UNISEC-Global The 40th Virtual Meeting

January 20th, 2024, 22:00-24:00
(Standard Japan time GMT +9)

The following report was prepared by UNISEC-Global Secretariat

January 20th, 2024
Japan

Table of Contents

1. Opening Remarks "New Year Greeting Speech" 3

Toshinori Kuwahara, Tohoku University エラー! ブックマークが定義されていません。**2. Presentation on "UNISEC-Global Activities 2024"** 4

Rei Kawashima, UNISEC-Global Secretariat 4

3. Presentation on "New Year Resolutions: UNISEC-Nepal" 4

Ira Sharma, UNISEC-Nepal

4. Presentation on "New Year Resolutions: UNISEC-SAR" 6

Arno Barnard, UNISEC-SAR 6

5. Presentation on "New Year Resolutions: UNISEC-India" 9

Inbisat Yousuf Nath, UNISEC-India 9

6. Presentation on "New Year Resolutions: UNISEC-Mexico" 9

Jorge Ferrer-Pérez, UNISEC-Mexico 9

7. Announcement and Closing 10

Haruka Yasuda, UNISEC-Global 10

8. Participant Statistics 11

1. Opening Remarks "New Year Greeting Speech"

Toshinori Kuwahara, Tohoku University

Toshinori Kuwahara received his M.S. degree from Kyushu University, Japan in 2005 and PhD degree from the University of Stuttgart, Germany in 2009. He served as a Research Associate of the University of Stuttgart from 2009 to 2010. From 2010 to 2015, he was appointed as Assistant Professor, and since 2015, he is an Associate Professor in the Department of Aerospace Engineering, Tohoku University, Japan. His research topics include space development, utilization, and exploration of small spacecraft technologies. He is a member of JSASS since 2010. Currently, Dr. Kuwahara is the chairperson of UNISEC-Japan.

Pictured: Dr. Kuwahara presenting new-year greetings speech

Highlights:

- New year greetings to everyone at UNISEC
- Briefly talked about UNISEC-Japan's activities in 2023
    - Celebrated 20th Anniversary of UNISEC-Japan in Tokyo
    - Celebrated 20th Anniversary of CubeSat Symposium
    - Presentation of MIC8 finalists and a CLTP12 Briefing
    - Held the in-site 9th UNISEC-Global Meeting at X-Nihonbashi, Tokyo
- UNISEC-Japan focuses on human resource development, technological development and outreach
- Activities conducted includes:
    - CANSAT/ HEPTASAT, CLTP Trainings
    - Rocket and Satellite Working Groups
    - UNISEC Lecture Series/Conferences, Workshops, Research Groups and Publications
    - MIC (Mission Idea Contest) and other diverse events and supports
- Launched more than 50 CubeSat up to now
- Launched UNISEC Academy in 2020
- GOALS: Promoting practical development and exploration of space
  Assuring the S&MA technology level
  Enhancing international space education and capacity building
  Enhancing co-operation between different space engineering R&D fields
- To achieve the goals, currently focused on KiboCUBE Program/Academy and J-Cube Program
- KiboCube International Space Education Program: Lectures publicly available at UNOOSA homepage
- J-Cube program: JAXA provides low-cost launch opportunities supported by UNISEC
- UNISEC-Global currently has 24 Local Chapters with 65 POC
- VISION 2030: Create a world where university students can participate in space projects in all countries
- Highlighted the fact that small satellites are becoming a "game-changer"
- Plans to continue conducting educational programs, support programs, and flexible launch opportunities

2. Presentation on "UNISEC-Global Activities 2024"

Rei Kawashima, UNISEC-Global Secretariat

Rei Kawashima has contributed to micro/nano/pico satellites for education and business applications through her leadership role at UNISEC -the University Space Engineering Consortium- that she co-founded in 2002. In 2013, she was appointed as the Secretary-General of UNISEC-Global and the organization was accepted as a permanent observer of UNCOPUOS in 2017. She organizes training programs and technology competitions to facilitate university's participation in space projects worldwide and especially, in emerging countries.

Pictured: Rei Kawashima during her presentation

Highlights:

- Highlighted the activities of UNISEC-Global in 2023
- UNISEC-Global established in November 2013
- Mainly provides training programs and competitions through an annual forum
- Accepted as permanent observer by UNOOSA in 2017
- 26 Local Chapters, 65 POC and more than 210 university members
- The main focus of past decade has been to launch university satellites to LEO
- In coming decade:
    - Plan to launch university spacecrafts and constellation mission
    - Continue training programs and conduct practical university network
- UNISEC-Global works on simplifying local resource concerns and international collaboration
- Satellite Development
    - PHASE A: CanSat training/competition, HEPTASat, ARLISS
    - PHASE B: Launch of simple satellite through KiboCUBE and J-Cube
    - PHASE C: Advanced and Deep Space Mission
- Plan Satellite constellation missions and execute them

3. Presentation on "New Year Resolutions: UNISEC-Nepal"

Ira Sharma, UNISEC-Nepal

Ms. Ira Sharma is a recent A-level graduate from Little Angels' School, Nepal. Currently, she is a Satellite Research Fellow at Antarikchya Pratisthan Nepal (Space Foundations Nepal) and has been involved with UNISEC-Nepal since 2023. She hopes to start her undergraduate studies in the fall of 2024.

Pictured: Ira Sharma, representing UNISEC-Nepal, during her presentation

Highlights:

- Highlighted UNISEC-Nepal's activities in 2023 and presented the plans for 2024
- Established in 2020 and participated in CLTP, MIC8 (won Student prize), CanSat/ HEPTASat Trainings
- Conducted the trainings and CanSat Competitions in Kathmandu
- Conducted Satellite Boot camps all over Nepal
    - In all 7 provinces
    - About 700 students of grade 6 to 12
    - Collaboration with UNESCO, NIC and Antarikchya Pratisthan Nepal (Nepal Space Foundation)
- Hosted 35th UNISEC-Global meeting and regularly participated in the UNISEC-Global Meeting
- 5 Member Universities that participate regularly in the programs and competitions
- Continued collaboration with national organizations to work on national Cube Sat Projects
- **Developed E-Cube Learning Kit in 2023 in reference to HEPTASat**
    - About 100 kits manufactured in 2023
    - Training provided to more than 800 students
- Logistics and funding were major challenges
- Lack of manufacturing units in Nepal to develop and manufacturing training kits and materials
- Students did not understand primary terms due to lack of primary technological education
- In 2024, UNISEC-Nepal plans to:
    - **Conduct national level amateur radio and satellite training**
        - In all 7 provinces of Nepal
        - The training has already been completed in 2 provinces
        - Collaborate with ARDC, Nepal Academy of Science and Technology
    - **Conduct CanSat workshops and competitions**
        - Planned to be organized in the last week of January at IOE, Pulchowk College
        - Trainers includ CLTP12 Trainees
    - **Plans regarding E-Cube:**
        - Scale up E-Cube kits- manufacture 1000 kits and reduce the cost (currently $100/kit)
        - Set up an online E-Cube Learning Platform –first draft manual has been created
    - **GIS Satellite Data Analytics Training**
        - Three levels; beginners, Intermediate and Advanced
        - $200 per participant
        - Online or In-Person
- Overall, plan to inspire 10000+ youths
- Priorities include education, specially focusing on E-Cube Project, and support national space projects

4. Presentation on "New Year Resolutions: UNISEC-SAR"

Arno Barnard, UNISEC-SAR

Dr. Arno Barnard received his B. Eng. (Electric and Electronic) in 1999 and MSc Eng. (Computer Systems) in 2001. He completed his PhD in Electronic Engineering in 2020. His PhD was on "Radiation effects on digital electronics: Testing principles and Practices". He served at University of Stellenbosch as Junior Lecturer from 2001-2003, Engineering Manager from 2003-2009, and Lecturer from 2010. Since 2001, he's been involved with several satellite development projects including Sumbandila satellite project. He is also the point of contact of the UNISEC Southern Africa Region (UNISEC-SAR).

Pictured: Arno Barnard, representing UNISEC- SAR, during his presentation

Highlights:

- Represents Southern African Region
- Highlighted the activities of UNISEC-SAR and presented plans for 2024
- Currently there are 7 university members
- Founded in 2014
- Participated in 3rd, 4th, 6th, 11th and 12th CLTP
- Participated and hosted HEPTASat Workshops
- Student teams participated in MIC1, MIC2, MIC3, DDC1, DDC2, MIC5, and MIC8
- PAUSS (CPUT) has M.Eng. in Satellite Systems and application and offers research opportunities
- Nelson Mandela University, with 16 years of working in the space industry, focuses on FPGA Systems
- Stellenbosch University, with 30+ years in satellite development, focuses on satellite hardware, control systems, radiation effects testing
- Participated in IAF-CSA Space Universities CubeSat Challenge
- Presented at the 12th European CubeSat
- Presented paper at IEEE Aerospace in 2023
- PocketCube project started in June 2023 developed by 5 undergraduate students
- Developed short courses focusing on satellite mission design which is still being improved
- Trained over 60 industry participants through courses
- In 2024,
    - plan on continuing short courses, participation in competitions and ongoing satellite projects
    - Collaborate with all member universities and conduct annual local UNISEC Forum
    - Improve collaboration with local industry and government
    - Host 10th UNISEC-Global Meeting / 13th Nano-Satellite Symposium/ 9th MIC on 25-29 November 2024 at Stellenbosch

Q&A (UNISEC-SAR)

George Maeda: You are unique because your local chapter covers several countries. Most of the local chapters are single countries. Do you have any advice for chapters that may consider doing multiple countries?

Yes, the advice is that it's a challenge. It is not an easy thing to do specifically here. All 3 of us, South Africa, Namibia and Angola are big countries. So, the three SA institutes, the space industry, and space activity are all localized here in and around Cape town. And the distance from here to Windhoek and Luanda is, you know, 1500 plus kilometers each. So, getting together physically is tricky. But if you want to get somewhere you need to take whatever road you can. So, yes, it is hard work, it is a bit of a challenge sometimes to get everybody together at the same place at the same time but don't let those challenges stop you from trying.

George Maeda: Can't you do many interactions via the internet?

We can. No, sure. And that is what we are doing. But even with virtual meetings like this, although we get a lot done with it and we get a lot of interaction and working with it, there is just something about being able to meet face to face in terms of specifically, if you're trying to get serious with projects.

George Maeda: You mentioned that you wanted to begin some annual forum. Could you elaborate?

Yes, so the idea is, at the moment we have been working very, let's call it, ad hoc in terms of getting together when we need to. So, every time there is a global event or a UNISEC event, then we quickly scramble to get together to decide what we do, what we put together, what do we say. So, the idea of a forum is to have a more proactive forum available so that we all sit down and say "Listen, this is what we are doing, this is what we are planning". Join us or don't join us but at least you know about what we are doing. So, it just gives the opportunity for everybody to come and put the cards on the table. So that we can see where the opportunities lie to collaborate and I think, by putting down the commitment to that forum will allow us to improve the collaboration. At the moment with UNISEC and I think it is the right thing for UNISEC, you don't want to force anyone to do anything. If they want to be a part of it, it's great; they can be a part of it. But it is sometimes tricky if you want to get something done and it is not a higher priority for that specific organization. So, with the forum, we can get to a point where we can have more of a buy-in of people committing to be actively part of the community because it is sometimes tricky even given the scenarios that we are in, specifically in Namibia, in Angola. There are not a lot of different people in the community. So, it is not a scenario that I am in, for instance, even a year where we do have more academics in the environment. It is not that I can just focus on a very specific satellite project. I need to be a jack-of-all-trades. I need to do everything because we don't have those resources of, you know, 5 or 10 academics working in the field. So that sometimes spreads us a bit thin. So, if I were to give advice on that is; if you're going to go cross-border, first of all, the better you know the people and the more you have got a history of working together, that will help a lot. And simply, just be careful that you don't spread yourself too thin. It is nice to say "Hey, I want to do all of these things" but it can be very negative to you if you have got a lot of things that you want to get to but you can't get to any of them because there are just too many.

George Maeda: Okay, so I am moving on to my second question about funding. I guess you know that most of our local chapters are struggling with funding issues. Have you discovered any novel methods for raising funds that you can share with our community?

Yeah, we've had a very interesting case, we were actually at a meeting between us and CPUT yesterday and we were telling our colleagues what we are doing with the budget that we have and so on. And our colleagues, they said, "Wow, you're getting a hell of a lot done without a lot of money". Yes, money is important, you can't do serious projects if you don't have enough funds to, you know, to buy flight hardware, elements that you need to put on a satellite that needs you to go into space. There is some investment in that field but to get to the point, you can do a lot with a little. So where do you get the little money that you need to get paid? What we have been trying to do is use any spare research funds that we have and push it towards a single goal. So, instead of trying to say, "okay, we have got a little bit, we're going to use it for this activity and that activity", we've decided that we pull everything towards that one activity which

means the little money that we do have goes to a single purpose. Secondly, we don't have membership fees for UNISEC-SAR because a lot of the institutions are struggling already to get anything done because they don't have a lot of funds. If we now start asking them membership fees, we will be taking a little bit of money away of the little money that they do have to do projects and for us, it is more important that the money goes towards space and engineering training, So, 2 of the methods that we found is you must just keep on asking for funding through the channels available whether it's through grants, whether it's through donations, whether it is through whatever mechanism is allowed or available with your environment; with industry, with government, with philanthropists, with whoever you can because if you don't have that money, you're not going to be able to do anything. So, what works for us is we've continuously looked towards small government grants, small government bursary support because one of the biggest challenges for us money-wise is it is not necessary being able to buy a few components, that is not too expensive. But to host the student for 2 years is expensive. So, if we can get that student sponsored to be at the university for 2 years, we have already won half of the battle. So, by enabling students you can also get quite far. The final thing that we have been doing that's been successful for us at Stellenbosch, at least, is that we have been providing training to industry. Now, we are in the good position that our industry has now developed to a point where they have, I'm not going to say, a lot of money, but they are growing. So, it is not that they have got a shortage of funds. We have identified that there is a need for them to train their engineers. They are growing at such a pace that we can't provide from the universities around us enough graduates per year to fill all the positions the companies require. So, they are pulling in engineers from different sectors and those engineers don't have the background of satellites in space.

George Maeda: So, you're training non-space people to understand space better?

Yes, exactly. So, by providing that service to the industry, we are generating enough funding at the moment, to support activities at least that we have at Stellenbosch. So, that has been successful for us but the basic tip on funding, I can say: "Just never stop asking for money". Sometimes, I think that we are very shy and we feel like I don't want to go stand there and ask but I mean, if you're in academia and you don't have money, that is what you need to do. And you just go and do it, until somebody says yes.

Mike: I had a question for Arno. So, can you really try and have some problem with a student that they don't understand what we try to do? How do we invite them or maybe just in your way?

Is this specific to the student that is already at your institute or external to the institute?

Mike: Both of them.

Okay. Well, the best way that we found is to make them excited. That is the best way that we found to get students is you need to show them the excitement of what we're doing. You know, if you see a rocket going up in space and you see a satellite being released and you see this wonderful piece of engineering operating successfully, I am telling you this and I get shivers from excitement. You need to generate that with a student. You need to generate that with anybody that you want to involve in your project or in your activity. If they are interested in doing the work, you can focus on that. But we found a lot of students want to know: "Can I go and work after I have studied?". "Is there a place for me to go and have a career in this?" Then, it's important that you are able to give that information and make it clear to them why they are doing this, where are they going? We found that people and students specifically tend to work efficiently and respond positively if they have got the motivation to know where they are going. So, if you can put down a dream for them, if you can say, listen, this is where we are going, this is what we want to do, and this is why this is exciting, you are never going to struggle to convince them. Because then, that becomes clear, then it becomes easy to say, "Hey, this is why I need to sit and study math for 2 years as an undergraduate, to become an engineer because it is important as a foundation." So, I would, first of all, if you can plant the seed of a dream for somebody, you will never struggle to convince them in future.

5. Presentation on "New Year Resolutions: UNISEC-India"

Inbisat Yousuf Nath, UNISEC-India

Ms. Inbisat Yousuf Nath is a student representative of UNISEC-India currently pursuing her master's degree in physics from The Central University of Kashmir, India.

Pictured: Inbisat Yousuf Nath, student representative of UNISEC-India during her presentation

Highlights:

- As student representative of UNISEC-India, presented the 2024 resolutions
- Aims to advance space science and technology in India through collaborations and creating a society of dynamic space professionals
- Plan for 2024:
  - Increase memberships with at least 50% growth than current and conduct at least two programs
  - Collaborate with at least three national and two international space organizations
  - Conduct educational workshops/webinar/ hands-on trainings
  - Actively participate in at least three major space-related conferences
  - Increase communication channels and social media presence and engagement by 30%
- Collaborate with Indian Technology Congress Association (ITCA) and commit to achieve the targeted goals
- Plan on curating conducting affordable events like hackathons, movie competition, paper presentations
- Develop a single platform allowing individual to showcase creativity
- Connect with potential startups
- ITCA initiated "75 Students' Satellites Mission 2022": collaboration to launch student-build satellites
- Space 2.0 initiated launch of private satellites
- In the coming year, plan to make affordable classroom satellites for all institutions
- Promote CanSat learnings

6. Presentation on "New Year Resolutions: UNISEC-Mexico"

Jorge Ferrer-Pérez, UNISEC- Mexico

Dr. Jorge Ferrer-Pérez is an associate professor of the National University Autonomous of Mexico-School of Engineering. He received his Ph.D. in Aerospace and Mechanical Engineering from the University of Notre Dame, South Bend in United States. He is part of the Advance Technology Unit-Aerospace Engineering Department and responsible of the Space Propulsion and Thermo-vacuum lab. This facility belongs to the National Laboratory of Space and Automotive Engineering (LN-INGEA) at Juriquilla, Querétaro. His current research areas are nano-heat transfer in solid state devices, thermal control, space propulsion, certification test for space systems and development of small satellites.

Pictured: Jorge Ferrer- Pérez representing UNISEC-Mexico during his presentation

Highlights:

- Talked about the aerospace sector, UNISEC-Mexico future, and future actions
- The last 10 years of Mexican aerospace sector has created a very competitive sector
- The current educational programs are designed aligned to the Mexican space sector trend
- Through aerospace, Mexico plans on fulfilling social needs
- Demand of highly trained human capital- engineers in aerospace area
- Technological dependence in the civil, commercial and military sector
- Transversal collaboration between academia, industry and government is lacking to improve communication
- Need of remote sensing seen since Mexico has the impact of meteorological phenomena every year
- Connect to remote communities for educational and health services
- The need of aerospace sector in Mexico ranges vaguely
- Mexico has a strong aeronautical industry but yet needs to develop its space industry
- Mexican Space Agency has created two Regional Space Development Center and other research laboratories
- Main focus right now is to design Mexico's own space industry
- The country has worked on 5 CubeSat projects, largest being a 6U Satellite
- UNISEC-Mexico founded in November 2014
- Involvement in CanSat courses, CanSat competitions, academic exchange, collaborations and local events
- Collaborated with National University of Mexico to design aerospace engineering program
- In future, plans to:
    - Increase members to represent all states of Mexico and continue/improve CanSat Competitions
    - Create more space courses in undergraduate and graduate programs
    - Establish partnerships with local industry and government
- Requires support, funding, involvement of young students and follow up new space trends

7. Announcement and Acknowledgement

Haruka Yasuda, UNISEC-Global

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

- **Establishment of New Local Chapter**
  - UNISEC- Zambia
    - Established with two universities
    - Copperbelt University and University of Zambia

- **The 8th Mission Idea Contest**
  - Full papers of finalists will be published as MIC8 book (e-book)

- **The 9th Mission Idea Contest**
  - Theme: “Lunar mission”
  - Requirements and schedule will be announced soon

- **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

- **41st UNIGLO Virtual Meeting**
  - Date: February 17, 2024 22:00 - 24:00 (JST)
  - Host: TBD
  - Theme: TBD
  - Virtual UNISEC-Global Meetings takes place third Saturday of almost every month of 2023

8. Participant Statistics

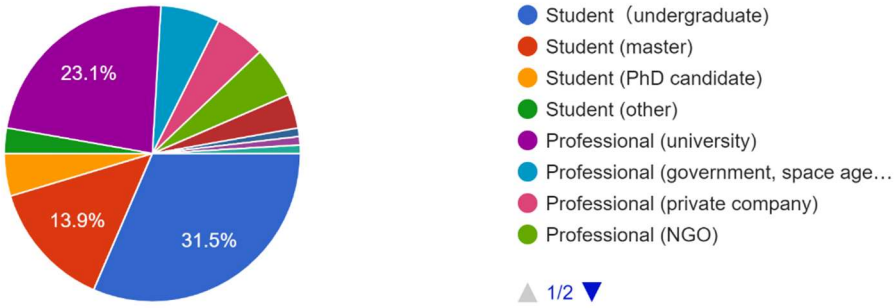
108 participants registered from 32 countries and regions for the 40th Virtual UNISEC-Global Meeting.

Country/Region	Number of registrations	Country/Region	Number of registrations
Argentina	1	Montenegro	1
Bangladesh	2	Myanmar	2
Bulgaria	2	Namibia	1
Burkina Faso	6	Nepal	3
Chile	1	Netherlands	1
Colombia	1	Nigeria	2
Egypt	5	Paraguay	1
Ethiopia	1	Peru	1
France	1	Philippines	6
Germany	1	Romania	1

India	38	South Africa	2
Indonesia	1	Taiwan	1
Italy	1	Thailand	1
Japan	15	Turkey	2
Kenya	1	UK	1
Mexico	4	Zimbabwe	1

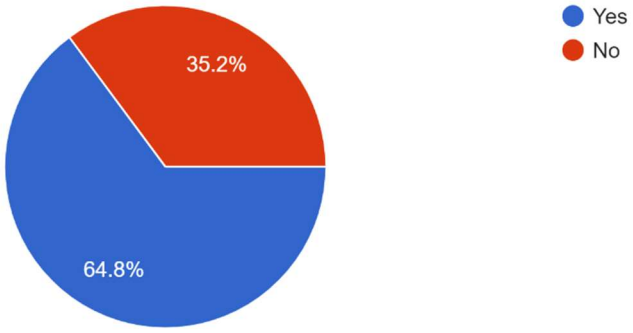
Student or professional?

108 responses



Have you participated in the UNISEC-Global Meeting previously?

108 responses



UNISEC-Global Social network accounts

@unisecglobal
https://www.facebook.com/unisecglobal/

@unisec_global
https://www.instagram.com/unisec_japan/

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

Thank you