

UNISEC-Global The 51th Virtual Meeting

December 21st, 2024, 22:00-24:00 (Standard Japan time GMT +9)



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1. Opening Remarks

Rüstem Aslan, Istanbul Technical University

Prof. Aslan graduated as an Aeronautical Engineer from the Istanbul Technical University (ITU) Department of Aeronautical Engineering. He received his MSc degree from the same department in 1985. Then, he completed the Diploma Course of the von Karman Institute for Fluid Dynamics with a scholarship in 1986. He received his Ph.D. from the same institute together with Universite Libre de Bruxelles in 1991. The same year, he started working as a faculty member (Assistant Professor) in the Department of Astronautical Engineering of ITU. He was promoted to Associate Professor in 1993 and became a full Professor in 1999, both at the same institution. He was a visiting professor and worked as an Adjunct Professor at Old Dominion University, USA, between 2001 and 2002. Prof. A. Rüstem Aslan served as the head of the Department of Astronautical Engineering at Istanbul Technical University (ITU) from 2004 to 2013. He has been the Deputy Director of Rotorcraft Center of Excellence (ROTAM) of ITU since 2003. He has also served as the coordinator of the Defense Technologies Graduate programme and co-director of the ITU Distance Education Center, in addition to other various administrative positions. He has also established seven labs including the spacecraft systems design and test lab. He is member of IAF, AMSAT-TR and UNISEC-Global.



Pictured: A. Rüstem Aslan while giving the opening remarks

Highlights:

- Extended greetings and welcomed everyone
- Acknowledged the meeting as the last meeting of 2024
- Reflected on the 10th UNISEC Global Meeting at Stellenbosch, South Africa
- Proceeded towards the local chapter presentations

2. Local Chapter Activity Report: UNISEC-Colombia

Giovanna Estefanía Ramírez Ruiz, UNISEC-Colombia and Jose Fernando Jimenez, UNISEC-Colombia

Giovanna is an Electronic Engineer graduated from the Escuela Colombiana de Ingeniería Julio Garavito in Bogotá, Colombia. She is doing a master's degree in development and integral project management. She is the Current President of the Aerospace and Electronics Systems Society (AESS-IEEE) Colombia section. She has worked in the Directorate of Science, Technology and Innovation of the Colombian Air Force, where she has developed software functions, design electronic, innovation projects and patents in the aeronautical field.

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: Giovanna (left) and Fernando (right) during their presentation

- UNISEC- Columbia chapter established in 2022
- Participated in CLTP 10, 11, 12
- Currently have 6 member universities with 35 students and 6 professors
- Participated in CanSat, Drones, Space Robotics, and Zagi Aircraft Projects
- Conducted outreach in Peru, Ecuador, and Latin America, the aim has been to motivate younger generations
- Columbia has 3 satellites:
 - LiberTad-1, FACSAT-1, FACSAT 2
 - FACSAT 3 is currently being developed Good opportunity for UNISEC to participate
- Participated in the Third Colombian Meeting of the Aerospace Sector
- Participated in the First International Congress on Space Science
- Activities:
 - Developed a low-cost educational CubeSat model
 - ADCS Courses
 - Foundational Nanosatellite Technology Training
- Aim to expand activities all over Columbia and beyond
- Plans for 2025:
 - Organize the 6th CanSat Columbia Competition and Training
 - Participate in CLTP 14
 - Organize Hepta Sat Training in Latin America
 - Columbian University Space Program
 - Participate in KiboCube/ J-Cube/ Constellation

Other Colombian Aerospace Activities



Pictured: Giovanna and Fernando explaining about other Colombian Space Activities

<u>Q/Ans:</u>

Q: Rei Kawashima: What is the goal of your local chapter activities?

A: Jose Fernando Jimenez: The main goal is to expand the space activities in the whole country, not only the capital cities but also to the different regions. I think that is the main objective now for Colombia UNISEC Chapter.

3. Local Chapter Activity Report: UNISEC-Kazakhstan

Nursultan Doszhan, Al-Farabi Kazakh National University

Dr. Nursultan Doszhan has a Ph.D. from al-Farabi Kazakh National University in the program of Space Engineering with specialization in nanosatellite development, small spacecraft systems, electronics, mechanical and electrical engineering. He is currently a acting Associate Professor at al-Farabi KazNU, Department of Mechanics. His research interests are ADCS of formation flying.



Pictured: Dr. Nursultan during his presentation

- Established in 2022
- 2 Member Universities: KazNU and AUES
- Participated in:
 - Uniform 3&4 Microsatellite EM Integration and Testing
 - CLTP 11 and 12
 - 7th, 8th and 11th Nano Satellite Symposium
 - 4th and 8th UNISEC Global Meeting
- Launched 2 University CubeSats in 2017 and 2018
- Organized two presentation dissertation defenses in 2024:

- Doszhan N: "Development of motion control algorithms in satellites in formation"
- Bapyshev A.: "Development of a method for generating a guaranteed fuel reserve for controlling the descent of an spent stage of launch vehicle."
- Organized KazSmartSpace Competition:
 - 82 project teams from 42 educational institutions
 - Participants from Kazakhstan, Russia, USA and Uzbekistan
 - Participants ranged from 7 to 22 years old
- Organized Aspan Fest Championship:
 - 3 categories: Simulator, Micro-class and Open-class
 - **30+ Pilots from 5 countries participated**
- Visited the Baikonur Launch Area Country's Largest Launchpad
- Conducted a satellited design tournament
- Participated in 75th IAC 2024
- Participated in NASA Space Apps Challenge
- Participated in International Scientific Conference of students and young scientists



Pictured: Dr. Nursultan explains the ongoing space projects of UNISEC-Kazakhstan

Q/Ans:

Q: Rei Kawashima: What is the goal of your local chapter activities?

A: Dr. Nursultan: So as per the goal of the UNISEC local chapter for Kazakhstan, a sub-goal is also to attract more students, more young generation to do some space activities, space technologies, making satellites also to do mission planning, design, launch operations with micro nano satellites and group of micro nano satellites. Also, we try to attract some business to support such symposiums or other conferences.

4. 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.



Pictured: Dr. Fatimah Zaharah Ali during her presentation

Highlights:

- Established in July 2019, POC
- Participated in CLTP 2011, 2017, 2018; MIC in 2018
- Involvement in Birds-2 program in 2016, -UiTMSAT-1
- Involvement by university students in CanSat competitions organized by MYSA
- Practical space projects like High Altitude Balloons, Small Satellite Systems
- ASEANSAT in 2021 Led by UiTM
- 4 Member Universities, 27 students, 6 professionals
- Hosted 46th Virtual UNISEC Global Meeting
- National Space Imaging Payload Competition
 - Co-organized by UiTM and Cybernet System
 - From Oct 2024 Jan 2025
 - To create awareness among space enthusiasts
 - Teaches how high-resolution imaging system is designed in satellites
 - Promote their software to space enthusiasts
- Plans for 2025
 - To establish UNISEC Malaysia student organization
 - Start in UiTM, open to all students from different background
 - Expands to other universities
 - Space STEM Education
 - Bring awareness in space technology using STEM Education
 - Promote robotics education
 - Space outreach
 - Uses ASEANSAT as the platform
 - Students to be exposed on satellite operation through Ground Station
 - Expand student's understanding on telemetry data

UNISEC-Global Activities in 2023-24



Pictured: Dr. Fatimah Zaharah Ali presenting the activities of UNISEC-Malaysia

Q/Ans:

- Q: Rei Kawashima: What is the goal of your local chapter?
- A: Fatimah Raharah Ali: Awareness and democratize space technology.

5. Local Chapter Activity Report: UNISEC-Mexico



Hermes Moreno Álvarez, Autonomous University of Chihuahua

Dr. Hermes Moreno Álvarez completed postgraduate studies at the Autonomous University of Puebla and the Moscow State University, with specialization in Satellite Systems, and has participated as an associate professor in different universities in Latin America. Currently, he works at the State University of Chihuahua as a full-time research professor. He is a specialist from the Moscow Aviation Institute in Satellite Systems Ballistics Control and Analysis of efficiency, Guidance and Control of Microsatellites.

- Mexican section created in 2014 by the university of Northern Mexico
- From 2015 2023
 - Collaborated with national and international universities
 - Organized local events
 - Organized annual can-sat missions
- Hermes Moreno Alvarez was voted the POC of UNISEC Mexico
- Set up a UNISEC-Mexico website for different types of announcements
- Voting carried out for next venue of can-sat competitions in Mexico
 - Will take place in October 2025
- First research on cosmological engineering at the autonomous university of chihuahua
 Participation of more than 80 students and 35 different projects
- New regulations in constitution for activities in outer space
- Will allow investments and schemes for development of space technology
- Plan for 2025
 - Increase number of members to represent each state
 - Continue Can-sat competitions

- Organize first congress about cosmonautical engineering

6. Local Chapter Activity Report: UNISEC-Nepal

Sakshyam Pandey, UNISEC-Nepal

Sakshyam Pandey is a recent A-level graduate from Budhanilkantha School, Nepal. Currently, He is a Satellite Research Fellow at Antarikchya Pratishthan Nepal (Nepal Space Foundation) and has been involved with UNISEC-Nepal since 2024. He is also a trainer/mentor in different educational outreach programs of UNISEC-Nepal.



Pictured: Sakshyam Pandey during his presentation

- Established in 2020
- Currently has 5 member Universities
- Participated in CLTP in 2016, 2022, 2023, 2024
- Won the students prize in MIC8 in 2023
- Hosted UNISEC-Global Meeting in 2022, 2023 and 2024
- Regular involvement in UNISEC-Global Meetings
- Development of SastoCube (A NepaliSat-1 Replica)
- Modified it later to E-Cube Learning Kit in reference to HEPTASat for educational purposes
- In 2024, E-Cube Kit was scaled up and 150 sets were manufactured
- Reached 950+ students through training
- 43% of participants were girls
- Previous and ongoing national Satellite Projects of Nepal include:
 - Nepali Sat-1: Launched in 2019
 - MUNAL: A High-School CubeSat Planned to launch in Early 2025
 - PHI-1: By UNOOSA, to be launched in 2025
 - Slippers2Sat: A Middle-school CubeSat involving students from marginalized community
 - Established a Space System Laboratory (SSL) in Chitwan District for Slippers2Sat Project
- Supported Khwopa College to establish and operate an Antenna Lab
- Aim to build a Ground Station for students to participate in communication
- Established a middle-school Robotics Laboratory: Makerspace
 - Focusing on young children to develop the space workforce in the long run
- Also hosted industrial visits with partner university students for exposure
- Mediate further internship opportunity for UNISEC university students
- Challenges have been:
 - Transportation safety make it difficult to reach many parts
 - Funding required for projects and procuring materials
 - Lack of primary technological education in Nepal, especially rural areas
 - Plans for 2025:
 - Support the Launch of Slippers2Sat and MUNAL
 - Continue providing nationwide satellite trainings

- Prepare Communications and Ground Station training curriculum
- Proposals for establishing other potential laboratories
- Increase number of partner universities to carry out our local chapter activities
- Continue Supporting ongoing Space Activities of Nepal

Q/Ans:

Q: Rei Kawashima: What is the goal of your local chapter activities?

A: Sakshyam Pandey: Our main objective is first of all, raise awareness about space activities throughout our nation. We also try to touch aspect of social empowerment through our training programs and well, as everyone said, it is also for technological advancements and for new innovation in our nation.

7. Local Chapter Activity Report: UNISEC-Samara

Igor V. Belokonov, Samara State Aerospace University

Dr. Igor V. Belokonov is the Head of Inter-university Department of Space Research, Professor, Doctor of Tech. Sci., academician of International Academy of Astronautics, Russian Academy of Cosmonautics, Academy of Navigation and Motion Control; author of more 300 scientific papers, the supervisor of 12 PhD, and the head of five nanosatellites projects for the study of geophysical fields. His area of interests are flight mechanics, navigation and control in space, nanosatellites, experiments in space.



Pictured: File photo of Dr. Ivor K Belokonov

- Samara city is the capital of space activities
- All rockets' carriers are designed and produced in samara city
- About 2000 rocket carriers and many spacecrafts for remote sensing
- About 100 designed and produced in Samara city
- Main areas of activity of UNISEC Samara
 - Organization and implementation of International Summer Space School
 - From mission idea to nanosatellite project
 - Has more than 500 students from 45+ countries
 - Theoretical education duration is 2 weeks
 - Hands-on experience and team projects and concept development of a real nanosatellite mission
 - Concludes with project's defense to a commission of experts
 - This year the school was attended by 29 participants from 9 countries

- Advanced aerospace topics covered during theoretical and practical classes
- Next year's summer school will take place from June 23rd to July 4th
- Registration open till 28th February
- Development of space technologies
 - Carrying out experiments in space on the base of nanosatellites
 - SamSat-ION sun-synchronous 3U nanosatellite
 - Has magnetometer, plasma parameter sensor, GLONASS patch antenna
 - Is the twin satellite of another SamSat launched in 2023
 - Plan next year is to launch SamSat-ORION in 2025
 - Participation in conferences/ symposiums/ congresses
 - Participated in IAC Dubai 2023 and IAC Milan 2024



Pictured: Mr. Belokonov shows georeferencing of images taken from SamSat

8. Local Chapter Activity Report: UNISEC-Tunisia

Kamel Besbes, Faculty of Sciences of Monastir

Kamel Besbes was born in 1960 in Monastir, Tunisia. He received the B.S. degree from the Faculty of Sciences of Monastir (Tunisia) in 1985, the M.S. degree from the Ecole Centrale de Lyon (France) in 1986, the PhD degree from the Institut National des Sciences Appliquées de Lyon (INSA), France, in 1989 and the "State Doctorate Degree" from the Faculty of Sciences of Tunis (Tunisia) in 1995.

In 1989, he joined the Faculty of Sciences of Monastir as an Assistant Professor of Physics and Electronics. He has established teaching and research laboratories in microelectronics since 1990. Research efforts are focused on microelectronics from devices to embedded micro-systems and Instrumentation for detection and navigation for space applications.



Pictured: Kamel Besbes during his presentation

- Launched in Dec 2013
- Objectives
 - Promotion of National and International projects
 - Working on Fundraising and Project Support
 - Promotion of the alliance and organization of events
 - Communication and dissemination
 - Promotion of International Cooperation
- Promoted courses on space and satellite technologies
- Fabrication and Application of CubeSats in Tunisia (FACT)
 - Development of CubeSat Fabrication facilities
 - 9 researchers, 3 engineers, 12 grad students, 15 undergrad students
 - Have a small clean room for cube sats
 - Have facilities for
 - Vacuum testing
 - Thermal testing
 - Magnetic testing
 - Electrical power system testing
 - RF testing
 - Mechanical and 3d prototype testing
 - Developed ground segments for space IoT
 - Launchable CubeSat platform development
 - Wrote scientific papers for space development
- Promotes national scientific events
 - Spacestar '22, '23, '24 : National Conference
 - '24 was on space science technology applications & regulation
 - High International participants
- Participated in international events
 - COPUS, Scientific and Technical Subcommittee
 - Italy-Africa Space Conference
 - IAC Milan
 - World Space Forum, UNOOSA
 - Horizon Europe Committee program
 - 4th International Conference & Exhibition, Advanced Geospatial Science and Technology
 - UNISEC Tunisia contributed to Tunisian SPACE policy

<u>Q/Ans:</u>

Q: Rei Kawashima: What is the goal of your local chapter activities?

A: Kamel Besbes: Yes, for us, it is promoting the space sector and advancing space technology by introducing of courses, developing facilities and organizations of advanced levels, and also participating in innovation advancements in Tunisia and thinking of how we can be good to our countries and other, to protect our environment and application for development of 17 SDGs.

9. Local Activity Report: Portugal

Juan Nolasco, POC - Portugal

Juan Nolasco is a seasoned Computer Science Teacher with a strong background in Electrical Engineering, based in Oporto, Portugal. Holding degrees from UTAD University and Portucalense University, he brings a robust educational foundation and extensive professional expertise to the field of space science and technology education. Since 2005, Juan has been actively involved with the Portuguese public pre-university and university educational systems, where he has led numerous space-related educational projects. His role extends beyond traditional teaching; he develops, implements, and evaluates STEM programs that align with both academic and industry standards, ensuring they meet the needs of students while integrating cutting-edge technological applications.



Pictured: Juan Nolasco during his presentation

Highlights:

- Preparations are being done to establish UNISEC-Portugal
- Universities with aerospace engineering degrees are being contacted
- Activities in the space educational domain are being developed
- Also involved in pre-university educational programs focusing on middle school students
- Aim for next year is to establish UNISEC-Portugal and present local chapter works

<u>Q/Ans:</u>

Q: Alim Rustem Aslan: Do you have CubeSat Projects?

A: Juan Nolasco: Yes, we are now starting with CubeSat Portugal from the Portuguese Space Agency that is now launching the project about one month ago and we are supporting the students that will take part in the CubeSat Portugal Competition that is a two-year competition. In our university, one of the concurrent engineering challenge workshops that will be in the three European universities and ESA facilities, we applied and we were selected to do a CubeSat Engineering Challenge Workshop in April

Q: Alim Rustem Aslan: Portugal, you are a member of the European Space Agency, aren't you?

A: Juan Nolasco: Yes, yes.

10. Announcement and Acknowledgment

Haruka Yasuda, UNISEC-Global



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

Highlights:

- UNISEC-Global events in South Africa

- Events from Nov 25 to 30 successfully concluded in Stellenbosch, South Africa
- 13th Nano-Satellite Symposium
- 10th UNISEC Global Meeting
- 9th Mission Idea Contest
- KiboCube Academy on-site workshop (HEPTA-SAT Training)
- Photos and presentation slides will be published in the website soon
- Facebook : <u>https://facebook.com/unisecglobal</u>

- The Mission Idea Contest

- 9th Mission Idea Contest (Preliminary Workshop)
 - Theme is Lunar Mission
 - 4 of the 10 finalists made presentations at the workshop
 - (Bulgaria, Indonesia, Nigeria, Taiwan)
 - Will make an in-person presentation at Preliminary Workshop on November 27
 - Results posted on PreMIC9 website
 - https://www.spacemic.net/index9pre.html
 - Website: <u>https://www.spacemic.net/</u> The 9th Mission Idea Contest : to the Moon
 - Theme is Lunar Mission

- https://www.spacemic.net/

- · Important Dates
 - Abstract submission due : April 15 2025
 - Notification : May 20, 2025
 - hission due : August 5, 2025
- Full Paper submission due :Final Presentation :
- T.B.D. at the 11th UNISEC-Global Meeting

- Call for proposal for 15th Nano-Satellite Symposium and the 12th UNISEC-Global Meeting 2026

- Next 11th UNISEC-Global Meeting will be held in Japan 2025 (Date : T.B.D)
- Will call for proposal for venue of Nano-Satellite Symposium and UNISEC-Global Meeting in 2026
- Important Dates
 - Proposal submission due : May 8, 2025
 - Proposal presentation : September 20,2025 (at Virtual UNIGLO meeting)
 - Local Chapter voting
- October 2025 (notification T.B.D.)
- Download the format here: <u>https://unisec-global.org/support.html</u>

- Launch Opportunity: J-Cube

- Special Discounted opportunities
- 1U, 2U, 3U, deployment from International Space Station
- Collaborate with UNISEC-Japan's University
- Contact: info-jcube@unisec.jp , http://unisec.jp/serviceen/j-cube

11.

. Participant Statistics 65 registered participants from 27 countries and regions for the 51st Virtual UNISEC-Global Meeting.

Registration for UNISEC-Global Virtual Meeting					
Country	Registrants	Country	Registrants		
Argentina	1	Mexico	2		
Bulgaria	3	Nepal	9		
Burkina Faso	2	Nigeria	1		
Chile	1	Philippines	1		
Colombia	4	Portugal	1		
Cote d'Ivoire	1	Russia	3		
Egypt	4	South Africa	1		
Germany	1	Taiwan	1		
India	6	Tanzania	2		
Indonesia	1	Tunisia	2		
Israel	1	Türkiye	1		
Japan	9	UK	2		
Kazakhstan	1	USA	2		
Malaysia	3				

Student or professional? 66 responses





Have you ever participated in Local Chapter activities in any regions? ⁶⁵ responses





Thank you