



# UNISEC-Global The 46<sup>th</sup> Virtual Meeting

July 20<sup>th</sup>, 2024, 22:00-24:00  
(Standard Japan time GMT +9)



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**Host: UNISEC-Malaysia**

**Time: 22:00-24:00 (JST)**

**Date: JULY 20, 2024**

**Link: <https://www.unisec-global.org/virtual-meeting.html>**



46TH VIRTUAL UNISEC-GLOBAL MEETING

Theme: Industry-Academia Collaboration for Sustainable Satellite Project



**Dr. Fatimah Zaharah Ali**  
POC UNISEC-Malaysia & Senior Lecturer in  
Universiti Teknologi MARA (UiTM)

Moderator  
Opening Remarks



**Dr. Norilmi Amilia Ismail**  
Founder & CEO of Spaceln

Company Startup Representative :  
From campus to commerce: the journey of  
space tech startup



**Prof. Dr. Mohamad Huzaimy Jusoh**  
Professor, Universiti Teknologi  
MARA (UiTM)

Academia Representative: ASEAN Multination  
Nanosatellite Collaboration Project: Crafting  
Indigenous Space Program in Malaysia



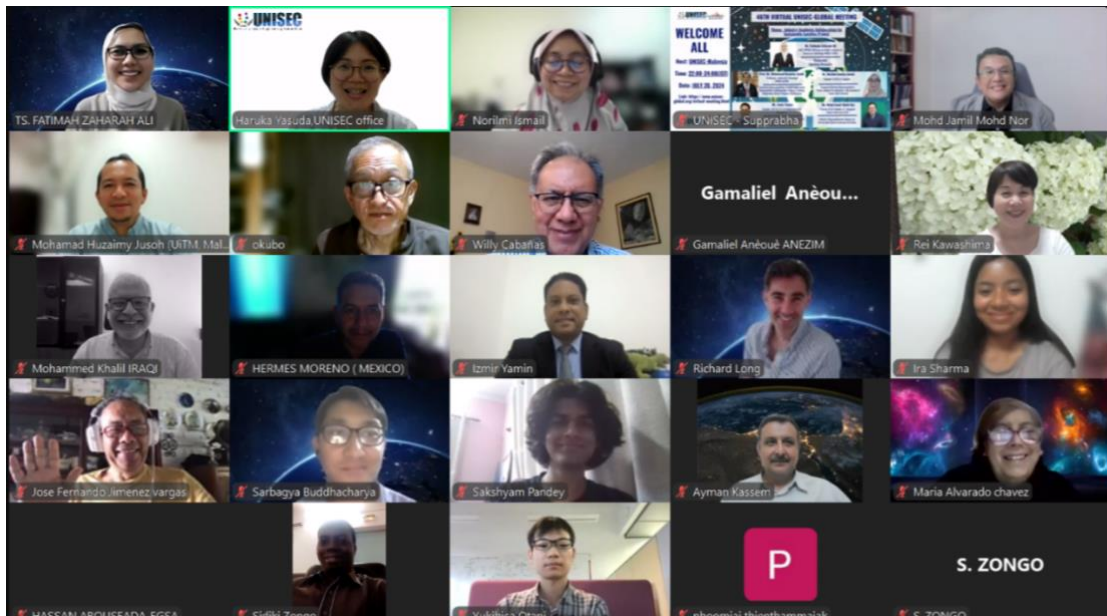
**Mr. Izmir Yamin**  
Founder, CEO & CTO of Independence-X  
Aerospace

Space Company Representative: Journey &  
Development of FEMTO satellite  
( World's smallest satellite)



**Mr. Mohd Jamil Mohd Nor**  
Partner & Co-Founder of Vanguard  
Space Industries (VSI)

Industry Representative: Impact on  
Sustainable Space Economy Activities



The following report was prepared by UNISEC-Global Secretariat  
July 20, 2024  
Japan

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## 1. Opening Remarks

Fatimah Zaharah Ali, UNISEC-Malaysia

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 (Honours) 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 start the 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; which also includes the integration and space environments tests with the other subsystems boards of the satellite.

In 2021, she was appointed as Project Manager for the international collaborative project, ASEANSAT, with associates from Philippines, Thailand, Ministry of Science, Technology, and Innovation (MOSTI), and Malaysian Space Agency (MYSA). In 2023, she was appointed as expert consultant and panel reviewer for Nanosatellite Development Project by MYSA.



*Pictured: Dr. Ali while giving the opening remarks*

### Highlights:

- UiTM started satellite development with UiTMSAT-1 since 2016 under the BIRDS-2 program
- Establishment of Malaysia's National Space Policy and Ground Station for Satellite communication in 2017 marked a significant advancement in the country's space sector
- MYSA (Malaysian Space Agency) formed in 2019
- MYSA formed through the merging of Malaysian Remote Sensing Agency (MRSA) and National Space Agency (ANGKASA)
- The Malaysian Government has put good focus on national space growth
- Involvement of Academia like UiTM has proven to be effective for National Satellite Development

## 2. Presentation Academia Representative: ASEAN Multination Nano-Satellite Collaboration Project: Crafting Indigenous Space Program in Malaysia

Prof Dr Mohamad Huzaimy Jusoh, Professor, Universiti Teknologi MARA (UiTM)

Prof Dr Mohamad Huzaimy Jusoh is a senior lecturer at Universiti Teknologi MARA (UiTM). He received his Diploma (2001) and Bachelor Degree (2004) from Universiti Teknologi MARA, Shah Alam in Electrical Engineering (Communication). He obtained his master in 2006, majoring in Communication and Computer. His interested research areas are in ionospheric scintillation and propagation, seismo-ionospheric coupling, the study of Total Electron Contents (TEC) in equatorial region and GPS. Currently, he is a lecturer at Faculty of Electrical Engineering, UiTM Shah Alam and supervises final year project students, mainly in GPS, TEC and ionospheric projects. He is a member of IEM, Malaysia.



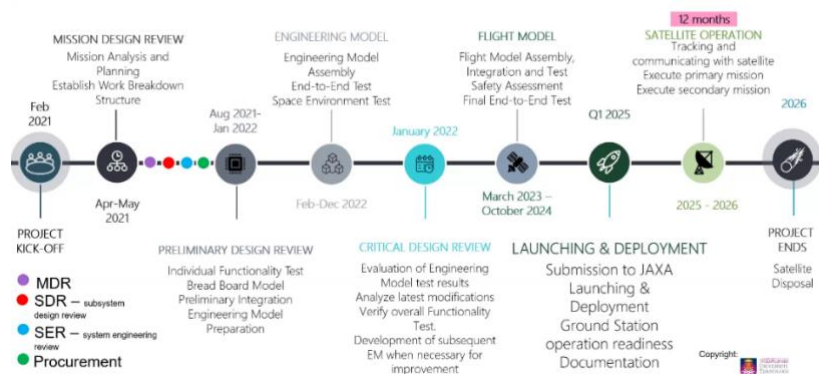
*Pictured: Prof. Jusoh presenting about ASEANSAT*

### Highlights:

- Started off with brief history of first national nano-satellite UiTMSAT-1
  - A 1U satellite with dimensions roughly 10cm<sup>3</sup> and weighing 1kg
  - Launched through ISS
  - Made a significant impact in satellite development of Malaysia, received good coverage from news and media
- Focused on The Project Overview of ASEANSAT
- First ASEAN Collaboration for a nanosatellite project
- Project Duration is 2 years
- Additional funds provided by Malaysian Ministry of Science, Technology & Innovation
- 4 students from Malaysia, 3 students from Philippines and 4 staffs from MYSA participating
- Collaborations with multi-national institutions like:
  - UiTM (Malaysia)
  - KMUTNB (Thailand)
  - UPHSD (Philippines)
  - KYUTECH (Japan)
  - MYSA (Malaysia)
  - MOSTI (Malaysia)
  - for satellite development, procurement, testing and fundings
- Primary mission of ASEANSAT is Earth Observation Mission
- Secondary missions are Amateur Radio Tracking System Mission and Store-and-Forward Mission
- Prioritized local manufacturers to produce different satellite parts to encourage local industries into space sectors
- Benefits academic institutions as well by providing satellite development skills and better satellite data for advanced research



## ASEANSAT: PROJECT TIMELINE



Pictured: Prof. Jusoh project timeline of ASEANSAT

**Q/Ans:**

**Q: Dr. Fatimah Zaharah Ali: What is the greatest challenge that the team faced doing the project development?**

**A: Dr. Mohamad Huzaimy Jusoh:** *If you are asking about challenge, its actually 'challenges'. There are quite a number of challenges that we're facing, other than the management itself, with the team members, and the commitment from the members, plus in terms of finances and the licensing and also in the aspect of the facilities that we are having now. But with this collaboration, or different partners and different entities that we are collaborating with right now, we believe these challenges can be overcome sooner.*

**Q: Moderator Dr. Fatimah Zaharah Ali: As you share, there's a lot of fields that can be involved in the satellite project. From the space field, and from many others. So, is there any challenge in order to push this field, or how can we get all of those different fields to collaborate together under the satellite project?**

**A: Dr. Mohamad Huzaimy Jusoh:** *One thing that we always highlighted when we started to approach the collaborators is the impact, so they impact each entity, and each entity that we approach is different. So, we need to have the knowledge, or we need to have the plan, where we're going in the next 3,5 or 10 years. So, we're always offering the impact that, the potential collaborators, or the entities to be collaborating with the project, in terms of future business, in terms of visibility, in terms of the human capital development, so different entities will have different target, different KPI for the entities. We're highlighting the impacts of the program, for each entities. Significant impacts, for each entities that we're collaborating.*

### 3. Company Startup Representative: FROM CAMPUS TO COMMERCE: THE JOURNEY OF SPACE TECH STARTUP

Dr Norilmi Amilia Ismail, Founder & CEO of SpaceIn

Dr. Norilmi Amilia Ismail is the CEO of SpaceIn Sdn Bhd, and a lecturer at Universiti Sains Malaysia (USM). She was awarded MSc in Space Mission Design & Analysis in 2007 and PhD in Mechanical Engineering in 2011, where she conducted research on the dynamics of the Motorized Momentum Exchange Tether. She has been teaching for over 13 years and is committed to promoting space technology education among young people in Malaysia. SpaceIn is focused on developing satellite IoT technology to connect devices in remote areas. Norilmi is also involved in space outreach programs, is co-founder and the first President of the NGO Malaysia Space Initiative {MiSI}, and was also appointed

as the mentor in the Space4Women Mentorship program by the United Nations Office of Outer Space Affairs. She is also the Assistant Secretary of Malaysia Space Industry Consortium (MASIC).

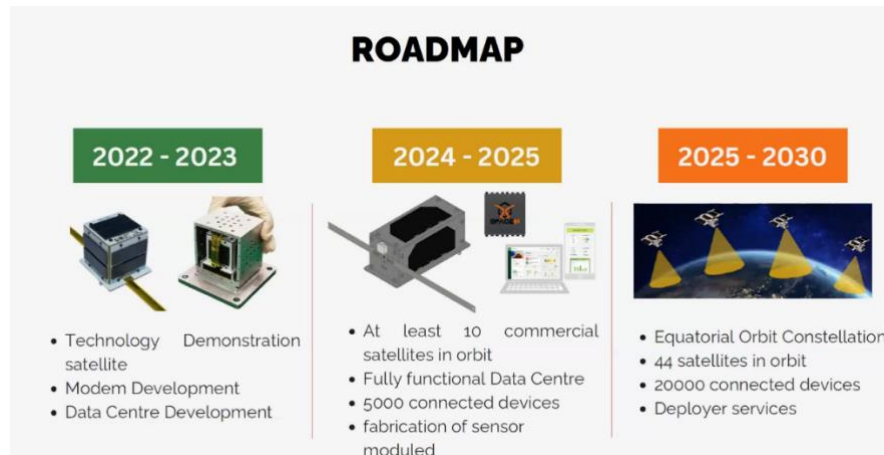


*Pictured: Dr. Norilmi Amilia Ismail presenting about SpaceIn*

### Highlights:

- Is passionate about space and education
- Is active in UNISEC, was previous POC for Malaysia
- Hosted different projects and facilitated students on international competitions
- Incorporated SpaceIn in Nov 2020
  - Small satellite research, development and manufacturing
  - Space education and awareness
- Mission is to provide lower cost space access/platform
- Products
  - CanSat kits for education
  - High Altitude Platform Services
  - SpaceAnt – PocketQube for satellite IOT services
- Problems
  - Poor/ No connectivity in rural areas
  - High satellite costs
  - Regulation
- Solutions
  - PocketQube for IOT applications
  - Non-Terrestrial Network using Satellites in Low Earth Orbit
  - Using small satellites benefits in
    - Reducing launch costs
    - Small, low power, easy to use
- Currently using AWS server
- Currently one ground station in Universiti Sains Malaysia (USM)
- Plans to build another in Malaysian Space Agency (MYSA)
- Having company is efficient and successful for collecting large grants for big projects
- Achievements of SpaceIn
  - Winner of MDEC IdeaKita
  - Winner of Hackathon 2023
  - Top Three Penang Hard Tech Accelerator Program
  - Winner of SheDisrupt Malaysia
  - Recieved large grants and has made big investments
- Will focus now on
  - ground station development for commercial satellites
  - Frequency filing for commercial satellites
  - Development of Mission Control Centre
  - Development of Ground Sensor Module / Terminal
- USM has been supportive in early starting funds and services

- Company has grown effectively since establishment
- Product development takes lot of time, but significant marks contribution for KPI
- Need to have commercial mindset and good problem identification



*Pictured: Dr. Norilmi Amilia Ismail presenting about SpaceIn roadmap*

**O/Ans:**

**Q: Rei Kawashima: I heard Space X required deorbiting in 5 years after mission completion. How did you prove it?**

*A: Norilmi Amilia Ismail: PocketQube/small satellite normally is orbiting for less than 2 years.3 years, so actually this can be done, of course, during the simulation. All this thing, you can predict how long actually this satellite will be lasting in orbit.*

**Q: Rei Kawashima: Are you using Pocket Cube for IOT business?**

*A: Norilmi Amilia Ismail: PocketQube, currently we use for technology demonstrations, at the same time we also plan to have a few PocketQube for the earlier batch of constellations. Then, we need to have a look on the demand on the ground, because the demand with the ground will actually determine the size of real satellites also. So, we can't really say that we're going to move to another kind of satellites, but we have to wait on what is the progress on that.*

**Q: Willy Cabañas: I can see that you have few developments in many years of development in satellite sector. And you have successful involvement in industrial sector. However, in my country, the industry used to show in a way that they can be involved in a project, they need to see the product, before they buy it. This is something cultural in my country, so if you don't have the development already done in the space sector, and you want to attract, to involve the industry, what could be the best advice you can give us to fulfill this goal.**

*A: Norilmi Amilia Ismail: I think this is normal that people see and believe it. Something like that. This is normal in developing countries. So, what we're doing is, you go first with developing something that you have to put more capital into. This is what I've done. Because I know that the pocket cube, the cost is less than compared to 1U cube sat. So, you can maybe go this first. And if you currently have a company to do that, of course this must be coming on the research ground. So, having less capital on that trying to push, and you have to convince the stakeholders. And what I can advise is what is the problem in your country that you can solve with your satellite. Use that first. For me I can see that of course everybody wants remote sensing. But remote sensing is also quite expensive. But internet of things, you can have the smallest satellite, you can send a few data for agriculture, so maybe you can use this, but make sure that your narrative is actually to get along with the narrative of government. For me, yes, I use this, because I know that we are looking on the forest measurement, we are looking on the agriculture; how you can use this satellite to solve this problem. And from there, this is like a customer focus first. The user focus first So, go there first, then you propose to make a satellite. And this can be solved using satellite. So, for the development of satellite, you can start with the smallest satellite, and then you show the growth for the development of the satellite. This is what I have done and I see that this is quite practical and also quite successful.*

#### 4. Industry Representative: IMPACT ON SUSTAINABLE SPACE ECONOMY ACTIVITIES

Mr Mohd Jamil Mohd Nor, Partner & Co-Founder of Vanguard Space Industries (VSI)

Mr. Mohd Jamil Mohd Nor is a partner and Co-Founder of Vanguard Space Industries (VSI). He graduated from Universiti Teknologi MARA's Arshad Ayub Graduate Business School in 2024 securing a grade of 3.40 in Masters of Business Administration (MBA). He also served as The Jury Member of . He has served as the Executive of Business Development at Space Future Consulting, Senior director of Spaceport Malaysia, Project Director of Space Venture Sdn Bhd, Chief Operating Officer of Skye Technologies Berhad, Director of Institut Kajian Angkasa Malaysia, and Director of Business Development at Asif Asia Sdn Bhd.



*Pictured: Mr. Mohd Jamil Mohd Nor during his presentation*

##### Highlights:

- Focus of Vanguard Space Industries is on space engineering and ancillary services
- Plans to reuse satellites by recovering them
- 4 phase action
  - Assist in experiment design of VSI laboratory
  - Assist in launch of VSI laboratory to orbit
  - Operate and feed data from the VSI laboratory
  - Reuse VSI laboratory by retrieving it
- Industry-Academia Phenomenon
  - solves talent shortage problem
  - Engineers taking business hierarchies expands multiple ventures including space
  - Funding Issues
    - Industry-Academia helps engineers fund large projects
    - Helps Startups grow
    - Roles of Governmental Agencies
      - US largely funds NASA: good success example
      - Govt funds constellation, constellation provides IOT, government receives com at cheaper rate
    - Funds should be prioritized on sustainable projects
- Govt Expenditures on Space % to GDP
  - 0.003% (Malaysia)
  - 0.221% (Singapore)
- Requires govt support and funding
- Collaboration and Partnership is extremely beneficial



- Space Economy is Ocean Blue Economy
- Open business: create your own market and income
- Very less competition

## 5. Space Company Representative: JOURNEY & DEVELOPMENT OF FEMTO SATELLITE (WORLDS SMALLEST SATELLITE)

Mr Izmir Yamin, Founder, CEO & CTO of Independence-X Aerospace

With over 10 years of experience as a Project Engineer and Head of Projects, Mr. Izmir Yamin have gained extensive knowledge in multi-engineering fields, especially in Software, Electronic, and Electrical engineering. Besides his core competencies in Mechanical engineering, he has successfully led key projects involving UAVs (Unmanned Aerial Vehicles) and Ground Vehicles, collaborating with multidisciplinary teams to ensure project success. My expertise lies in writing software for embedded systems on Controller Area Network (CAN) and I2C systems, specifically autopilot systems and user interfaces. He possesses strong skills in high-level systems design, integration, and validation, employing rigorous testing models and processes such as Scrum, AGILE, and the V-Model. His track record demonstrates a commitment to excellence and a drive for innovation. He describes himself as a results-oriented professional seeking high-impact opportunities to apply his expertise and contribute to transformative projects, where he can contribute significantly to projects and propel organizational success.



*Pictured: Mr. Izmir Yamin presenting about Femto Satellites*

### Highlights:

- Representing Independence-X Aerospace (IdXA)
- New space Transportation Company
- Focus lies in Launch Vehicles – future vision
- Currently, developing technology developments in rocket engine across solid, liquid and hybrid rockets
- Cryogenic rockets are being tested
- Meanwhile, the organization has also commercialized other products
  - Re-entry Vehicles
  - Low-Cost Satellite
- Vision is to go green and deep in space exploration
- Looking for net zero carbon emission on rocket propulsions
- Parallely also experiment with new innovation sand technology
- Recently, they were also certified by the government for their nanotechnology
- Intentions to also get into multi-planetary exploration with Moon as the first step

- GerhanaSat – an IoT based Satellite
- Started in 2021 – initiated the R&D process
- The Satellite is now ready for launch – scheduled to launch in 2025
- Some delays are being faced due to license and filing works which might extend the time stated
- Some customers are already signed from France, Netherlands, Denmark, USA and India
- Formerly, they have participated in Google Lunar XPrize – Top 16 – Received the Pioneer Award
- Participated in the SiswaSat Challenge in 2020
  - A Can-Sat organized by Malaysian Space Agency
  - They mentored an university project which secured the first place
- GerhanaSat Challenge - 2022
  - A competition launched by IdXA in collaboration with the Ministry of Science
  - Gave out their products as part of beta testing program
  - More than 150 participants across 24 teams participated in the program
- GerhanaSat is a femto-class satellite which is <100g
- It does not carry any payload
- It is a communication relay satellite
- Future plan is to launch a constellation around the equator
- Business model is focused around the equator but can also accommodate client request on other parts

## DESIGN AND DEVELOPMENT



*Pictured: Mr. Izmir Yamin presenting about the design and development of GerhanaSat*

- 3 satellites will be launched at an orbit of about 500 kms at 55 degrees inclination
- Will have a store and forward mission and live communication with 2 Ground Station in Malaysia
- Complete 100% in-house manufacturing
- This will also be declared as world's smallest satellite after chief launch and successful data transmission
- Challenge was to integrate everything in the smallest form possible
- Ground Stations are stationed one in East Malaysia and one is West Malaysia
- All the operation of the company is handled by internal funding. They do not have any external grants/investment.
- The satellite has undergone a high-altitude balloon flight test

### Q/Ans:

**Q: Maria Alvarado chavez: According to ECSS, the estimated time the materials of the Femto will last in space?**

**A: Mr Izmir Yamin:** So, usually the materials that we design is going to last 2 years so we will also have thermal control system as well as radiation protection which both of them can get involved in the degradation of some materials on board. So, currently that is one area that is least talked about which is the radiation analysis because when I take a look on the radiation part, it is amazingly complex! So, we are currently undergoing some level of training in France on this aspect of radiation so in short the answer is 2 years and these two elements are the ones that is going to contribute for material degradation.

**Q: Maria Alvarado chavez: Is Gerhanasat Challenge international?**

**A: Mr Izmir Yamin:** It is local for the past but thank you for the question. Actually, we like that question. We are

going to open internationally, hopefully, next year. So, we will have a much interesting theme and I can give you a spoiler alert; the theme will be “Mars Exploration lander”. So, the landers it is upto you, you can provide rovers or mars drone because now you know on mars, they have drones. So, that will be the next challenge.

**Q: Dr. Fatima Zaharah Ali: Oh, wow. So, when will you publicize this competition?**

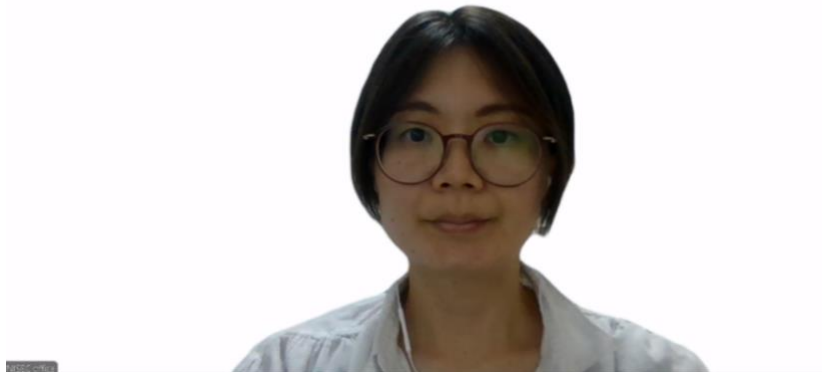
*A: Mr Izmir Yamin: Towards the end of this year.*

**Q: Dr. Fatima Zaharah Ali: As a space company, how do you see engaging satellite project or space activities with the academia or academy?**

*A: Mr Izmir Yamin: Actually, I am an inch away to go to UITM to talk about collaboration that we can make because I believe there is certain expertise based on your past experience with your UITM satellites and we do see having joint research on new novel elements. Of course, there is paper writing journals and all that but something that is tangible that we can put up in the market because there is a lot of demand. Since we have sold few space-based products even though we have not had a flight heritage yet but there will be soon, we have gotten a lot of requests. So, these are all problem statements that is worthy for academia to have a look as well. It will be very beneficial for your side. SO, I am not just saying UITM alone. Later on, we can also invite other universities to join in. So, yes, we are very close to contacting UITM. Just on an additional note, myself, I graduated from UITM in 2010 so I am quite proud of the university so far. Thank you.*

## 6. Announcement and Acknowledgment

Haruka Yasuda, UNISEC-Global



*Pictured: Yasuda-san announcing the latest updates from UNISEC-Global*

### Highlights:

- **CLTP13 (CubeSat Leader training Program)**
  - Date: August 19-29, 2024
  - Venue: Nihon University, Chiba, Japan
  - Application has been closed. Participants from 10 different countries are participating.
  - CLTP Website: <http://cltp.info/index.html>
  
- **The 9th Mission Idea Contest (Preliminary Workshop)**
  - The MIC9 theme is “Lunar Mission”
    - Category A: Lunar Orbit CubeSat Mission (LOCM)
    - Category B: Lunar Surface Rover Mission (LSRM)
  - Requirements can be downloaded at PreMIC9
  - Website: <https://www.spaceimic.net/>
  - Important Dates:
    - Abstract Submission Due: July 24,2024

- Notification: September 10, 2024
- Final Presentation: November 27, 2024 (South Africa)
- Contact: [info@spacemic.net](mailto:info@spacemic.net)
- **13<sup>th</sup> Nano- Satellite Symposium**
  - Date: November 25-27, 2024
  - Venue: Protea Hotel Technopark, Stellenbosch, South Africa
  - Abstract Submission: July 7, 2024: [https://www0.sun.ac.za/UNISEC-SAR/nanosat13/call\\_for\\_papers/](https://www0.sun.ac.za/UNISEC-SAR/nanosat13/call_for_papers/)
  - Early Bird Registration: August 23, 2024: <https://www0.sun.ac.za/UNISEC-SAR/nanosat13/>
- **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](mailto:info-jcube@unisec.jp) , <http://unisec.jp/serviceen/j-cube>

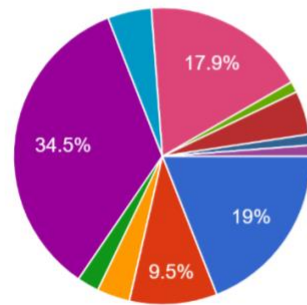
## 7. Participant Statistics

84 registered participants from 32 countries and regions for the 46<sup>th</sup> Virtual UNISEC-Global Meeting.

Registrants			
Country	Registrants	Country	Registrants
Argentina	2	Nepal	4
Brazil	1	Nigeria	1
Bulgaria	3	Peru	5
Burkina Faso	6	Philippines	1
Chile	1	Romania	2
Colombia	3	Russia	1
Dominican Republic	1	Spain	1
Egypt	4	Sudan	1
France	1	Switzerland	1
Guatemala	1	Taiwan	2
India	10	Tanzania	1
Indonesia	2	Thailand	1
Japan	7	Tunisia	2
Malaysia	10	Turkey	1
Mexico	2	UK	2
Namibia	1	US	3

### Student or professional?

84 responses

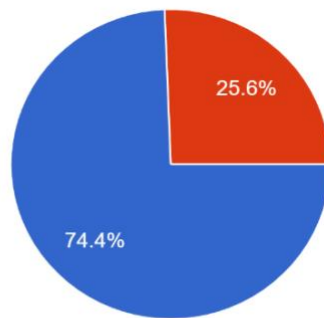


- Student (undergraduate)
- Student (master)
- Student (PhD candidate)
- Student (other)
- Professional (university)
- Professional (government, space age...)
- Professional (private company)
- Professional (NGO)

▲ 1/2 ▼

### Have you participated in the UNISEC-Global Meeting previously?

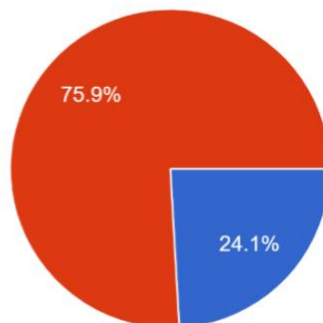
82 responses



- Yes
- No

### Are you familiar with space projects of Malaysia?

83 responses



- Yes
- No



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<https://www.linkedin.com/groups/8982613/>

Thank you