

UNISEC-Global's Capacity-Building Programs



September 29, 2023
Rei Kawashima, UNISEC-Global

30th UN/IAF Workshop on Space Technology for Socio-Economic Benefits: "Challenges and Capacity-building Opportunities for Emerging Space Nations"

Outline

- UNISEC-Global Overview
- UNISEC-Global Capacity-Building Activities
 - Mission Idea Contest for Nano-satellite utilization (MIC)
 - CanSat/CubeSat Leader Training Program (CLTP)
 - UNISEC-Global Meeting (Virtual and in-person)
- UNISEC Local Chapter's Roles and functions
- Future plan for capacity building

UNISEC-Global Overview

UNISEC-Global

- **International nonprofit, non-governmental organization**, consisting of local-chapters (consortium of 2 or more universities) across the world.
- Since its **establishment in November 2013**, it has provided an annual forum, training programs, competitions, etc.
- In 2017, it was accepted as **permanent observer by United Nations Committee on the Peaceful Uses of Outer Space (COPUOS)**.
- Its **primary objective** is to help create a world where space science and technology is used by individuals and institutions in every country, rich or poor for peaceful purposes and for the benefit of humankind.



24 Local Chapters, 66 Points of Contact, >210 universities, 10 corporate members

UNISEC-Global “Vision 2030-ALL”

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



Changed from the original
“Vision 2020-100”

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

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

UNISEC-Global Approach

Training Program

HEPTA-Sat Training
CanSat Leader Training Program

Forum, Conferences, Technical competitions

UNISEC-Global Meeting, Mission Idea Contest, Nano-satellite Symposium, CanSat Competition

Vision 2030-ALL

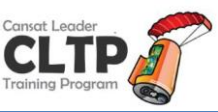





Debris Awareness and Solutions

Debris Mitigation Competition
IAA Study Report: A Handbook for Post-Mission Disposal of Satellites less than 100kg

Support International collaborative Space Projects initiated by member universities

UNISEC-Global: Activities

UNISEC-JAPAN
UNISEC-GLOBAL

Year/Activity	CLTP 	DMC/DDC 	MIC 	Nano-satellite Symposium 	UNISEC-Global Meeting 
2010				1 st	
2011	1 st and 2 nd		1 st	2 nd and 3 rd	
2012	3 rd		2 nd	4 th	
2013	 4th		Pre 3rd	5th	1st (Japan)
2014	5 th		3 rd	-	2 nd (Japan)
2015	6 th		Pre 4 th	6 th (ISTS30)	3 rd (Japan)
2016	7 th	1 st	4 th	7 th	4 th (Bulgaria)
2017	8 th	2 nd	Pre 5 th	8 th (ISTS31)	5 th (Italy)
2018	9 th		5 th	-	6 th (France)
2019	10 th		6 th	9 th (ISTS32)	7 th (Japan)
2020	Postpone		Postpone	Postpone	Virtual (monthly)
2021	Postpone		7 th	10 th (ISTS33)	Virtual (monthly)
2022	11 th		Pre 8 th	11 th	8 th (Turkey)
2023	12 th		8 th	12 th (ISTS34)	9 th (Japan)

UNISEC-Global Capacity Building Activities

Mission Idea Contest for Nano-satellite utilization (MIC)
CanSat/CubeSat Leader Training Program (CLTP)
UNISEC-Global Meeting (Virtual and in-person)

Mission Idea Contest (MIC) for Micro/Nano Satellite Utilization

Objective: The Mission Idea Contest (MIC) is encouraging aerospace engineers, college students, consultants, and anybody interested in space to share their ideas on how to use micro/nano/pico satellites, and provides opportunities to present their ideas and gain attention internationally.

Launched: June 2010

Conducted: Annually as PreMIC or MIC

- Regional coordinators from about 50 countries
- Six books (4 hardcovers, 2 e-books) were published as a part of the IAA book series.

8th Mission Idea Contest Final presentation is held on Nov 29, 2023.
The theme is “mission idea by multiple satellites.”



MIC history

	Theme	year	venue
MIC1	constellation (<15kg)	2011	Tokyo, Japan
MIC2	satellite design/business model	2012	Nagoya, Japan
Pre MIC3	Mission idea and satellite design	2013	Tokyo, Japan
MIC3	Mission idea and satellite design	2014	Kitakyushu, Japan
PreMIC4	Mission proposer and satellite provide	2015	Tokyo, Japan
MIC4	Mission idea and satellite design	2016	Kamchia, Bulgaria
PreMIC5	SDGs	2017	Rome, Italy
MIC5	SDGs	2018	Strasbourg, France
MIC6	ISS platform	2019	Tokyo, Japan
MIC7	Deep space mission	2021	Tokyo, Japan
PreMIC8	Multiple satellites (<6U)	2022	Istanbul, Turkiye
MIC8	Multiple satellites (<6U)	2023	Tokyo, Japan

8th Mission Idea Contest

Requirements

- The mission shall be carried out by multiple satellites made of **6U CubeSat** or smaller each.
- The number of satellites can be anything as long as there are **at least two** satellites in the mission; and
- The mission has **clear benefits of having multiple satellites** in orbit simultaneously.
 - **Constellation** missions (with no inter-satellite link) or
 - **Formation Flying** missions (with inter-satellite link)

Please download and use the abstract template on the website.

<http://www.spacemic.net>

Evaluation Criteria

Originality	Novel concept not yet realized or proposed, or a new implementation of an existing capability or service (25).
Impact	Impact on society / Potential to expand scientific knowledge / Strengthen deep space mission motivation (25).
Engineering	Technical description and solutions (20). Operational (protocol, communication and interaction during experiment) (15).
Feasibility	Programmatic (realistic- cost, development schedule, infrastructure requirements, risks and opportunities) (15).

Reasons for joining MIC

1. Capacity building via training opportunities.
2. Seek meaningful mission ideas.
3. Make a difference in the real-world. MIC can function as catalyst and result in projects which are innovative, affordable and technically reachable.
4. Receive exposure for your ideas. Develop your career profile and find potential future collaborators among a worldwide network.
5. Recognition of excellence; awards/prizes.

CanSat/CubeSat Leader Training Program (CLTP)

Objective: CLTP is a training program for professors/instructors to learn how to conduct CanSat (or HEPTA-Sat) training by experience. Participants are expected to teach their students after training. It has contributed to capacity building in basic space engineering and technology.

Launched: October 2010 (1st CLTP was held in 2011)

Offered: Annually

Graduated: 134 participants from 54 countries



CLTP History & Participants (1)

134 participants from 54 countries

CLTP1 (Wakayama Univ. in Feb-March, 2011)

12 participants from 10 countries, Algeria, Australia, Egypt, Guatemala, Mexico, Nigeria, Peru, Sri Lanka, Turkey (3), Vietnam.

CLTP2 (Nihon Univ. in Nov-Dec, 2011)

10 participants from 10 countries, Indonesia, Malaysia, Nigeria, Vietnam, Ghana, Peru, Singapore, Mongolia, Thailand, Turkey.

CLTP3 (Tokyo Metropolitan Univ. in July-August, 2012)

10 participants from 9 countries, Egypt (2), Nigeria, Namibia, Turkey, Lithuania, Mongolia, Israel, Philippines, Brazil.

<2013~ iCanSat kit CLTP4-7>

CLTP4 (Keio Univ. in July-August, 2013)

9 participants from 6 countries, Mexico(4), Angola, Mongolia, The Philippines, Bangladesh, Japan.

CLTP5 (Hokkaido Univ. in Sept 8-19, 2014)

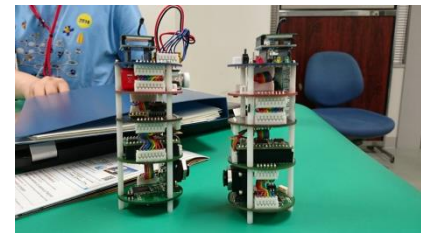
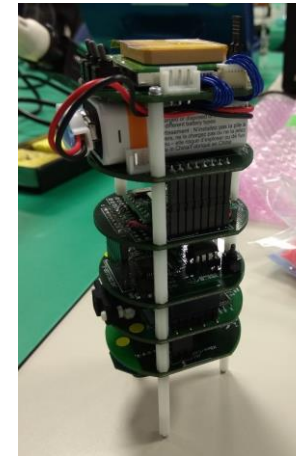
7 participants from 5 countries, Korea (2), Peru, Mongolia, Mexico (2), Egypt.

CLTP6(Hokkaido Univ. in August 24-Sept4, 2015)

8 participants from 8 countries, namely Angola, UN(Austria), New Zealand, Tunisia, Turkey, Egypt, Bangladesh, Mexico

CLTP7 (Hokkaido Univ. in Sep 21 - Oct 1, 2016)

8 from 7 countries, namely Egypt, Myanmar, Peru, Nepal (2), Mongolia, Serbia, Dominican Republic



CLTP History & Participants (2)

<2017~ HEPTA-Sat Kit: CLTP8-12>

CLTP8 (Nihon Univ. in Sep 7 - Sep 16, 2017)

9 from 7 countries, namely Bolivia, Egypt, El Salvador, Malaysia, Nepal, Turkey, (+Japanese Students)

CLTP9 (Nihon Univ. in August 20- August 31, 2018)

8 from 6 countries, namely Argentina, India, Japan, Malaysia, Mongolia, UAE

CLTP10 (Nihon Univ. in August 19-August 30, 2019)

15 from 11 countries, namely Australia, Bhutan, Bulgaria, Cambodia, Colombia, Kenya, Morocco, Myanmar, Peru, Rwanda, Zimbabwe

CLTP11 (Nihon Univ. and AOTS in August 18-August 31, 2022)

21 from 14 countries, namely Bangladesh, Bosnia, Colombia, India, Kazakhstan, Kenya, Malaysia, Mexico, Mongolia, Nepal, Peru, Philippines, South Africa, Thailand

CLTP12 (Nihon Univ. and AOTS in August 21-Sept 1, 2023)

17 from 13 countries, namely Bangladesh, Burkina Faso, Colombia, Egypt, Eritrea, Indonesia, Kazakhstan, Namibia, Nepal, Philippines, Zambia, Zimbabwe

134 participants from 54 countries



HEPTA-Sat Training

Host countries

● 10

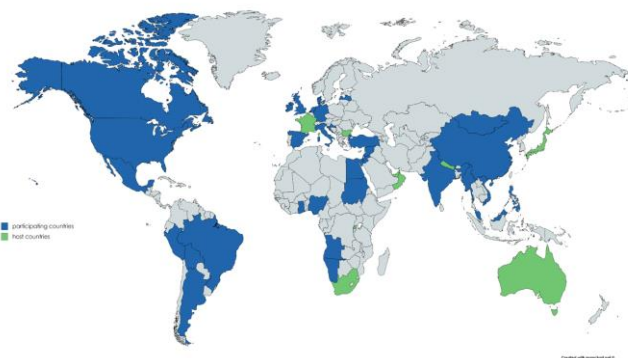
Participating countries

● 53

Trainees

1000

During 2017.10~2022.12



- Ghana, Feb. 2015.
- Angola, Oct. 2015.
- Japan (CLTP8), Sep. 2017.
- Bulgaria, Oct. 2017.
- Nepal, Nov. 2017.
- South Africa, UN Workshop, Dec. 2017.
- UAE, March 2018
- Japan (CLTP9), Sep. 2018
- France (ISU-SSP), Nov, 2018
- Oman, Dec 2018
- Australia (ISU-SHSSP), Jan 2019
- Japan (CLTP10), Sep. 2019
- Kenya, Nov 2019
- Australia (ISU-SHSSP), Jan 2020
- Japan (Kyoto Univ), May 2020
- Japan (Clark Memorial International High School), Dec 2021
- Japan (CLTP11), August 2022
- Japan (Nihonbashi Space week) – one day course, Dec 2022
- Japan (private company) 1-day course, Feb 2023
- Japan (Kimotsuki-cho, Kyushu) 2-day course, March, 2023
- Japan (CLTP12), August 2023



Ghana



Angola



Japan



Bulgaria



Kenya



Nepal



UNISEC-Global Meeting

- **Objective:**

The UNISEC-Global Meeting is an annual gathering to expand university community which intends to promote practical space projects at university level. The meeting includes Local Chapter activities report, Group discussion, Student Session, Competitions, and Acknowledgement of new local chapter.

- **Launched:** November 2013

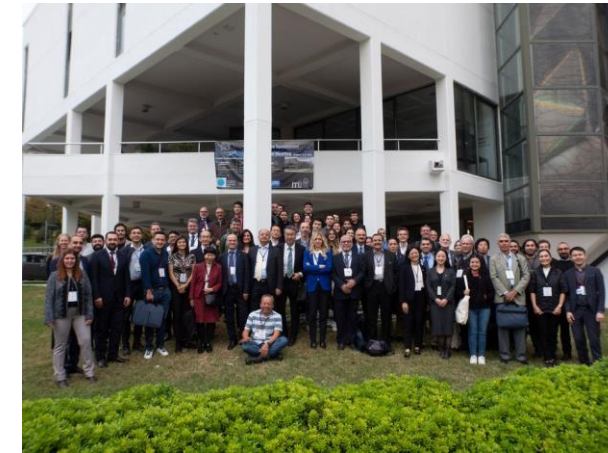
- **Conducted:** Annually

Due to the COVID19 pandemic, the 8th Meeting was postponed to 2022.

Virtual monthly UNISEC-Global Meeting has been organized since September 2020. Every third Saturday (10:00 pm- 0:00 am JST)

Nov 27- Dec 1, 2023

**We will hold the 9th UNISEC-Global Meeting (in person)
Tokyo, Japan**



9th UNISEC-Global Meeting (in-person)

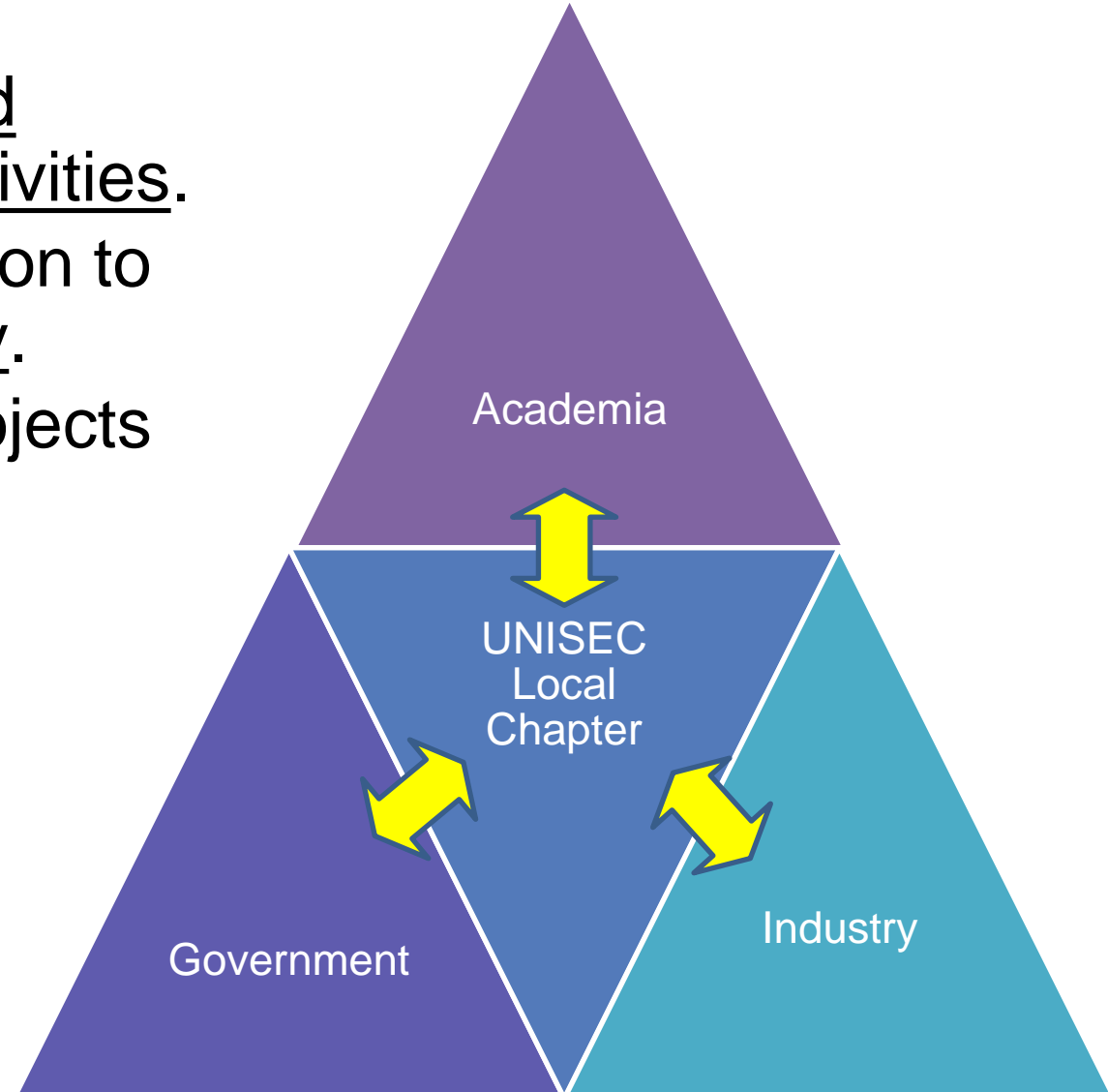
- Venue: X-Nihonbashi Tower, Tokyo, Japan
- Date: Nov 27-Dec 1, 2023
- Collaboration with Nihonbashi Space Week
- Program
 - Nov 27: HEPTA-Sat Training (1-day course)
 - Nov 28: Space Job Fair
 - Nov 29: Keynote speech, MIC8 final presentation
Reception for 10th UNISEC-Global Anniversary
 - Nov 30: Regional Report, Earth Observation Data
Workshop, Student session
 - Dec 1: Regional Report, Company presentation,
J-CUBE workshop, Gala Dinner



<http://www.unisec-global.org/meeting9.html>

UNISEC Local Chapter's Roles and functions

- UNISEC Local Chapters promote and support practical university space activities.
- Provide effective training and education to Academia, Government, and Industry.
- Incubation function to launch new projects and new companies.
- Bridge to International Network



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

Future plans for capacity building (1)

HEPTA for xxxx

- HEPTA (Hands-on Education Program for Technical Advancement) for xxxx
- HEPTA-Sat training organized by local chapter
 - 1st case: UNISEC-SAR (South African Region)
 - 3-day course in Oct 30- Nov 1, 2023 in South Africa
 - CLTP11 graduate and HEPTA-Sat instructors from Japan will provide the training together.



HEPTA-SAT
3-day course

HEPTA-Sat Hands-on Training

Oct 30, 31, Nov 1, 2023
Stellenbosch University, South Africa

Date:
Oct 30, Oct 31, Nov 1 2023

Venue:
Stellenbosch University,
South Africa

How to Register:
Access the QR code to register.

Participation Fee:
R9000 per applicant

Register here



CONTACT
abarnard@sun.ac.za

Stellenbosch
UNIVERSITY OF SOUTH AFRICA

UNISEC GLOBAL
UNISEC SAR

hepta-sat
training



Future plans for capacity building (2)

UNISEC-Constellation Mission

- Seek a good mission that helps to solve common problems or global issues
- Monitor something at least 10 years
- Each local chapter will contribute to the mission by developing and providing a satellite(s), receiving and/or analyzing data.
- Through the process, technology transfer will be made by efforts of both sides.

MIC8 Theme: Mission by Multiple nano-satellites

(Final presentation and review: Nov 29, 2023, in Tokyo, Japan)

UNISEC-Global

*If you want to go faster, go alone.
If you want to go further, go together.*

Contact



UNISEC-Global Office
Central Yayoi 2F, 2-3-2, Yayoi, Bunkyo , Tokyo
113-0032, Japan
Email: secretariat@unisec-global.org