeSat**
- The plan is to make a qualification model of IoT CubeSats, maybe six units CubeSat constellation
- This constellation is intended to cover Colombia's territory, which is 2 million square kilometers
- The chapter would like to participate again in the KiboCube challenge in 2025 or 2026
    - **Participated in 2023**
- Working hard with the UNISEC constellation and is near to finding a financial investor
- Working with the Air Force to present the critical routes in this project, which is the regulation track
- Colombian Air Force is helping to present the demand of frequency
    - Permission needed from the Minister of Telecommunication in Colombia
- The chapter has some difficulties sending participants to CLTP 14
- But the intention is to send another Colombian to the 15th CLTP course in 2026

5 Local Chapter Activity Report: UNISEC-Tanzania

Joseph Wambura Matiko, Dar es Salaam Institute of Technology

Dr. Joseph Wambura Matiko obtained a BEng degree in Electronics and Telecommunication Engineering from the Dar es Salaam Institute of Technology (DIT), his MSc in Wireless Communications at Lund University, Sweden and his PhD in Electronics and Computer Science at University of Southampton, UK. Dr. Matiko has over 20 years working experience in TVET sector as an instructor, a lecturer, a researcher, a consultant and a software developer. He is currently working as a lecturer at DIT, Tanzania. He is also the Centre Leader of a Regional Flagship ICT Centre, which is being established under the support of the World Bank. His current research interests include blockchain technology, mobile computing, embedded electronics for IoT, energy harvesting for low power electronic devices, machine learning, and biomedical signal processing and Space Technology.

Pictured: Dr. Matiko seen during his presentation for UNISEC-Tanzania

Highlights:

- UNISEC-Tanzania was established in 2024, making it one year old
- The organization currently has eight members and expects to attract more members in the near future
- UNISEC-Tanzania attended several virtual meetings that was organized by UNISEC-Global
- Undertaking R&D of the first satellite (the first CubeSat) in Tanzania and is at the prototyping stage
- Developing a space engineering program in Tanzania, intended for the bachelor's degree level
- Participated in the HEPTA training, CLTP14, in Japan, which was a good opportunity to learn
- Working with the Government of Tanzania to implement newly developed national space strategy.
- Participate actively in UNISEC-Global initiatives, such as virtual meetings
    - If financially possible, participate in the annual event in 2026
- Continue the finalization of the CubeSat, hoped to be launched next year possibly by August
- Develop joint research proposals and collaborate with partners to expand the space program
- Build capacity, which is a key objective of UNISEC-Tanzania
    - By engaging students in CubeSat development and satellite and space technology in general
    - Focus on enhancing skills and knowledge
- Mobilize resources to establish satellite development and testing laboratories in some universities
- Plan to conduct research related to space activities and the impact of space technology
- Plan to engage the academic community by hosting a forum next year
- UNISEC-Tanzania is a very young organization, one year old, that is slowly establishing itself
- Eager to learn from other local chapters across the globe
- Hopes to receive support from other members

Pictured: Dr. Matiko seen during his presentation for UNISEC-Tanzania

6 Local Chapter Activity Report: UNISEC-India

Inbisat Yousuf Nath and Vamshi Sainath Gavani, UNISEC-India

Pictured: Inbisat (left) and Vamshi (right) during their local chapter presentation

Highlights:

- Prof. R. M. Vasagam, who was the previous president of UNISEC-India, passed away at 84
    - He was the first employee of ISRO (Indian Space Research Organization)
    - Prof. Vasagam led the space revolution in India
    - **Was responsible for the first Indian geostationary satellite, Apple**
- UNISEC-India sets a mission and vision for every year
- To advance space science and technology in India through collaborations, education, and innovation
- Partnership with academia, entrepreneurs, research organizations, and venture capitalists
- Vision is to emerge as prominent catalysts in advancing new space-related initiatives
    - to nurture a dynamic community of professionals
    - to actively participate in global endeavors to democratize space for the benefit of mankind
- **This year's goals include**
    - Increase membership
    - Increase collaborations and partnerships
    - Increase educational initiatives
- Set up events, conferences, and publications, build communication and outreach
- Achievements and Initiatives
- **UNISEC-India exceeded membership goal, a 55% increase this year against a goal of 50%**
- Partnered with national and international universities and conducted four membership drives
- UNISEC-India collaborated with seven universities, as well as with Russia, Taiwan
    - Also collaborated with the Southeast European Space Education Association
- Partnered with Taiwan on a mission, participating in the MIC organized by UNISEC-Global
- The team split into
    - "TILDA" (Taiwan India Lunar Dust Analysis)
    - "TILMAC" (Taiwan India Lunar Mapping Constellation Mission)
    - Members from both India and Taiwan
- **Visa issues prevented the team from presenting at the MIC in South Africa**
    - However, they presented at the Taiwan Space Agency
    - Won the International Academy of Astronautics award
- Collaborations were also made with TESOS Dynamics Private Limited and UNISEC-Samara
- Signing an MOU for technology transfer in satellite design
    - Provide ground station access from India to Samara University for SamSat-ION projects
- UNISEC-India participated in the NLE conference in collaboration with UNISEC-Serbia
- Produced a paper on the effects of light pollution on a dark sky during observations of space objects
- **Educational and Outreach Efforts**
    - Prepared 12 course materials and hosted four events
    - Published 12 course materials with ISBNs
    - Introduction to Satellite Communication, Introduction to Space Technology and Satellites
    - Introduction to Space Environments and Orbits
- Published and circulated 54 newsletters titled Space Beacon to spread space-related awareness
- The organization was able to increase engagement by 15% against an envisaged 20% increase
- Conducted four educational workshops and webinars
- Mentorship programs and "classroom satellite with dashboard" implemented

    - Connect experienced members with newcomers
- New UNISEC-India chapters were inaugurated at
    - JPR Institute of Technology and Shri Shakti Institute of Technology
    - Seminars held on small satellites and the establishment of WCRC
    - WCRC stands for World CanSat and Rocketry Championship chapters
- Supported the students of the "75 Student Satellite Mission" with orbit simulations and mentorship
- **75 Student Satellite Consortium Mission**
- The 75 Student Satellite Consortium Mission is a visionary project announced by PM Narendra Modi
- Announced at 76th United Nations General Assembly on September 25, 2021
- **Collaboration with UNISEC India, 15 satellites built and planned for launched in Q1 2026**
- UNISEC-India is the capacity building and education partner for this mission
- The Indian Technology Congress Association (ITCA) handles the technology part
- Provides the "student satellite classroom version"
- The DCE satellite, called "Bhumitan," was announced late this year and adds to the consortium
- Participating institutions include:
    - Ramaiah Institute of Technology (for testing)
    - Tandra University
    - Gandhi Gram Rural University (which will announce its own satellite)
    - Shadrium Satellite Orientation Program (whose satellite will also be launched)
    - Galgotias University (which wants to start a space engineering department)
        - UNISEC India's help for capacity building and course deployment
- **Involve Kashmir in space sector through “Kashmir Satellite Initiative”**
- Dr. K. Gopal Krishnan called upon the Lieutenant General S. A. and introduced nanosatellite field
- The Lieutenant General S. A. was supportive and wanted to fund the initiative for Kashmir
- Jammu and Kashmir (J&K) will be launching a satellite
    - Under the Islamic University of Science and Technology (IUS)
    - Will build Kashmir’s first satellite
    - The Kashmir satellite was officially announced by the Chief Minister, Shri Omar Abdulla
    - Announced on October 10, 2025
- ITCA is the technology partner, and UNISEC-India is the education and capacity building partner
- Course and Project Development
    - Goal is to build platforms to inspire and educate innovators, focusing on EdTech in space
    - Provide educational resources and subsystems to space-faring nations
- Designing course at IIT Kanpur specifically for students globally to easily learn space technology
- **Especially nano-satellite technology, serving as an entry level building block**
- The course focuses on critical thinking and problem-solving skills for CubeSat missions
- The integration of human-centered design
- TESOS Dynamics is announcing an open-source beacon for CubeSats
    - Is very low-current consuming, non-invasive, and operates autonomously.
    - It can transmit up to 2W in the UHF frequency, and its current size is about 30 mm x 40 mm.

Pictured: UNISEC-India’s work on indigenous CubeSat technology

- **Implement “Space for Designers" as a methodology to address the lack of design thinking**
- Encourages students to start by thinking to analyze, redefine, and synthesize the problem
- Understand the "empathy study" of a satellite
- UNISEC-India congratulated Dr. Naran on taking office as the new chairman
- Dr. K. Gopal Krishnan was a jury member for the In-Space ISRO CanSat competition at Kushinagar
- A virtual *Hall of Fame* for renowned scientists involved in ISRO
- Focusing on their achievements and contributions, is being discussed and built
- Inform students about current happenings in space technology, related to ISRO
    - Act as a museum to glimpse advancements in the Indian space sector

7 Local Chapter Activity Report: UNISEC-Nepal

Ashlesha Dangal, UNISEC-Nepal

Ashlesha Dangal is currently serving as the youngest member of UNISEC-Nepal. She coordinates programs, fund raising and activities for the chapter. She has deep interest in Active Debris Removal (ADR) and is researching on drag sail technologies.

Pictured: Ms. Dangal seen during her presentation for UNISEC-Nepal

Highlights:

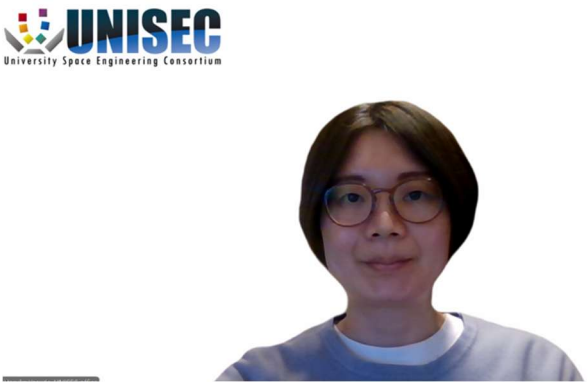
- UNISEC-Nepal has been participating in the CLTP since 2016, became an official member in 2020
- Won the student prize in the Mission Idea Contest (MIC) in 2023
- The local chapter currently has five member universities including Kathmandu and Tribhuvan Uni
- **E-Cube (Educational Cube) is a training kit inspired by the HEPTA-Sat**
    - The kit contains all basics of a satellite subsystem, is used to train students on satellite
    - E-Cube was listed on Kickstarter crowdfunding this year, and the campaign was successful
    - Shipped over 150 E-Cubes worldwide in 2025 including US, UK and Japan
    - **A dedicated website for E-Cube was developed this year**
    - The kit has been used to train university, middle school, and high school students in Nepal
- Inspired by E-Cube, a CanSat shield is currently being developed for another round of Kickstarter
- Top of an Arduino Uno and serve the purpose of a CanSat
- It will be used to teach high school, middle school, and university students about satellite subsystems.
- Satellite training continued across schools and universities this year
- **This year's focus included narrowing the gender gap and promoting women in STEM education**
- An end-to-end PCB designing training was held at Kathmandu and Purwanchal University
    - 100 students, most being girls, participated from both universities
- GS training was held to train middle/high schoolers on how to develop and build an antenna
    - Led by students selected from Khwopa Engineering College and Purwanchal University
    - The aim is to establish a ground station in all seven provinces of Nepal
    - Currently, only two provinces have GS established
- UNISEC-Nepal helped schools like in Bloom Nepal School to established Makerspaces
- The goal was to develop a research culture among students
- UNISEC-Nepal helped link about 15 university students from universities for industry internships

- A payload designed by Nepal for a 12U CubeSat that launched on November 30, 2025
- Slippers2Sat, a middle school satellite project that completed its launch on December 10, 2025
- Nine members from marginalized communities participated in making the CubeSat
- **Slippers2Sat2 (S2S2), this is a CubeSat that will follow the footsteps of Slippers2Sat**
- University students will review and collaborate with the S2S2 mentors and the middle school team
- **Future training will take place in the first quartile of 2026**
- **Munal high school satellite is waiting to be launched in the first quartile of 2026**
- Lack of local manufacturers, materials and resources must be sourced from foreign countries
    - This significantly increases the price
    - And makes it difficult to keep E-Cube kits and CanSat shields cheap and accessible
- There is a lack of sufficient funding to support initiatives
- Students do not understand primary technical words, creating a major barrier in trainings
- **Plans for 2026 for UNISEC-Nepal**
    - Supporting the launch of Munal High School Satellite
    - Providing nationwide satellite trainings
    - Providing ground station boot camps and developing a ground station curriculum
    - Continuing R&D for E-Cube and CanSat to make the experience immersive
    - Improving the web portal for virtual learning
    - Continuing to push for affordability and sustainability

Pictured: UNISEC-Nepal participating at IAC's KiboCUBE HEPTA-Sat Workshop in Sydney

8 Announcement and Acknowledgment

Ms. Haruka Yasuda, UNISEC-Global



Pictured: Yasuda-San announcing the latest updates from UNISEC-Global

Highlights:

- **The 11th UNISEC-Global Meeting Completed**
  - Was held on November 1 – 4, 2025
  - Venue: The University of Tokyo, Japan
  - Was successful, slides available here
  - https://unisec-global.org/meeting11.html

- **The Mission Idea Contest Completed**
  - The 9th Mission Idea Contest: to the Moon
    - Theme: Lunar Mission
    - https://www.spacemic.net/
    - 25 abstracts were submitted from 14 countries
    - 10 finalists and 4 semi-finalists were selected
  - **Important Completed Dates:`**
    - Full Paper submission : August 25, 2025 (Finalists and Semi-finalists)
    - Final Presentation was on : November 1, 2025 held at the 11th UNISEC-Global Meeting in Tokyo
    - Contact: info@spacemic.net

- **Nano-satellite IoT Constellation Program**
  - A new program launched by UNISEC-Global
  - Jointly design satellite bus (3-6U) with online guidance
  - Each satellite will be developed by each country with its own funding
  - If difficult, we will jointly search for international funds
  - All the satellites have the **same mission payload** to contribute to solving global problems or local problems as a constellation
  - Each country can have **one specific mission payload** for its own interest
  - Web: https://unisec-global.org/iot.html
  - Interested ones can submit the form here: https://forms.gle/WcdvQ9GiQV9rxssj6
  - The IoT workshop was held on November 2 at the 11th UNISEC-Global Meeting
  - Contact: iot@unisec-global.org

- **Next Venue Announcement**
  - **The 12th UNISEC-Global Meeting**
  - To be held online
    - To facilitate all POC and students from all local chapters to participate
    - Details will be announced later
  - In person **POC** gathering at Antalya, Türkiye, afternoon
  - **October 4, 2026,** in conjunction with IAC (T.B.D)
  - **15th Nano Satellite Symposium to be held at Tainan, Taiwan**
  - November 8 – 12, 2026, with
    - PreMIC10
    - 2nd IoT Workshop
    - 3rd Deep Space Workshop

- **CLTP15 (CanSat/ CubeSat Leader Training Program)**
  - Completed: August 18 – 28, 2026
  - Venue: Nihon University, Chiba, Japan
  - Application will start in January 2026
  - Contact : secretariat@cltp.info

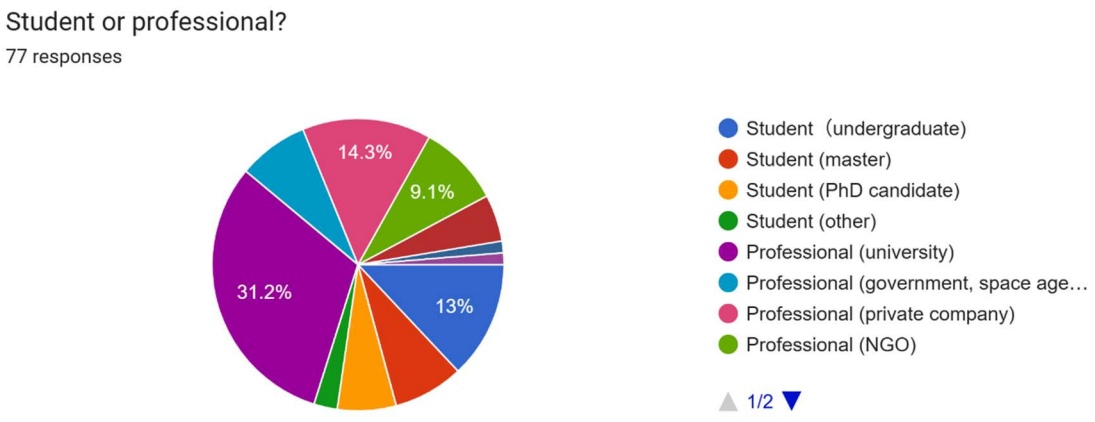
- **Launch Opportunity: J-Cube**
  - Special Discounted opportunities
  - 1U, 2U, 3U, deployment from International Space Station
  - Collaborate with UNISEC-Japan's University
  - Technical support will be provided
  - Contact: info-jcube@unisec.jp ,
    http://unisec.jp/serviceen/j-cube

- **Next Virtual Meeting**
  - Date: January 17, 2026
  - Theme: Local Chapter Report
  - Host: UNISEC-Global

9 Participant Statistics

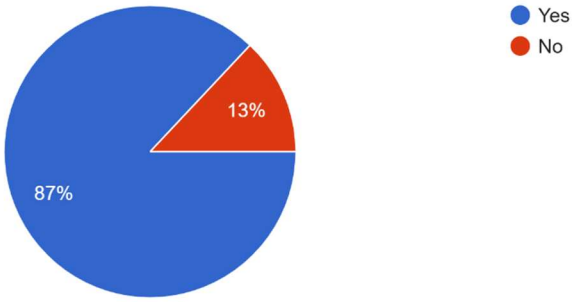
77 registered participants from 33 countries and regions for the 63rd Virtual UNISEC-Global Meeting.

Country/Region	Registrants	Country/Region	Registrants
Argentine	1	Nigeria	4
Bulgaria	8	Pakistan	1
Burkina Faso	1	Paraguay	2
Chile	2	Peru	1
Colombia	4	Philippines	2
Dominican Republic	1	Portugal	1
Egypt	3	Somalia	2
Germany	1	Spain	1
India	7	Taiwan	1
Japan	10	Tanzania	4
Jordan	1	The Netherlands	2
Kenya	1	Tunisia	1
Korea	2	Uganda	1
Malaysia	2	Uruguay	1
Mauritania	1	USA	1
México	1	Zambia	1
Nepal	5		



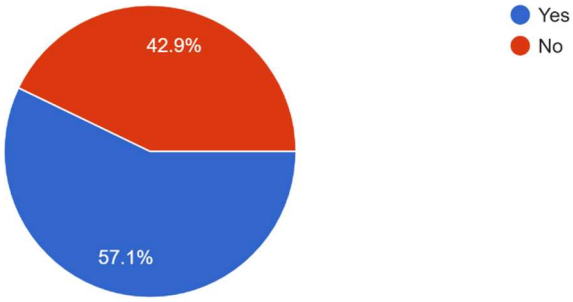
Have you participated in the UNISEC-Global Meeting previously?

77 responses



Have you ever joined any local chapter's activity?

77 responses



Thank you