

**United Nations/Japan  
Long-term Fellowship Programme  
Post-graduate Study on  
Nano-Satellite Technologies (PNST)**





# Access to Space for All Initiative

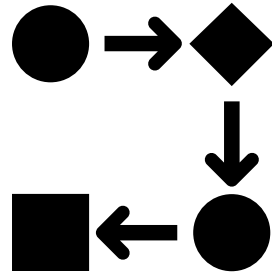
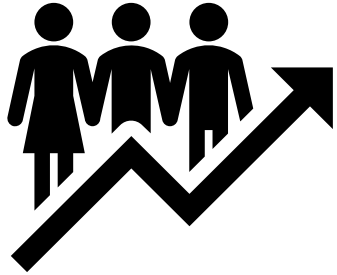


*The goal of the **Access to Space 4 All Initiative** is to provide research and orbital opportunities for UN Member States to access space and to ensure that the benefits of space, in particular for sustainable development, are truly accessible to all*

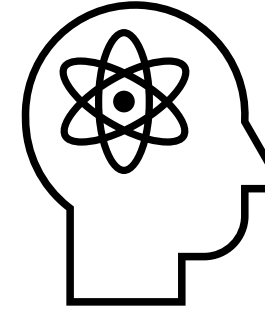
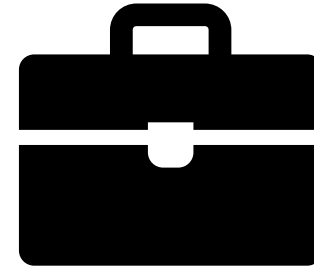




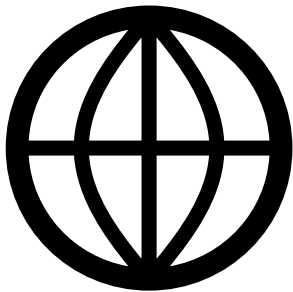
# Access to Space for All Initiative



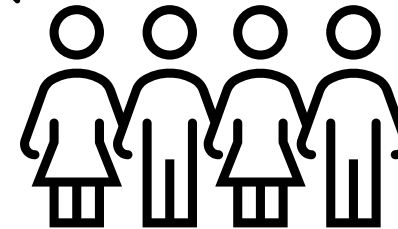
Hands-on Capacity from A-Z  
Responsible & Sustainable Way



Provides cutting edge skills for  
jobs and other opportunities



Fosters international cooperation



Social Impact: To your country,  
region and young generations



# Access to Space for All Initiative



## HyperGES "Watermeal, the Future Food Source for Space Exploration"



### HyperGES and community impacts

- Expand space-related knowledge and awareness in Thailand
- Flagship program in astroculture, produce intensive research environment
- Team up with other organization. Stepping out of their comfort zone encouragement



## FIRST MAURITIAN SATELLITE – OPENING NEW OPPORTUNITIES

JOURNEY TO SPACE ALTHOUGH NOT EASY BUT EXTREMELY REWARDING AND OFFERS HIGHLY PROMISING FUTURE

### MAURITIUS EMBARKS IN NEW SPACE ERA

- Geolocation interesting for future space related activities
- More advanced space nations interested to collaborate

### BOOST TECHNICAL CAPACITY

- Building highly technical capacity
- Sophisticated ground station for future missions set up
- Training of younger generation

### A POTENTIALLY NEW SOCIO-ECONOMIC PILLAR

- Space offers numerous possibilities for Mauritius. Data analytics, opportunities for R&D, business opportunities, intergovernmental collaborations.

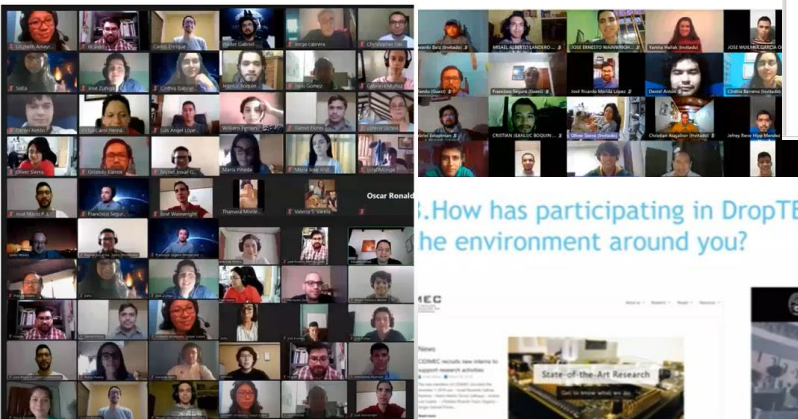
### ENTHUSIASTIC YOUNGSTERS

- The training program on antenna building gave us an insight of the high level of enthusiasm for this new field. There is hope to enhance this interest further to build new capacity.



### GOVERNMENT FULLY SUPPORTIVE

- This historical initiative for the Republic of Mauritius promises to unlock new opportunities for research, innovation and socio-economic development.



## How has participating in DropTES changed the environment around you?



SIELUM: A student experiment to investigate the sloshing of magnetic liquids in microgravity

Acta Astronautica, Volume 173, August 2020, Pages 361-381

Free surface reconstruction of opaque liquids in microgravity. Part 1: design and on-ground testing

A. Romero-Cabro\*, A. J. Garcia-Sabido\*, F. Garneau\*, E. Rivarola\*, G. Cano-Gómez\*, E. Castro-Hernández\* and F. Maggi\*

Free surface reconstruction of opaque liquids in microgravity. Part 2: results of drop tower campaign

A. Romero-Cabro\*, F. Garneau\*, A. J. Garcia-Sabido\*, E. Rivarola\*, G. Cano-Gómez\*, E. Castro-Hernández\* and F. Maggi\*

AXISYMMETRIC AND LATERAL FREE SURFACE OSCILLATIONS OF FERROFLUIDS IN MICROGRAVITY

M. Álvaro Romero-Cabro, alvaro.romero@univ-bordeaux.fr

University of Colorado at Boulder, Boulder, Colorado, United States

Adriano José Garcia Sabido, agarciasabido@gmail.com

Politecnico di Milano, Milano, Italy

François Garneau, francois.garneau@univ-bordeaux.fr

Politecnico di Milano, Milano, Italy, francesco.garneau@polimi.it

Filippo Maggi, filippo.maggi@univ-bordeaux.fr

Politecnico di Milano, Milano, Italy, filippo.maggi@polimi.it

## 3. How has participating in DropTES changed the environment around you? Cont'd (3)

In Feb. 2017 I was elected to be the President of the American University of Madaba (AUM) in Jordan. That month AUM started the Innovation project for its students and for high school students in Jordan at large.



Final results!!  
COSPAR 2021



# Access to Space for All Initiative



Space is relevant to the SDGs!

The 2030 Agenda for Sustainable Development <https://sdgs.un.org/2030agenda>

To learn more about the SDGs go to <https://sdgs.un.org/goals>

UNOOSA SDGs page

<https://www.unoosa.org/oosa/en/ourwork/space4sdgs/index.html>



# Access to Space for All Initiative

Goals

4

**Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**

[← Prev](#) [Next →](#)



Target

**4.4**

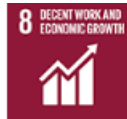
By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship

Goals

8

**Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all**

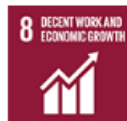
[← Prev](#) [Next →](#)



Target

**8.2**

Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors



Target

**8.3**

Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services

Goals

9

**Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation**

[← Prev](#) [Next →](#)



Target

**9.1**

Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all



Target

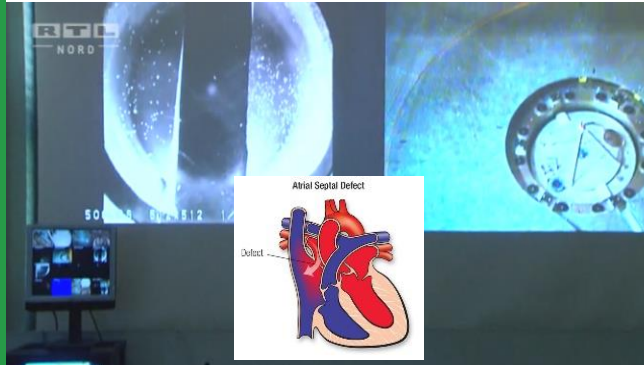
**9.5**

Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending

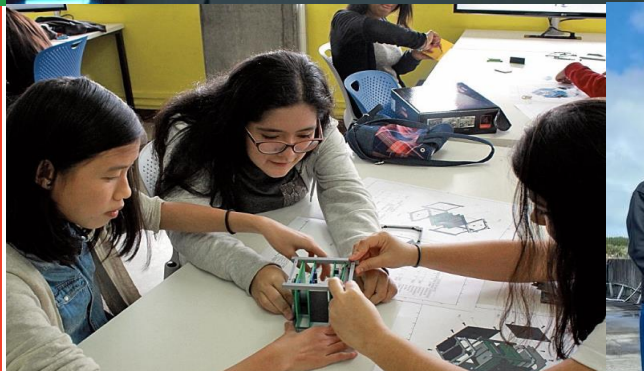


# Access to Space for All Initiative

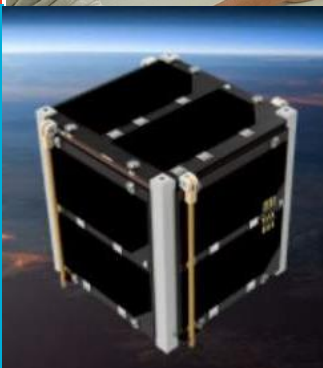
**3** GOOD HEALTH AND WELL-BEING



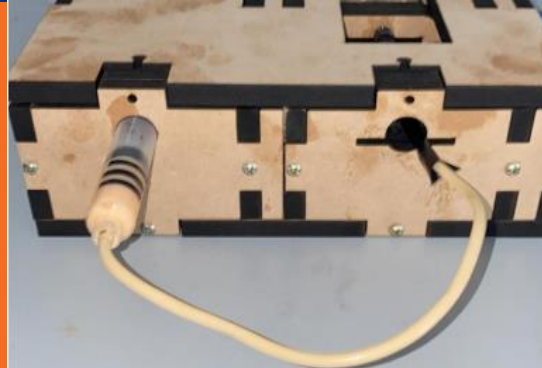
**5** GENDER EQUALITY



**6** CLEAN WATER AND SANITATION

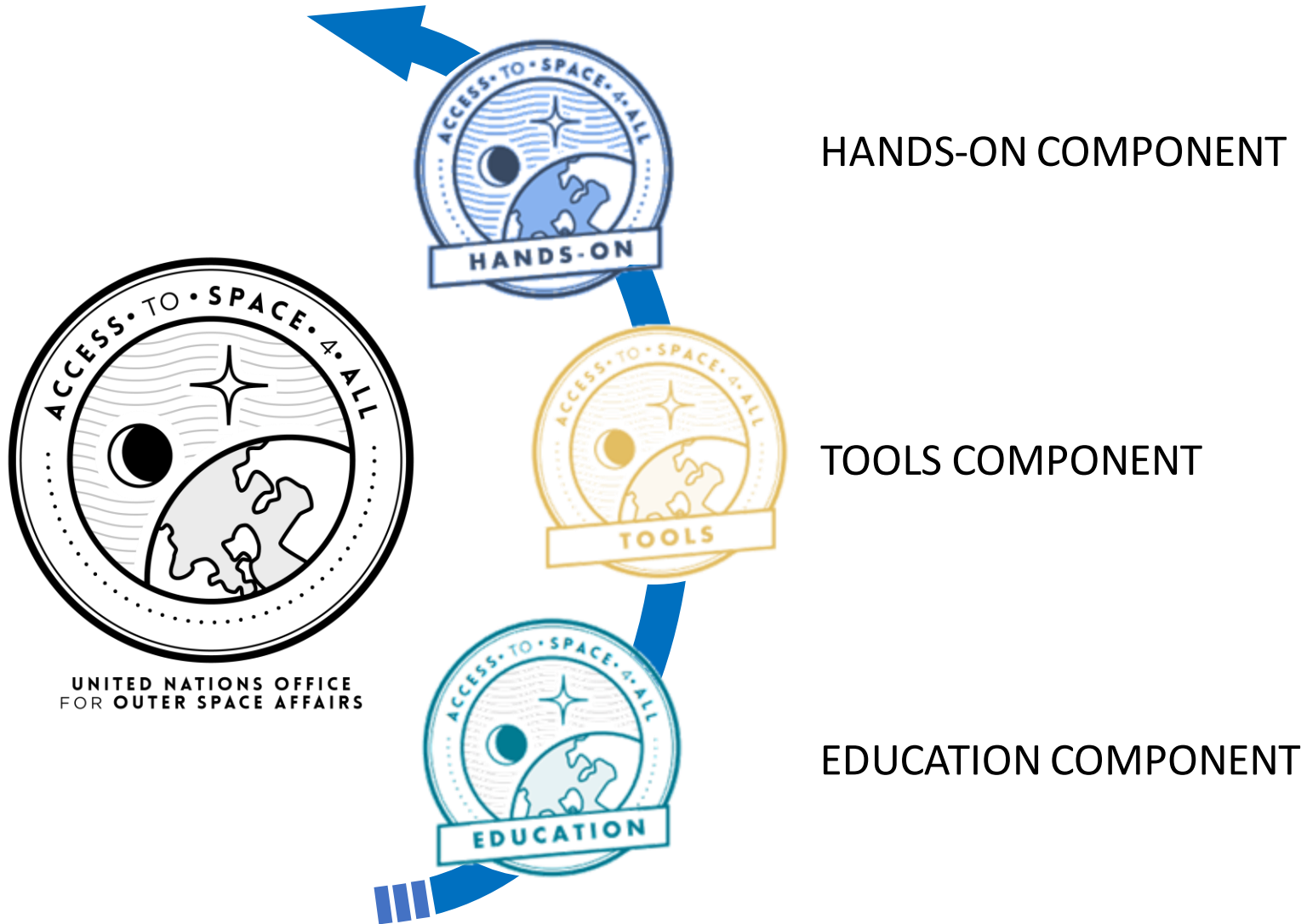


**9** INDUSTRY, INNOVATION AND INFRASTRUCTURE





# Access to Space for All Initiative

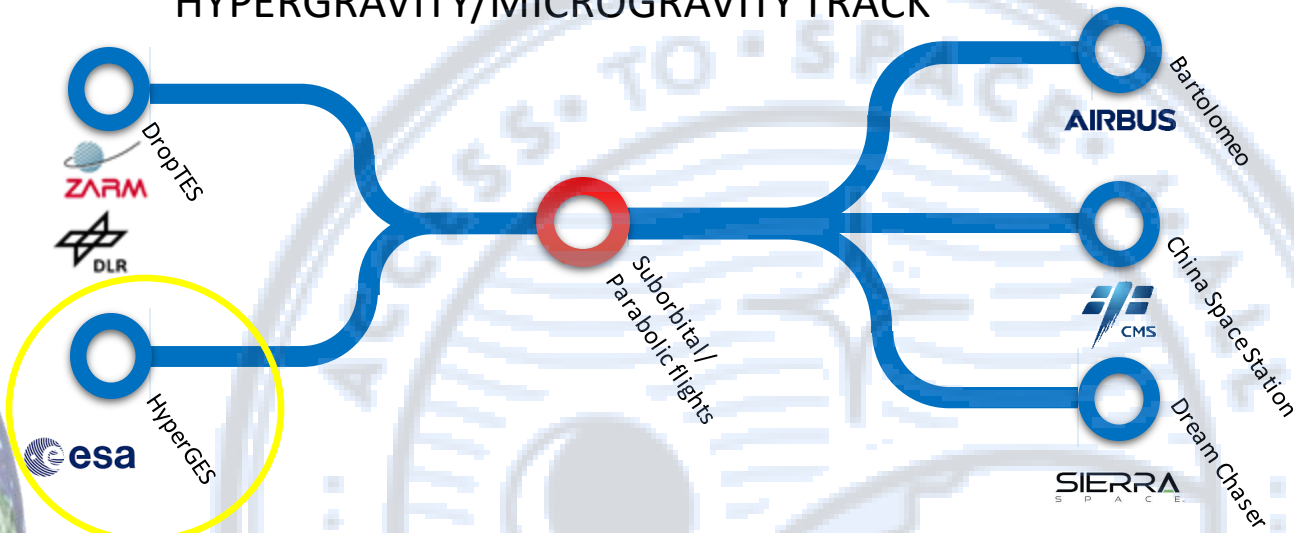






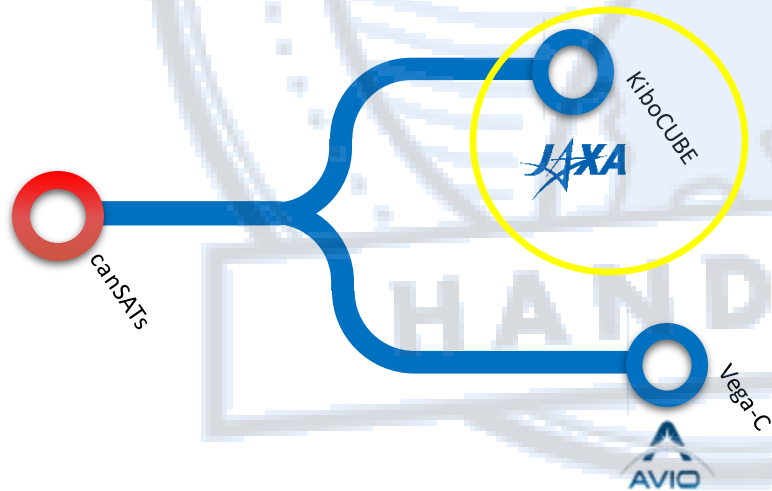
# Access to Space for All Initiative

## HYPERGRAVITY/MICROGRAVITY TRACK

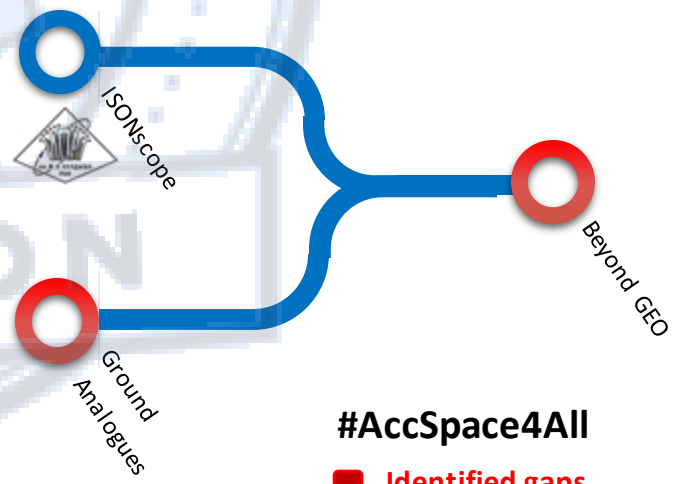


Opportunities are **OPEN!**  
 KiboCUBE : 31 Dec 2021  
 HyperGES: 28 Feb 2022

## SATELLITE DEVELOPMENT TRACK



## EXPLORATION TRACK

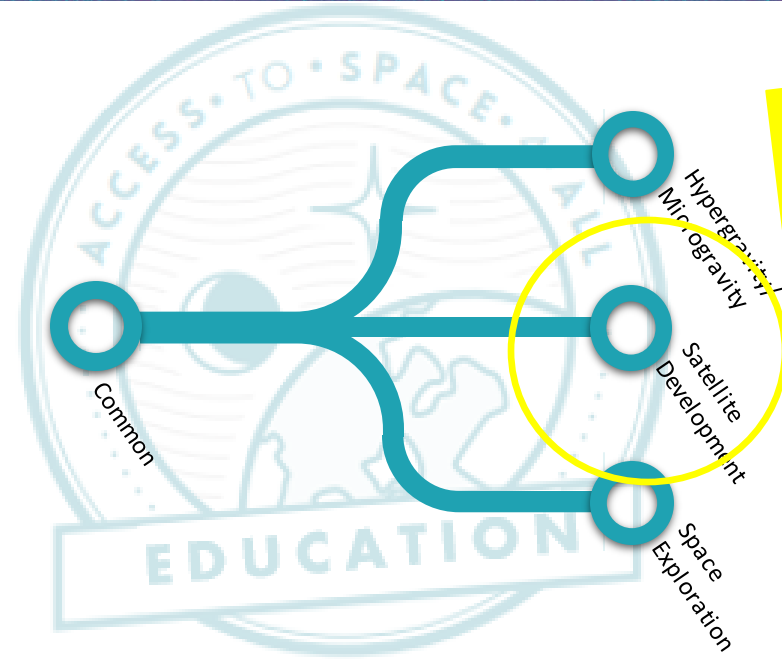
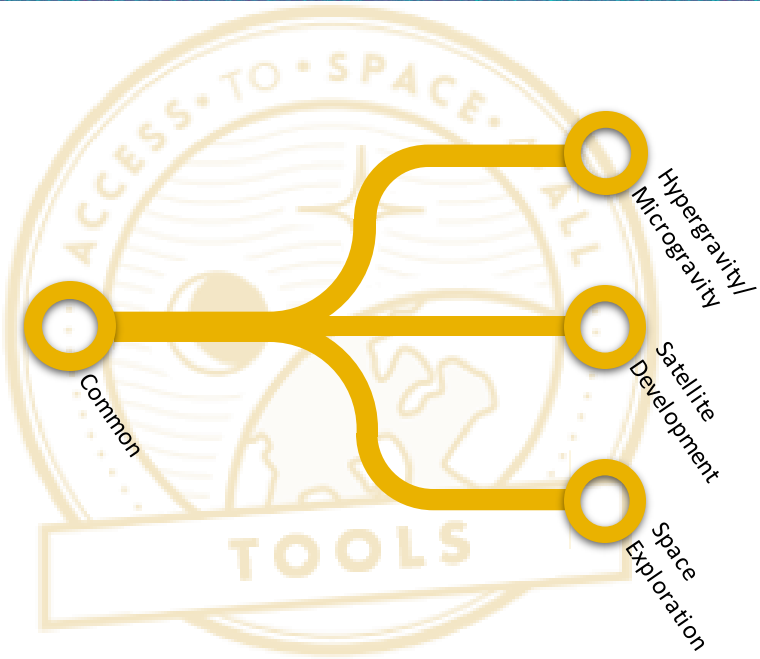


#AccSpace4All

■ Identified gaps



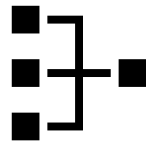
# Access to Space for All Initiative



**Fellowship is OPEN!**  
 Post-graduate study on Nano Satellite Technology (PNST)  
 : 10 Jan 2022



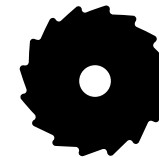
Design



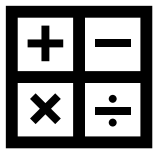
Planning



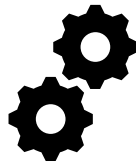
Webinars



Workshops /Training



Calculation/ Analyzation



Validation /Testing



MOOCs



Teacher's Guides



Curriculum



Fellowships

# What is the Post-graduate study on Nano-Satellite Technologies (PNST) fellowship?

- A fellowship programme between the United Nations Office for Outer Space Affairs (UNOOSA) and Kyushu Institute of Technology (Kyutech) which started from 2013, for nationals of developing countries or non-space faring nations. This programme is supported by the Ministry of Education, Culture, Sports, Science and Technology: MEXT of Japan.
- Provides opportunities for 3 students in the Master's Programme (2 years duration) and 3 students in the Doctoral Programme (3 years duration) to enrol in Kyutech's Space Engineering International Course (SEIC).

Photo credit: JAXA

# Why PNST?

## 1. Opportunity to study in an international environment at a leading university in the field of small satellites

Hands-on, extensive research opportunity in nano-satellite systems through the use of the nano-satellite development and testing facilities available at Kyutech.

In 2018, 2019 and 2020, Kyutech was reported by Bryce Space and Technology to have had launched the highest number of small satellites among all academic operators.

## 2. Generous support from Japan

The selected candidates will each receive a grant under the MEXT scholarship of approximately 144,000 JPY per month for the duration of their fellowship study (2 or 3 years) to cover housing, food, local transportation, and other expenses. Also, according to the route as designated by MEXT, an economy class air ticket between an international airport in the country of his/her nationality and Narita International Airport or Fukuoka International Airport.

Fees for matriculation, tuition and entrance examinations will be paid by Kyutech.

## Number of Academic Smallsats by Institution

Academic and Non-Profit Smallsats

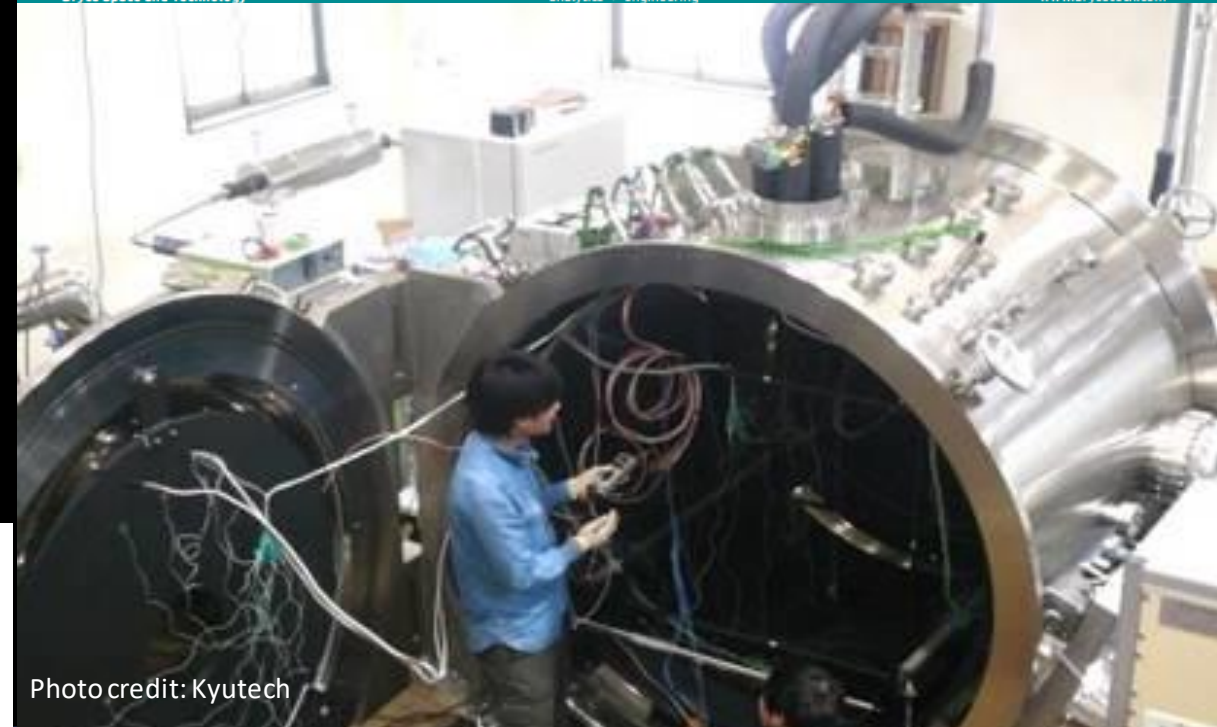
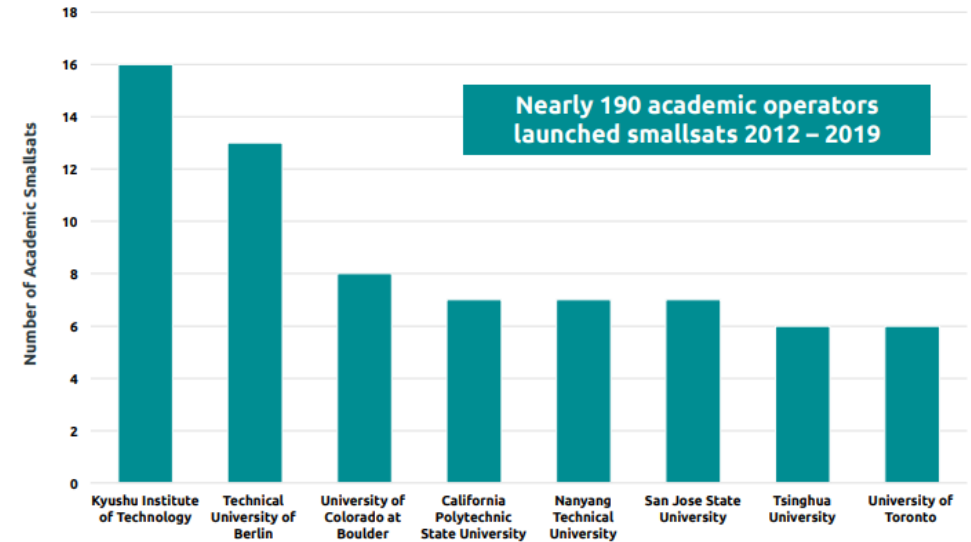


Photo credit: Kyutech



# PNST



UNITED NATIONS  
Office for Outer Space Affairs

## Where to begin...

- All documents/information can be found at:

<https://www.unoosa.org/oosa/en/ourwork/psa/bsti/fellowships.html>

*Read all documents/information on website carefully*

- Read interview article with current students in the programme  
Fatima Duran (El Salvador):

[https://www.unoosa.org/documents/pdf/psa/bsti/fellowship/2022/Interview Article PNST2021 Fatima Duran.pdf](https://www.unoosa.org/documents/pdf/psa/bsti/fellowship/2022/Interview%20Article%20PNST2021%20Fatima%20Duran.pdf)

Pooja Lepcha (Bhutan):

[https://www.unoosa.org/documents/pdf/psa/bsti/fellowship/2021/Interview with Pooja Lepcha PNST Kyutech- 30 Nov FINAL.pdf](https://www.unoosa.org/documents/pdf/psa/bsti/fellowship/2021/Interview%20with%20Pooja%20Lepcha%20PNST%20Kyutech-30%20Nov%20FINAL.pdf)

- See past webinar to hear about the students' experiences and advices

<https://www.unoosa.org/oosa/en/ourwork/psa/bsti/fellowship-programme-2021.html>

UNITED NATIONS  
Office for Outer Space Affairs

Our Work - Our Work - Space4SDGs - Information for... - Events - Space Object Register - Documents - COPUOS 2021 -

Our Work > Programme on Space Applications > Basic Space Technology Initiative (BSTI) > Fellowship Programme

### Basic Space Technology Initiative Fellowship Programme

United Nations/Japan Long-term Fellowship Programme 2022  
Post-graduate study on Nano-Satellite Technologies (PNST)  
(Kitakyushu, Japan)

Updated 29 August 2021

WEBINAR  
**Wednesday 22 September 2021 10:30CEST and 16:00CEST**  
For participation, please register from [here](#) by Tuesday 21 September 18:00CEST.  
Agenda (TBD):  
- Introduction to PNST and other UNOOSA education activities by UNOOSA (15min)  
- Introduction to PNST and SEIC (Space Engineering International Course) by Kyutech (15min)  
- Lightning Talks from Current and Past Fellows (10min each)  
- Q and A

**<NEW> PNST INTERVIEW WITH A CURRENT FELLOW**  
We interviewed one of the current fellows, Ms. Fatima Duran from El Salvador!

The United Nations Office for Outer Space Affairs and the Government of Japan in cooperation with the Kyushu Institute of Technology (Kyutech) have established a United Nations/Japan Long-term Fellowship Programme on Nano-Satellite Technologies for nationals of developing countries or non-space-faring nations. The Programme will provide extensive research opportunities in nano-satellite systems through the use of the nano-satellite development and testing facilities available at Kyutech.

Every year this "Post-graduate study on Nano-Satellite Technologies (PNST)" Fellowship Programme will accept up to three students in the Master's Program (2 years duration) and up to three students in the Doctoral Program (3 years duration). Successful participants will be awarded a master or doctoral degree after successful thesis defence. The successful candidates will enroll in the Space Engineering International Course (SEIC) after passing an official entrance examination by the Graduate School of Kyushu Institute of Technology.

The selected candidates will each receive a grant under Japanese government (Ministry of Education, Culture, Sports, Science and Technology; MEXT) scholarship (Research Students) of approximately 144,000 JPY per month for the duration of their fellowship study (2 or 3 years) to cover housing, food, local transportation, and other expenses. Each candidate will be provided, according to his/her itinerary and route as designated by MEXT, an economy class air ticket between an international airport in the country of his/her nationality and an international airport in Japan used on the normal route to the accepting university. Fees for matriculation, tuition and entrance examinations will be paid by Kyutech.

The purpose of this fellowship is to help non-space-faring nations join the community of space-faring nations. Consequently, if you are selected as a PNST Fellow through the aforementioned process and you earn your advanced degree at Kyutech, you have an immense moral obligation to return to your home country and contribute to it. This is the central expectation of both UNOOSA and Kyutech.

Application deadline: The Programme will be accepted until 10 January 2022 (GMT+9). If not fully completed at the time of the deadline, the application will be deemed to be not qualifying.

#### PNST FELLOWSHIP PROGRAMME DETAILS

- PNST Programme Flyer.pdf
- Message from Kyutech regarding PNST
- PNST Presentation at the 58th Session of the Scientific and Technical Subcommittee, 13 February 2013
- PNST Presentation at the 59th Session of the Committee on the Peaceful Uses of Outer Space, 10 June 2016
- PNST Presentation at the 60th Session of the Committee on the Peaceful Uses of Outer Space, 9 June 2017
- G. Marchi, M. Cho, Five-year results of the world's first graduate-school-level space engineering fellowship program conducted between the UN and a university - called the PNST program, IAC-17, E.I.4.1, 68th International Astronautical Congress (IAC), Adelaide, Australia, 25-29 September 2017.
- PNST Presentation at the 58th Session of the Scientific and Technical Subcommittee, 15 February 2019

► Application Requirements

► Information Note and Application Documents

► Application Submission Procedure

► Timeline of the Selection Process

► Frequently Asked Questions



PNST



UNITED NATIONS  
Office for Outer Space Affairs

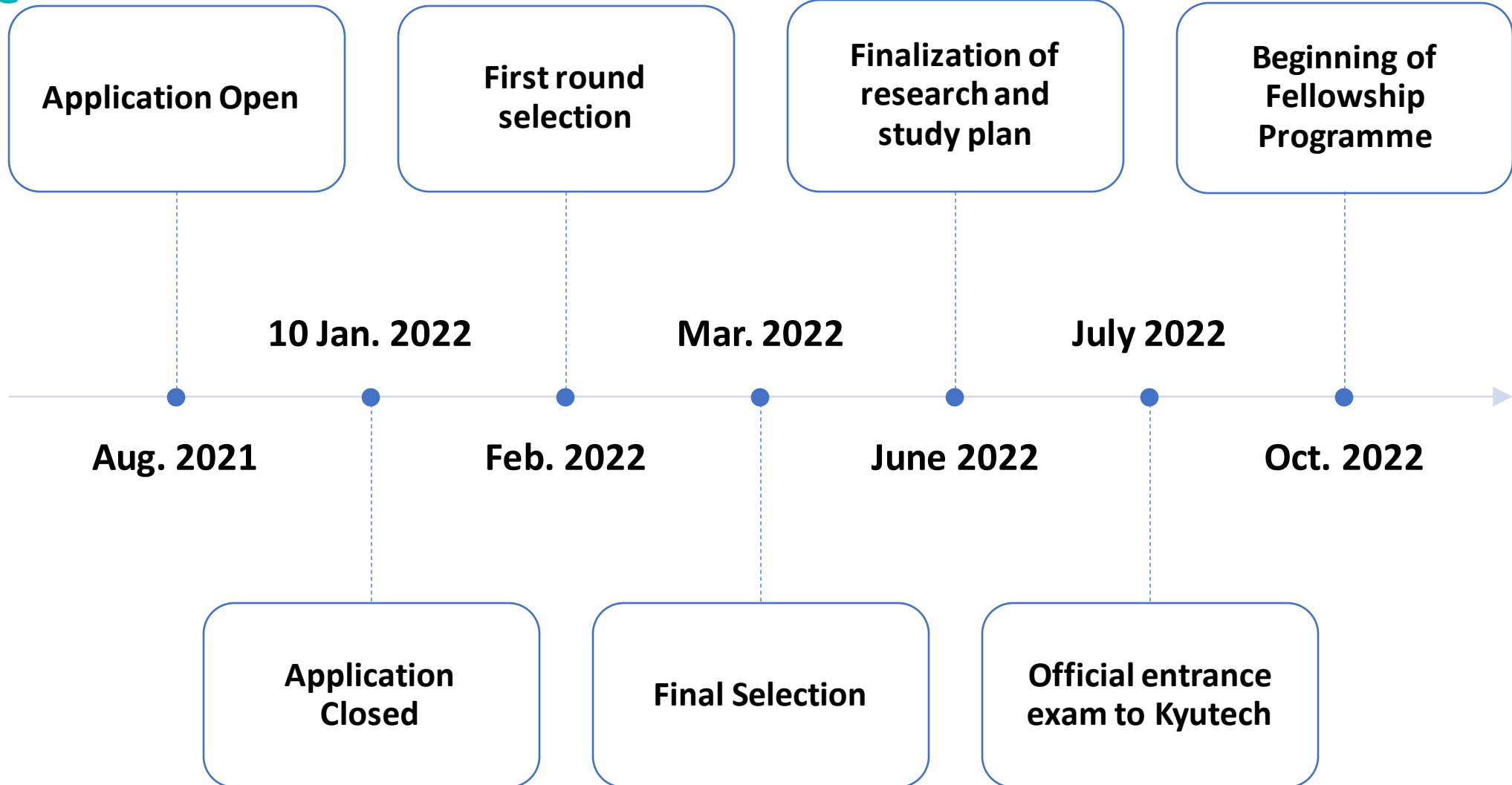
## Requirements for Participation

- Be nationals of developing countries or non-space-faring nations (countries without an established substantial capability to develop space technology/launch space objects);
- Be duly nominated by their institutions;
- Born on or after 2 April 1987;
- Should have the academic and professional background required by the specific fellowship programme. Candidates seeking a Master degree are expected to have completed studies ending with a Bachelor Degree or equivalent (4 year university degree) in engineering-related subjects. Candidates seeking a Doctorate degree are expected to have completed studies ending with a Master Degree or equivalent (5 years university degree) in engineering-related subjects. Degrees in different technological fields can be considered by the Doctor Commission; and
- Be able to make professional use of the experience gained in the fellowship programme.

**The Office for Outer Space Affairs is committed to achieving 50/50 gender balance in its programme and ensuring a balanced representation from different perspectives.** This programme intends to select 3 male and 3 female students for the fellowship.



## Schedule



**Thank you!**

**For inquires:**

**UNOOSA Access to Space**

**[unoosa-access-to-space@un.org](mailto:unoosa-access-to-space@un.org)**

