According to Bryce Space & Technology Co., among academic operators, Kyutech is No. 1 in number of small satellites launched

Members of BIRDS -1, -2, -3, and -4, on 29 Nov 2018 in front of the lab building

Archive website: http://birds1.birds-project.com/newsletter.html
All back issues are archived at this website.

Acknowledgment of support: This newsletter is supported, in part, by *JSPS Core-to-Core Program, B. Asia-Africa Science Platforms.*

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BIRDS Project Newsletter

Issue No. 49
(20 Feb. 2020)

Edited by:
G. Maeda
Laboratory of Spacecraft Environment Interaction Engineering (LaSEINE),
Kyushu Institute of Technology (Kyutech)
Kitakyushu, Japan

Space Engineering International Course

All back issues of this newsletter can be easily downloaded.
Go to here: http://birds1.birds-project.com/newsletter.html and scroll down to the desired issue.

From Malaysia

The Guest Box

This is the chock-a-block city of Kuala Lumpur, where commonly people it KL. It is one of the federal territories of Malaysia and also the national capital city of the country. Located in the county of Selangor which is one of 13 states in Malaysia, KL stuffs up with civilized urbanization and technological modernization along with the continuous development of gleaming skyscrapers and myriad of attractions for businesses and tourists.

One of the fascinating thing about KL is the existence of Malay traditional village named Kampung Baru (means New Village) in the heart of the cramped city. It lives for decades since 1899 and still holds the strong vibes of traditional ways of living such as wooden houses. Predominant by Malay ethnics, Kampung Baru becomes a gastronomic place for food hunters.

By Fatimah Zaharah Ali (UiTM, Malaysia)
Photo credits: Razman Izzuddin from Selangor (IG: raz.izzuddin)

Table of Sections

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Table of Sections (cont'd from the previous page)

Continued on the next page

JSPS Reminder

When you publish a paper on a topic related to BIRDS, please include this acknowledgement in the paper:

This work was supported by JSPS Core-to-Core Program, B. Asia-Africa Science Platforms.

Table of Sections (cont'd from the previous page)

END OF TABLE OF SECTIONS

Next month is Issue No. 50 of this newsletter

01. Eighth UNISEC-Global Meeting in Istanbul (mark your calendar)

At the left, you can see four events that will take place in Istanbul at roughly the same time. Please mark your calendar.

Also, please visit the website below from time to time if you are interested in attending this UNISEC-Global meeting in Istanbul.

Website is this:
http://www.unisec-global.org/meeting8.html

THE LOWER HALF OF POSTER

Get this poster from the web: http://unisec-global.org/pdf/uniglo8/UNIGLO8_flyer.pdf

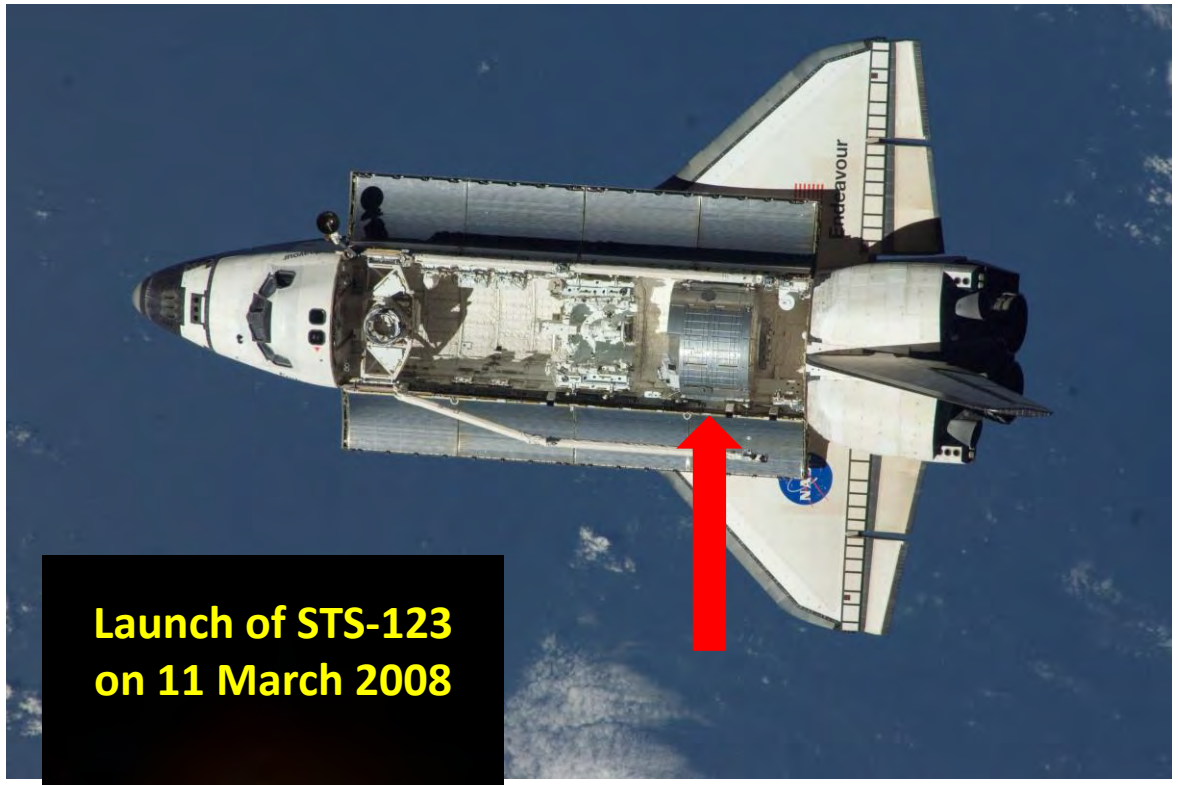
02. Astronaut Doi visited Kyutech on 24 January 2020

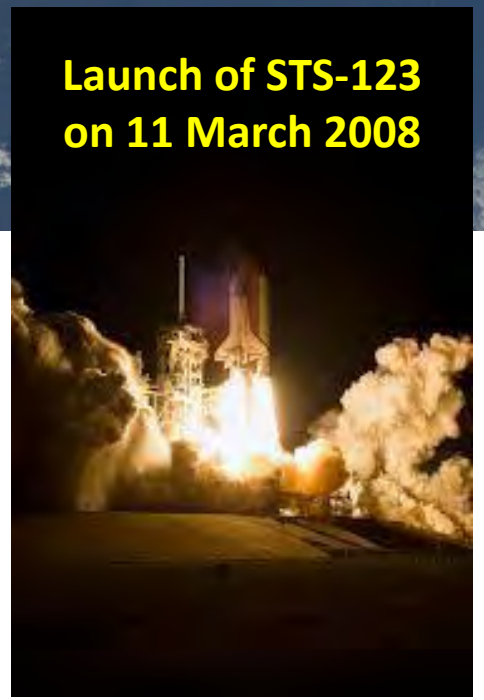
Astronaut Takao Doi (土井 隆雄 宇宙飛行士) visited Kyutech on 24 January 2020 for discussions with Prof Cho.

Dr Doi also did a special seminar for SEIC.
I thought the seminar was outstanding.

"Doi flew as a mission specialist aboard STS-87 in 1997, during which he became the first Japanese astronaut to conduct a spacewalk. "

From: https://en.wikipedia.org/wiki/Takao_Doi
日本語: https://ja.wikipedia.org/wiki/土井隆雄





Launch of STS-123 on 11 March 2008

Above: Element of Kibo inside of the cargo bay of STS-123

The bio for Astronaut Doi

Dr. Doi joined NASA's mission specialist training program in 1995. He flew aboard the Space Shuttle Columbia on the STS-87 Mission in 1997 and conducted two space walks.

In 2008, Dr. Doi flew aboard the Space Shuttle Endeavour on the STS-123 mission which delivered the first element of Kibo [*see photo at the left*].

From 2009 to 2016, he was the *Expert on Space Applications with the United Nations.* Since April 2016, Dr. Doi has been a professor at Kyoto University.

Name	Photo	Mission(s) (dates)	Launch times	Total duration	Spacewalk times	Spacewalk duration	Notes
Takao Doi (Japanese: 土井 隆雄) born 18 September 1954		Columbia STS-87, 19.11.1997 - 05.12.1997 Endeavour STS-123, 11.03.2008 - 25.03.2008	2	31 days 10 hours 45 minutes	2	12 hours 42 minutes	Doctor of Science in aerospace engineering Doctor of Astronomy; specialist in flying.

For complete list of Japanese astronauts: https://en.wikipedia.org/wiki/List_of_Japanese_astronauts

JAXA's old name was NASDA


Crew of STS-87 (1997)

Inspection of the BIRDS-4 Room (3rd floor of the SVBL Building)

BIRDS-4
JOINT GLOBAL MULTI-NATION BIRDS SATELLITE PROJECT

Prof Cho gave Prof Doi a complete tour of the laboratory and other facilities

And then Astronaut Doi conducted a wonderful seminar for SEIC students . . .

SPACE ENGINEERING INTERNATIONAL COURSE ***OF KYUTECH***

Seminar Title:

STS-123: 1st Japanese Space Station Mission

Seminar Abstract:

Japan started working on the International Space Station (ISS) Program in 1985. In 2008, after 23 years of the development of the Japanese Space Station Module "Kibo" ("Hope" in Japanese), the first element was launched to space and attached to the ISS on the STS-123 mission. Dr. Doi is going to show a NASA video and explain how the space mission was conducted from launch to landing.

Dr Doi: ***Thank you for coming to Kyutech*** **– please come again.**

END OF THIS REPORT
by G. Maeda

Check out this 2.5-min video of this seminar:
https://www.dropbox.com/s/be1ps7j7mqbb201/24-JAN-2020_Dr%20Doi.AVI?dl=0

03. 59th Student Festival at Kyutech

This annual event occurred last year in November, and was described recently in the Kyutech Journal, shown at the right.

Many of the students from overseas cook and sell their national dishes so that we all can sample them.

第59回
工大祭

令和元年11月23日(土)～11月24日(日)開催

「工学部」第59回工大祭

工学部　工大祭実行委員長　越智　翔一

こんにちは。工大祭実行委員会です。この度は第59回工大祭にご来場していただき誠にありがとうございました。

昨年の工大祭のテーマは「Start-ing New Positive」であり、来場されるお客様や模擬店、学科展・サークル展を行っていただいた各研究室・サークルの皆様方に対して令和最初の新たな工大祭を提供し、感動し、楽しんでいただけるように工大祭実行委員一同1年間尽力してきました。

また、2日目の朝に雨天にはなりましたが、昼からは晴れ、2日間工大祭を行うことができ、大変喜ばしく思っております。大きな事故などもなく、無事に第59回工大祭を行うことができたのは実行委員の力だけではなく、学生係の方々や各研究室、サークルの方々、実行委員のOB・OGの方々の協力があってこそのものです。

第59回工大祭には留学生の方々による店舗を含め、全部で54店舗の模擬店を出店していただきました。その際テントを貸していただいた西日本工業大学様、西南女学院大学様、北九州市立大学ひびきのキャンパス様、北九州市立大学北方キャンパス様、九州共立大学様、九州国際大学様、九州女子大学様、九州国際大学付属高等学校様、下関市立大学様、下関国際大学様、福岡県立若松高等学校様、北九州工業高等専門学校様、誠にありがとうございました。

ここで、工大祭のイベントを見逃した方もいらっしゃると思いますので、簡単ではありますが振り返らせていただきたいと思います。

まず1日目の企画では地域の方々によるステージイベント「桃紅祭」をスタートに、九州工大ののど自慢が互いに歌を披露する「集え歌自慢お前が歌わねば誰が歌う！」や模擬店出店者の方々がPR時間を勝ち取

Continued on the next page

Photos of the festival are on the next two pages.

るためにミニゲームで対戦する「模擬でshow!!」などの様々な企画をステージで行わせていただきました。また、人気声優の小林愛香さんによるトークショーも行われ、多くの方々に楽しんでいただきました。1日目のラストにはバンドの方々によるライブやKDC、SDCの皆様によるダンスショーで大変盛り上がりました。

2日目は地域の子供たちを対象にした「よい子のかがくじっけん」や近隣高校の生徒が作成したロボットたちが白熱の対戦を繰り広げる「ロボットコンテスト」、九州工大生Kさんによるライブ「K Live in Kyutech」、学科展や模擬店の表彰、ダンスサークルの方々によるダンスパフォーマンスで堂々のフィナーレを飾った「後夜祭」など、楽しい企画が盛りだくさんでした。この2日間のために半年以上の期間をかけて取り組んできたものが十分に実を結び、とても内容の濃い工大祭とすることができました。工大実行委員として活動するうえで様々な問題点や課題等が見つかり、時には実行委員同士でぶつかることもありましたが、皆様を楽しませることができ、自分も大きく成長することができたと考えております。

最後になりましたが、第59回工大祭を行うにあたりご協力いただいた皆様に厚くお礼申し上げます。

工大祭実行委員会：
大学会館2階活動室2
TEL：0938830679

Members of the organizing committee for this festival

工大祭実行委員会のメンバー

These photos are courtesy of Mark (BIRDS-4; Philippines)

Above: the booth of France

23-24 November 2019, Tobata Campus

More photos on the next page.

END OF 2019 FESTIVAL ARTICLE

04. Kiran (BIRDS-2; Bhutan) has a paper published in JoSS journal

www.adeepakpublishing.com

Pradhan, K. K. and Cho, M. (2019): JoSS, Vol. 8, No. 3, pp. 881–896
(Peer-reviewed article available at www.jossonline.com)

www. JoSSonline.com

Shortening of Delivery Time for University-Class Lean Satellites

Kiran K. Pradhan and Mengu Cho
Laboratory of Space Environment Interaction Engineering (LaSEINE)
Kyushu Institute of Technology
Kitakyushu, Fukuoka, Japan

Abstract

The introduction of the CubeSat standard has led to exponential growth in the number of small satellites launched in recent years. This is evidenced by statistics, which show such growth predominantly for satellites weighing 10 kg or less. Several factors can be attributed with the proliferation of small satellite launches, including the use of commercial off-the-shelf (COTS) components and the acceptance of higher risk during their development stage, both of which have enabled faster delivery of these satellites from concept to launch. Such non-

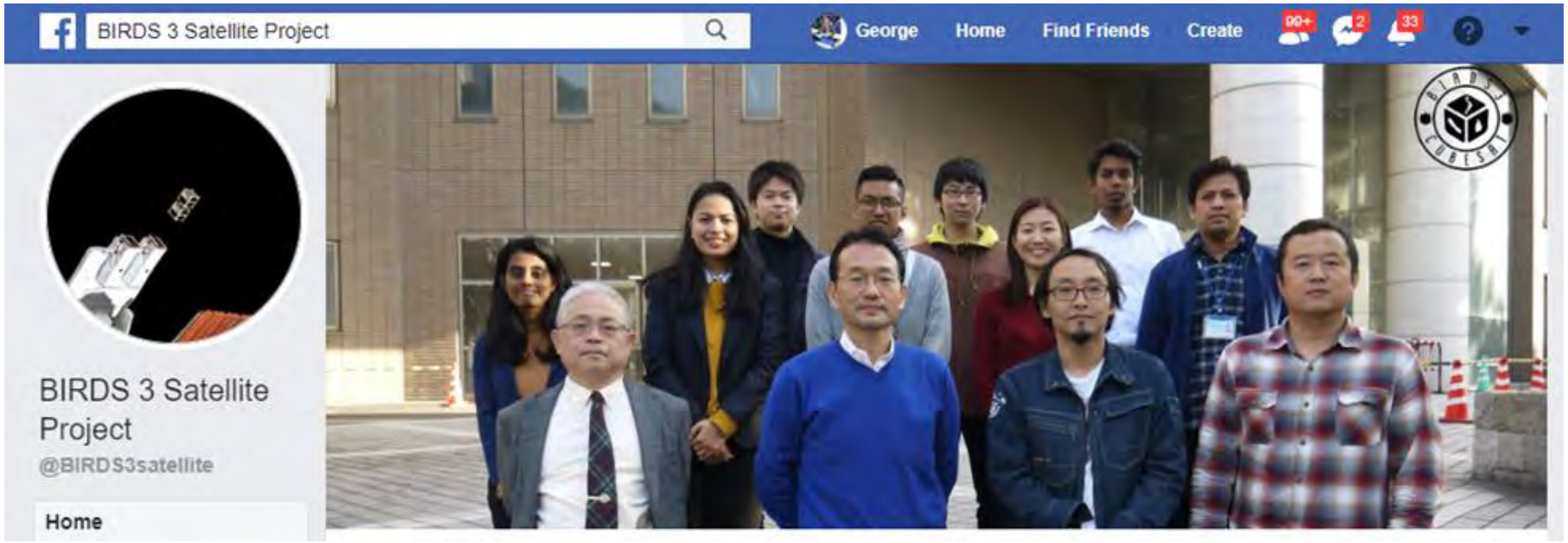
Available from here: https://jossonline.com/

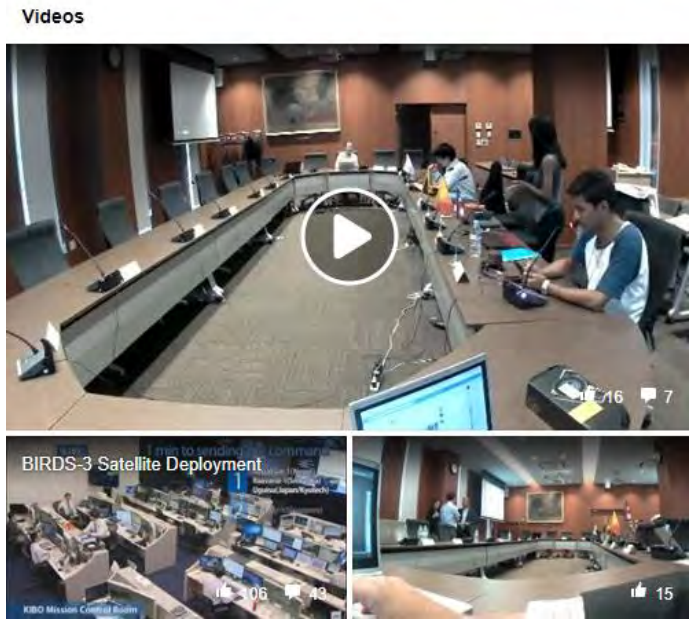
Kiran says this about this paper:

"This paper is basically my masters thesis. While detailed information is available in my thesis, this paper gives a quick overview of what I did for my thesis and what my findings are. One key aspect of my thesis is that BIRDS projects (especially BIRDS-1 and BIRDS-2) have been taken as a case study. The experience and lessons learned from the two projects are discussed in the paper. "

05. BIRDS-3 Project is on Facebook – check it out

THIS IS THE LINK: https://www.facebook.com/BIRDS3satellite/





History was made

OLAYINKA'S WORLD

COLUMN NO 17

OLAYINKA FAGBEMIRO
ASSISTANT CHIEF SCIENTIFIC OFFICER,NATIONAL SPACE RESEARCH & DEVELOPMENT AGENCY(NASRDA), ABUJA. NIGERIA. HEAD, SPACE EDUCATION UNIT
FOUNDER/NATIONAL COORDINATOR, ASTRONOMERS WITHOUT BORDERS (AWB) NIGERIA
PUBLIC RELATIONS AND EDUCATION OFFICER, AFRICAN ASTRONOMICAL SOCIETY (AfAS)

Olayinka's World
...in space to make a difference

Launch of *Office of Astronomy for Education* (OAE)

The International Astronomical Union (IAU) has selected Haus der Astronomie (HdA), an Astronomy outreach centre based in Heidelberg, Germany, as the location for its new **Office of Astronomy for Education (OAE).** The OAE was established to promote astronomy in education and to achieve the education-related goals set out in the IAU Strategic Plan 2020–2030.

Astronomy Education experts from around the globe converged at the headquarters of the International Astronomical Union (IAU) in Paris from the 17th – 19th December, 2019, in what has since been described as a commendable move towards the popularization of Astronomy around the globe to launch the establishment of the IAU Office of Astronomy for Education.

Cont'd next page

The International Astronomical Union's Strategic Plan 2020–2030 provides for the establishment of an Office of Astronomy for Education (OAE), which will support the astronomy community and astronomy educators in bringing the fascination of astronomy into schools.

Its activities will include establishing a worldwide network of National Astronomy Education Coordinators (NAECs), promoting astronomy in national curricula, supporting teachers with evidence-based education research and helping the community with its professional development. The OAE is also intended to facilitate discussion and knowledge sharing within the community, particularly between astronomy education researchers and astronomy education practitioners.

End of text

Haus der Astronomie (HdA), Heidelberg, Germany, host facility for OAE

A cross section of participants at the workshop witnessing the signing of the document establishing the IAU Office of Astronomy for Development.

The Founder/National Coordinator, *Astronomers Without Borders* (AWB) Nigeria, Olayinka Fagbemiro, making a presentation about astronomy education efforts in Nigeria.

Olayinka's World
...in space to make a difference

End of Column No. 17

07. HEPTA-Sat training went to Australia

What is HEPTA (Hands-on Education Program for Technical Advancement)-Sat?

Answer: http://unisec.jp/serviceen/heptaen.html

HEPTA-Sat Training as a CubeSat Workshop, **ISU SHSSP**, took place at the University of South Australia, Adelaide, Australia. 32 participants with various backgrounds from 10 countries attended the training.

=== Schedule ==========
> Day 1 (1/27, 14:00 ~ 21:30)
* Introduction of Satellite
* Lab #1 : Programing Practice
* Lab #2 : Electrical Power Supply Subsystem
* Lab #3 : Command & Data Handling Subsystem
> Day 2 (1/29, 14:00 ~ 21:30)
* Lab #4 : Sensor Subsystem
* Lab #5 : Communication / Ground Station Subsystem
* Lab #6 : Structure Subsystem
* Lab #7 : Mission Implementation
> Day 3 (1/30, 11:30 ~12:30)
* Final Presentations
==========

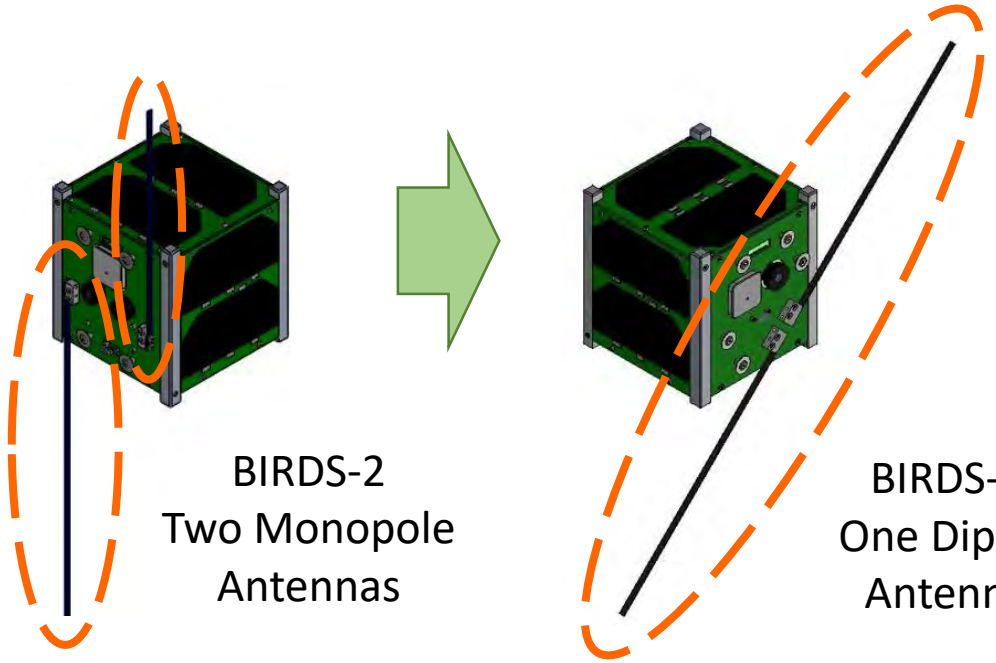
ISU=International Space University
SHSSP=Southern Hemisphere Space Study Program

Adelaide ISU-SHSSP slide show: https://www.facebook.com/unisecglobal/videos/260823951475043/?v=260823951475043

08. How the communication system was changed from BIRDS-2 to BIRDS-3

Reported by Makiko Kishimoto of BIRDS-3

1. Satellite Antenna

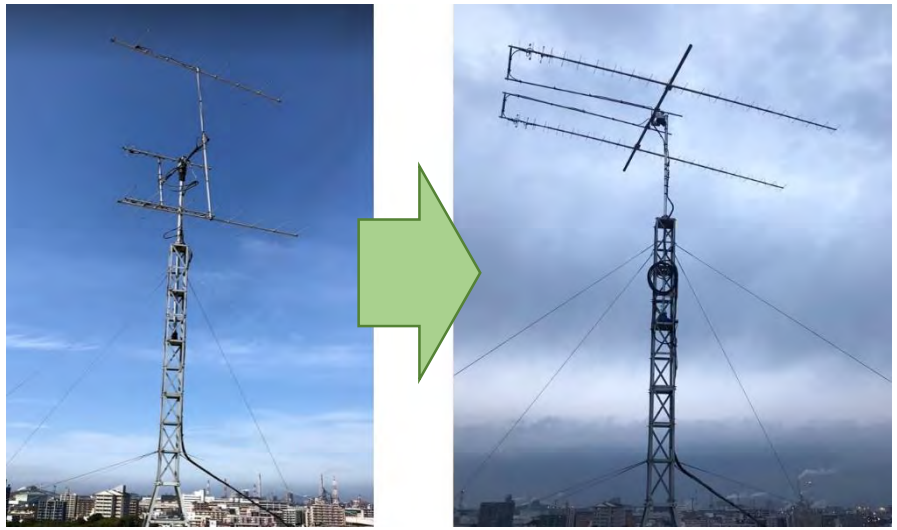


BIRDS-2
Two Monopole
Antennas

BIRDS-3
One Dipole
Antenna

We changed from monopole to dipole antenna. Because monopole antenna needs large size of GND plane for the good performance but 1U (10 x 10 x 10 cm) CubeSat GND size is much smaller than another big satellite like 3U or 6U CubeSat. Dipole antenna does not need to care about GND size, therefore we changed the design.

2. Ground Station Antenna

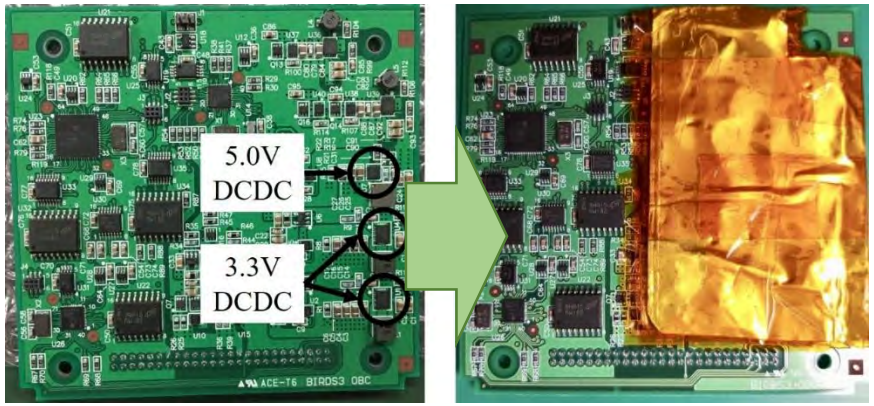


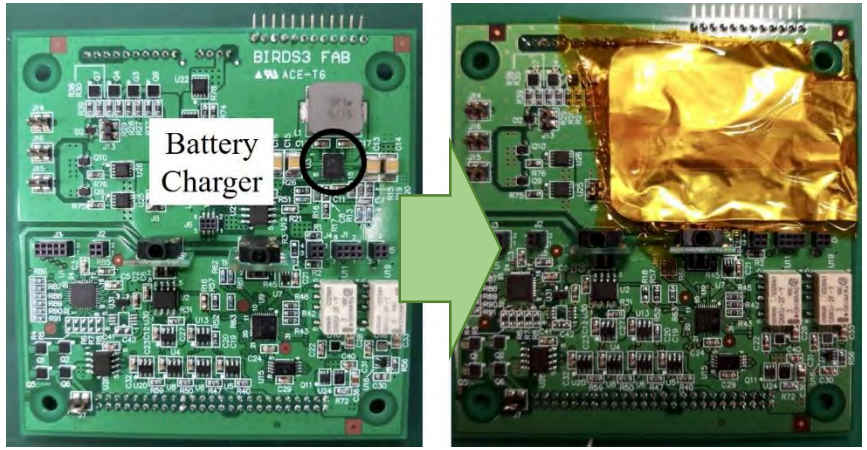
Linear Polarization
Antenna

Circular Polarization
Antenna

We changed from linear polarization antenna to circular polarization antenna. Circular polarization antenna is better than linear polarization antenna by approximately 3dB. If it is better by 3dB, the received and transmitted power becomes double.

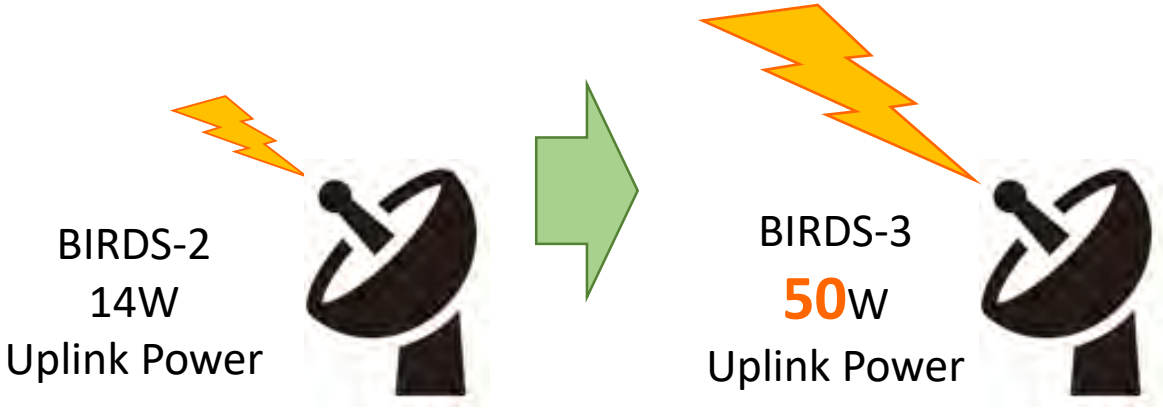
3. Noise shielding – EMC measures





DC/DC converter and battery charger emit noise. It affects SNR (Signal-to-Noise ratio). Noise makes SNR is worse, and the success rate of uplink is reduced. We found these components emit much noise, therefore we covered them by aluminum foil. This is called EMC (Electromagnetic Compatibility) countermeasure.

4. Increased uplink power



If the uplink power is increased, the uplink success rate is also increased. We can transmit up to 50W with our Japanese operation license, therefore we upgraded from 14W to 50W.

5. Decreased communication speed

The communication speed of BIRDS-2 is 9600bps, but it is 4800bps for BIRDS-3. If the communication speed is decreased, the data which we can send and receive in a certain time is decreased but the errors of data are also decreased.

A total of five major changes

09. Farewell to Paolo, our Phd student from Italy

4 Oct 2019 – Paolo cooks pasta for Fall Lab Barbecue

14 Oct 2019 – trying a Japanese steak house

Paolo: It was really fun having you here for several months. Hope you had fun, too.

← 30 Oct 2019
Paolo conducts seminar for Cho Lab students

11 Oct 2019 – Paolo tries Japanese 弁当 (bento)

23 Oct 2019 – Part of Italian delegation to the IAC in Washington, DC

31 Oct 2019 – Halloween at Kyutech

21 Nov 2019 – Checking out Japanese shabu shabu near Yahata Station

ALSO SEE PAOLO'S FAREWELL REPORT IN SECTION 24 OF THIS ISSUE

10. Femi reports on his trip to Southern Hemisphere Space Studies Program (SH-SSP)

An experience report by Femi Ishola

Trip to Australia for the Southern Hemisphere Space Studies Program

[SH-SSP 2020]-Femi Ishola

In January, 2020, I had the honor to serve as a **Teaching Associate** at the SH-SSP Program by the **International Space University** [ISU] and the **University of South Australia**, Mawson Lakes Campus, Adelaide.

Mawson Lakes

Group Photo of Staffs & Participants


Deputy Head of Australian Space Agency


CEO of Inovor Tech

In Australia

Doing my Job as a Teaching Associate

Dinner with NASA Chief Scientist, Dr. Jim Green & Lunar Systems Lead, Dr. John Connolly

Photo after one of my sessions with participants

Dancing Activities led by Goktug: It's not all study, we had lots of fun too!

Cultural Night Costume: Leopard (Amotekun in Yoruba Language)

Space Nerds Karaoke

Aside the feelings of switching abruptly between Australia hot summer and winter in Japan, I had an awesome up-close encounter with **Mount Fuji**, Japan's tallest Volcano, when the aircraft I boarded flew directly over it!

End of report by Femi

11. Kyutech is still the world's No.1 academic operator of small satellites

According to BRYCE, Kyutech is still the No. 1 academic operator of small satellites. And it is largely because of BIRDS.

See page 28 of this pdf.

View the entire pdf here: http://brycetech.com/downloads/Bryce_Smallsats_2020.pdf

Number of Academic Smallsats by Institution ← **Page 28**

12. ISU seeks more students from Japan – message by UNISEC

UNISEC
University Space Engineering Consortium

国際宇宙大学日本卒業生会・JASI
Japanese Alumni Society for the ISU

国際宇宙大学(ISU)入学案内 (概要)

（2020年－2021年版）(rev1)

◎概観

国際宇宙大学 (以下、ISU)は、3人の大学生によって、今後の宇宙業界を担う人材の育成を図る観点から1987年に設立された教育機関である。

それ以来、ISUは世界各国からの学部卒業生や院生、研究者等に対して、ISUの5つの教育プログラム (後述) を提供してきており、いまでは、これら卒業生は、宇宙分野における公的、民間の両部門で、価値ある人的財産となっている。

ISUは仏ストラスブール市郊外に位置し、国際的 (International)、学際的(Interdisciplinary)及び異文化間(Intercultural)の研究というユニークな学習機会を提供している。この大学では、世界各国から学生、教師陣、客員講師たちが集い、宇宙工学、宇宙科学、生命科学等の技術分野のみならず、法律、経済、政策、哲学等の非技術的分野について学習し、情報の共有に努めている。

ISUに入学すると、独特な異文化の雰囲気の中で、共通する課題についてそれぞれ異なる文化的手法で対応しようとすることや、共有する目標についても多様なアプローチをもって達成しようとすること等、一国にいてはなかなか経験できないような多様性という貴重な体験を享受することになる。

See the full webpage here: http://jasi.unisec.jp/

13. Beautiful Sri Lanka -- a member of BIRDS-3

Check out this 43-min. documentary video (by the public broadcaster of Germany) covering a train journey across Sri Lanka. The video is extraordinarily beautiful.

The link for this video: https://www.youtube.com/watch?v=s8VNJ88AFWw

14. 3rd National School on Space and Earth Electromagnetism in Malaysia

Date of event: 5 April 2020

Registration: http://tiny.cc/nsosee2020
Deadline is 5th March 2020.

Technical Workshop theme:
Space Weather Payloads on Japanese Small Satellite

Organized by UiTM

UNIVERSITI TEKNOLOGI MARA

15. New incoming SEIC students of Rwanda

Coming this April, we welcome four new Master Deg. students into SEIC:

- UWONKUNDA Alice
- NDAYISHIMIYE RAFIKI YVES
- NSHUMBUSHIJWENAYO Samuel
- IRENE MANISHIMWE

In the following pages they introduce themselves.

The flag of Rwanda

UWONKUNDA Alice

Rwandese

Supervisor: Prof. Dr. Kenichi Asami

PERSONAL INFORMATION

Birthday: March 28

Motivational for BIRDS-5. Why I wish to be a member:

I have really wished to participate in BIRDS-5 after being selected as a student of the SEIC course to improve my practical skills in satellite development. If we get the chance to be BIRDS-5 members, me and my team members will be able to contribute to the satellite project to implement our mission.

Hobbies:

Reading, watching and listening political and technology news, traveling, singing.

Special qualities: Ability to work very flexible hours, Work effectively both as team member and independently,

About home:

Favorite food: Fruits and vegetables

ACADEMIC BACKGROUND

❖Degrees Taken

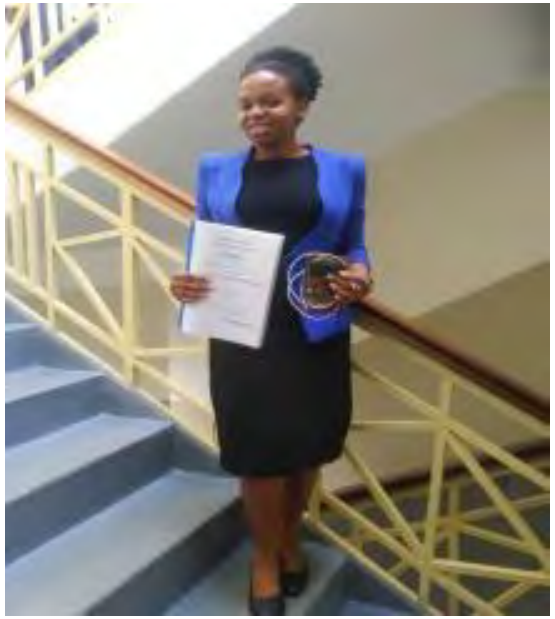
Bachelor Degree in Computer and Software Engineering

❖Academic interests

Software, Space Engineering and Data analysis**.**

❖Skills areas

- **Programming language:** C, PHP, JavaScript, C++, basic knowledge of Python, HTML, CSS, MySQL.
- **Networking**: Installation and Maintenance of LAN, Routing and Switching of routers and switches, Linux server administration.
- **Languages**: Kinyarwanda, English.



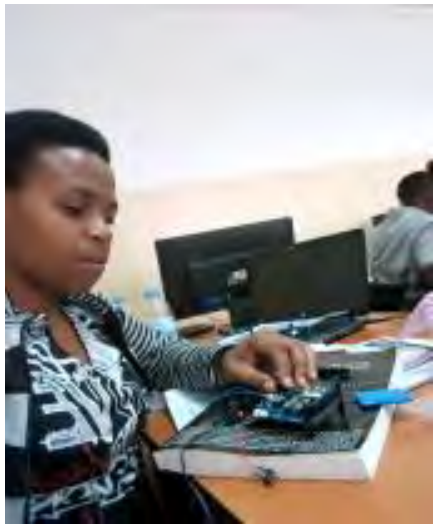
PREVIOUS ENGINEERING PROJECTS

- Design, implementation and testing of Doctor to Patient Communication System as my final year academic project (2019).

- Construction of cube-satellite with 1U to reverse CubeSat development.

Achievements

Certificate of participation HEPTA SAT hands-on training program organized University of Space Engineering Consortium (UNISEC) for making CubeSat with 1U.






OTHER INFORMATION

Some best places in Rwanda to visit:

King's house at Rwanda National Museum

Akagera national park

Lake kivu beach

Volcanoes national park

Virunga National Park

Nyungwe National Park

Eng. NDAYISHIMIYE RAFIKI YVES

Rwandese

Academic Advisor: Prof. Dr. Akitoshi HANAZAWA

SEIC Space Engineering International Course

PERSONAL

- **Birthday:** December 15
- **My motivational for BIRDS-5**
- I was thinking a satellite as one of the expensive cut- ting edge project for least developed countries but since I know Birds project I become con- vinced that it is possible, and I found that it is one of the best way of learning satellite devel- opment which fulfill my dream.
- **Hobbies:** Reading, playing Basketball,
  - Biking, Baking, Traveling
- **About home**
- **Favorite food:** Cassava bread & Chicken
- https://www.visitrwanda.com/

VISIT RWANDA

Visit of Asst. Prof George Maeda Sensei in CLTP 10 at Nihon University (Team Rwanda)

Recommended Places for

Akagera National Park Vast Savannah with wildlife & wetlands

Gorilla National Park Gorilla, Volcano and hiking

Nyungwe Forest National Park

Nyanza Palace Museum

Academic Background

Degrees Taken

- Bachelor's degree in Electronics and Telecommunication Engineer- ing

Academic Interests

- Space Engineering
- Embedded Systems
- Telecommunication Engineering

Academic Work

- Learning Facilitator in the Giants Electronics Lab

Technical Skills

Programming Skills

- C Programming language
- C++ Programming language
- Python Programming language
- Java for Android Programming language
- Assembly language

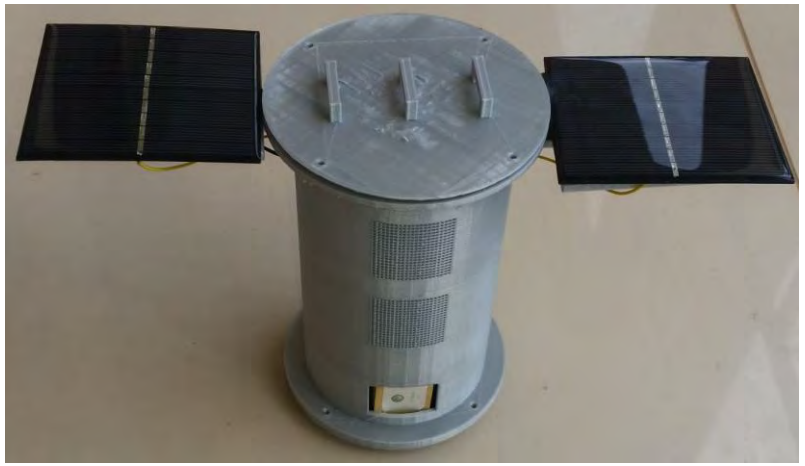
Design Skills

- Printed Circuit Board (PCB) art work
- Model (3D) Design

Languages

- Kinyarwanda (mother tongue)
- English (Proficient)
- French (Intermediate)
- Japanese (Beginner)

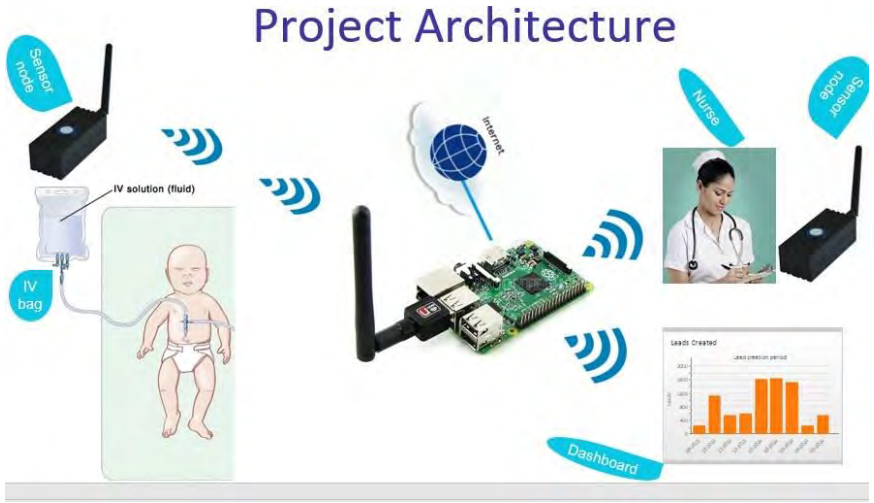
Engineering Projects



CanSat_Rwa; Can sized satellite in Rwanda, can be used as an educational tool of space technology

Telecom Engineer

PCB creation of Mobile online and offline attendance system



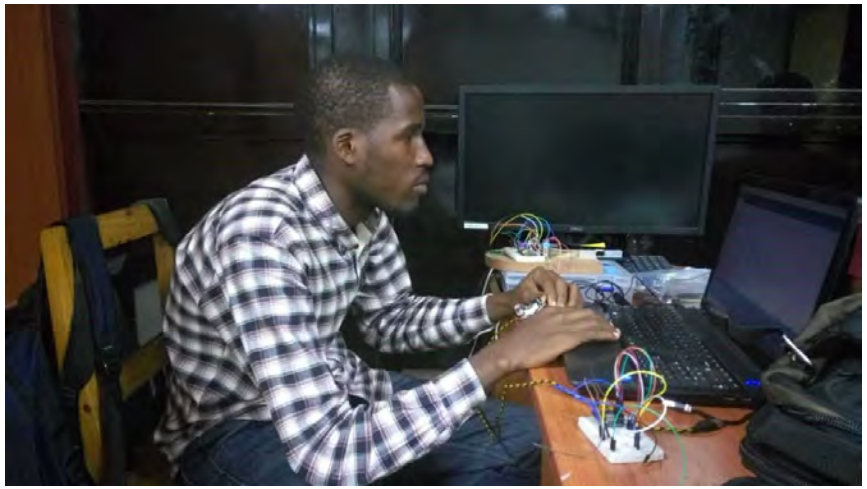
Patient Health Monitoring System

Training

CanSat Leader Training Program (CLTP10)

HEPTA-Sat training Program

Fiber-Optic Training workshop



ICT Engineer Development Training Course (IoT and Leadership) & Rapid Prototyping for Internet of

Eng. NSHUMBUSHIJWENAYO Samuel

Rwandan

Supervisor: **Prof. Dr. Mengu Cho**

Space Engineering International Course

Personal Information

- **Birthday:** January 01.
- **Motivation for Birds**

I am very motivated and enthusiastic of joining BIRDS-5. As I realized that it relates theoretical courses with practical space engineering skills like launching of built satellites and operating them for community based interests. Again, my contribution (Structure Modelling and Simulations; Vibrational and Thermal testing) will ease and comfort tasks scheduled in BIRDS-5.

- **Hobbies**

Watching music and basketball; playing football and chilling with friends.

- **About Home**

My favorite food is **Milk**; chips and meat.

I recommend BIRDS project members to visit Genocide Museum; Akagera and Nyungwe National parks.

Academic/ Professional Background

❖ **Academic qualification**

Bachelor Degree in Mechanical Engineering

❖ **Academic Interests**

➔ Mechanical design

➔ Space systems

➔ Automobile maintenance

➔ Hydraulic and Pneumatic systems, Vibration and Thermodynamics

❖ **Work History**

➔ I worked at METROPOLE MOTORS Ltd as maintenance; inventory and safety management.

➔ I worked in Empower Energy Design as Vice Coordinator_chapter Rwanda and Mechanical Designer.

Engineering Projects

- A Case Study At Pfunda Tea Company “Improvement of the Efficiency of Compacting and Weighing Systems.”
- Designing, manufacturing and testing of small renewable energy systems.
- Automobile maintenance, repairing and servicing.

Trainings

- Reverse Engineering of HEPTA-SAT training and focused on understanding subsystems.
- HEPTA-SAT training on CubeSat prepared by UNISEC Global.
- Space and Telecoms Fellowship prepared by LEAPR Labs.






Other Information

- **Mechanical related softwares**

  SOLIDWORKS
  Matlab
  LISA 8.0
  Solar Cert
  ANSYS
  Basic Programming ©
  Python.

- **Languages**

  Kinyarwanda

  English

  French

- **Personal attributes**

  Hard worker

  Result oriented

  Collaborative

  Punctual

Eng. IRENE MANISHIMWE

RWANDA

Supervisor: Prof. Dr. Mengu Cho

PERSONAL INFORMATION

❑ **Birth day** January 01

❑ **My motivation for joining BIRDS-5 project.**

I am a member of space program in my home country, Rwanda. I am grateful to be a part of this program since I want to contribute in development of space sector. Joining SEIC and BIRDS-5 project as a member at Kyushu institute of technology will enable me to understand space and be well armed with technical skills for satellite development.

❑ **Hobbies**

Playing basketball & football, visit park, being with friends, fellow men & women are what I like at most.

❑ **About home:**

I like vegetables especially cauliflowers

I recommend to visit places like Volcanoes mountain (visit gorillas) and Nyungwe national park

ACADEMIC QUALIFICATION AND PROFESSIONAL EXPERIENCE

❑ **Academic qualification**

I hold BSc in Mechanical Engineering.

The degree is issued by University of Rwanda College of Science and Technology.

❑ **Academic interests**

My academic interests are: **Space engineering** (especially space environment and satellite development), **Heat transfer, Thermodynamics and Mechanical design.**

❑ **Work history**

I was a mechanical engineer in **Certitude Engineering ltd**. The company basically design **HVAC** systems (**HVAC stands for heat, ventilation and air conditioning**)

After defending my undergraduate thesis

Working in Certitude Engineering Ltd

OTHER INFORMATION

❑ **Software I worked with**

1. SOLIDWORKS
2. MATLAB

❑ **Programming languages**

1. C language
2. Arduino programming

❑ **Other skills**

1. Air conditioning installations
2. Water treatment plant design
3. Plumbing
4. CCTV installation

❑ **Languages**

1. Kinyarwanda (native)
2. English
3. French
4. Swahili

ENGINEERING PROJECTS AND TRAININGS

- **Recycling of used engine oil as alternative source of energy**

The aim of the project is to do processing of used engine oil so that it can be used as a fuel in boiler for tea factories.

- **Automatic ebb and flow hydroponic system for indoor vegetables.**

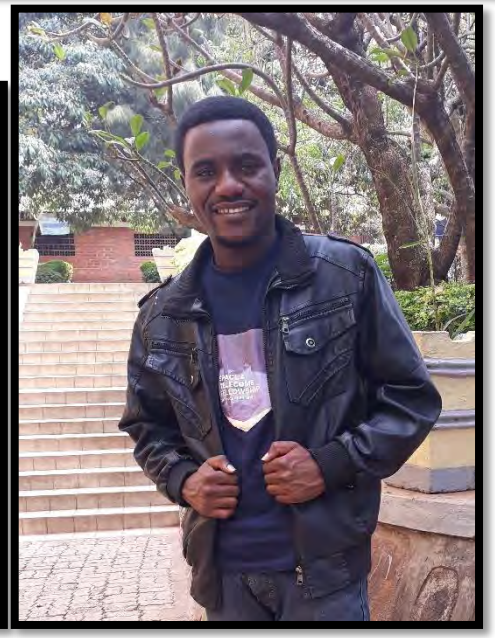
This is my final year project. The main objective of this project is to design and implements automatic ebb and flow hydroponic system.

- **Reverse engineering of HEPTAsat**

In this project we do a reverse engineering of HEPTAsat for better understanding satellite development.

- **Space and Telecom fellowship organized by LEAPR lab**

End of introductions by the four students of Rwanda



16. Report about UiTM undergrads who visited Kyutech under Mobility Program

Universiti Teknologi MARA | Fakulti Kejuruteraan Elektrik

INSTITUTION OF ENGINEERS MALAYSIA
UiTM STUDENT CHAPTER

Kyutech
Kyushu Institute of Technology

Report on Nanosatellite Mission Idea Review 2.0: UiTM - Kyutech

An International Mobility Program (IMP)

February 5th, 2020

Prepared by: Muhammad Hasif bin Azami

OVERVIEW

On January 20 – 25th, 2020, a second symposium related to Mission Ideas for UiTMSAT-2 Nano-Satellite and Siswasat UiTM (Cansat project) was conducted in Kyutech by LaSeine and UiTM students. For this year, the student advisor, Dr. Hashimah and 11 undergraduate students (from Universiti Teknologi MARA (UiTM), Malaysia) were the participants of the program. This time the objectives of the symposium were to further discuss and gain more feedback of the mission ideas for the next UiTM nanosatellite project (UiTMSAT-2), UiTM Cansat project, and UiTM space activities.

On the first day (January 22nd), the symposium began with a welcoming speech by Maeda-sensei and followed by a short lecture on satellite development by Dr. Necmi. After that, sharing experienced and lesson learned were presented by the BIRDS member representatives; Ibukun (BIRDS-1), Adrian (BIRDS-2), Dulani (BIRDS-3) and Hoda (BIRDS-4). Later, the students were divided into 4 groups with 3 different mission ideas and 1 space program with their respected mentor.

On the second day (January 23rd), the final presentation were presented by the students in front of the panels; Maeda-sensei, Masui-sensei, and Kim-sensei. Lastly, the symposium ended with a closing speech by Prof. Cho and a group photo session.

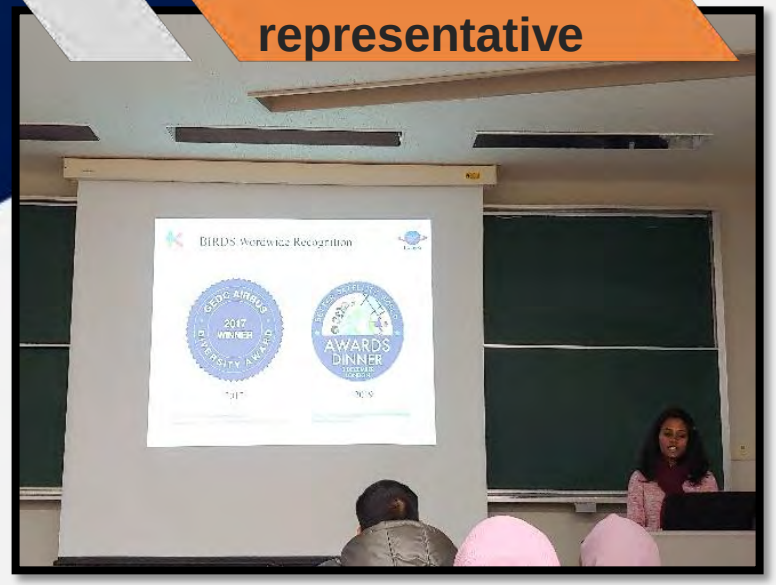
SHARING SESSION BY BIRDS MEMBERS

BIRDS member representatives shared their experiences on the CubeSat development

BIRDS-1 representative

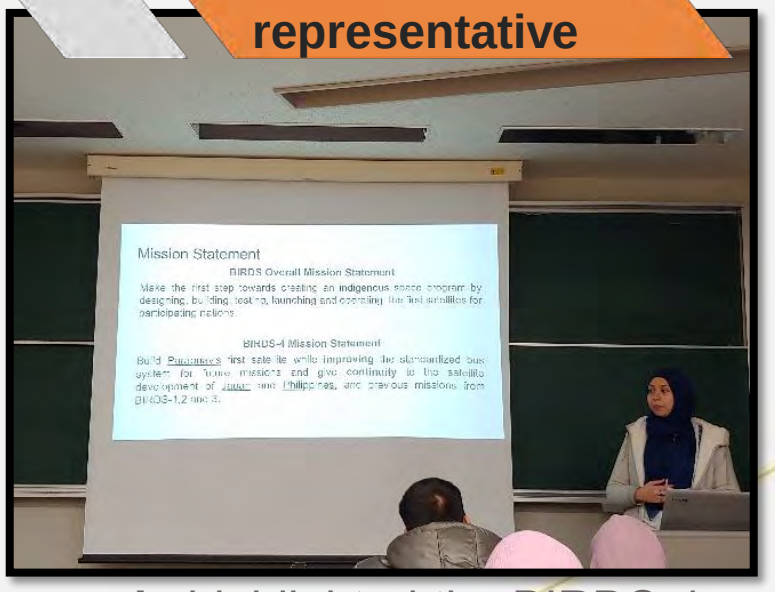
Ibukun highlighted what do you need to prepare yourselves before develop the CubeSat

BIRDS-3 representative



Dulani highlighted the BIRDS-3 project, the satellite operation, and what data has been collected

BIRDS-4 representative

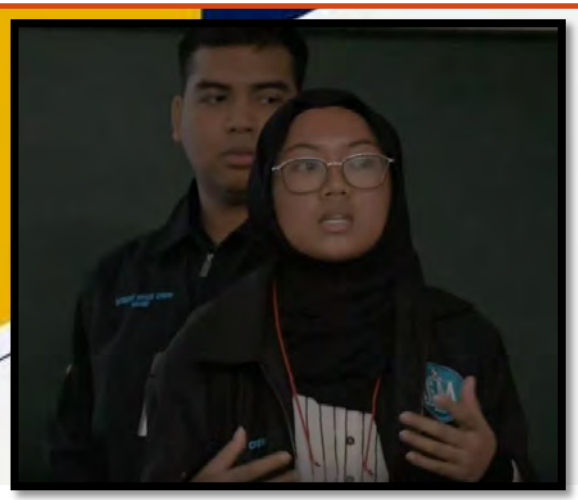


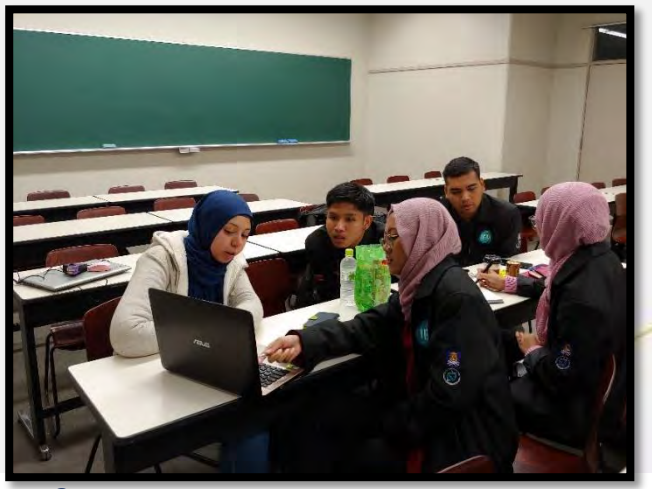
Hoda highlighted the BIRDS-4 project and the current status in which development stage are they now

MISSIONS PROPOSED

TURBIDITY MISSION

- Measurement of the degree to which the water loses its transparency due to the presence of suspended particulates
- Water pollutions happened in several rivers; Sungai Kim Kim and Gua Musang area
- Mission objective – to compare the data between the image from the satellite and reading from in-situ measurement





MISSIONS PROPOSED

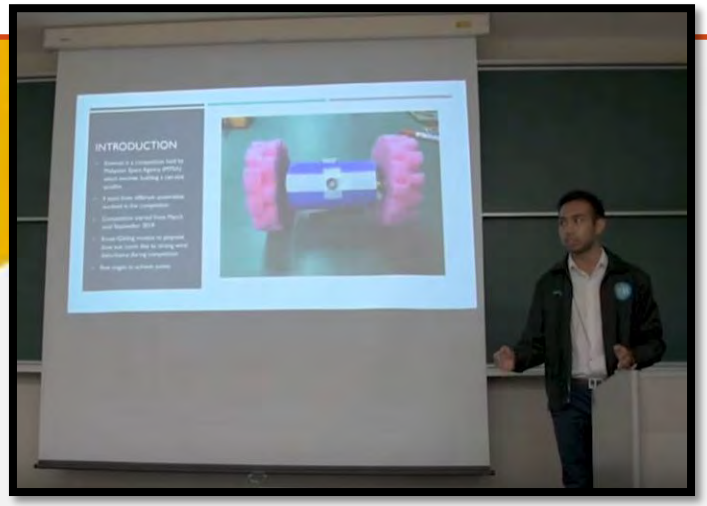
MARITIME SURVEILLANCE MISSION

- Many illegal trans-boundary activities happened due to lack of surveillance
- Drug smuggling and fishermen abducted reported around Malaysia sea
- Mission objective - to explore the capabilities and complement current terrestrial daytime maritime infrastructures through satellite imaging based surveillance system

CANSAT PROJECT

SISWASAT UiTM

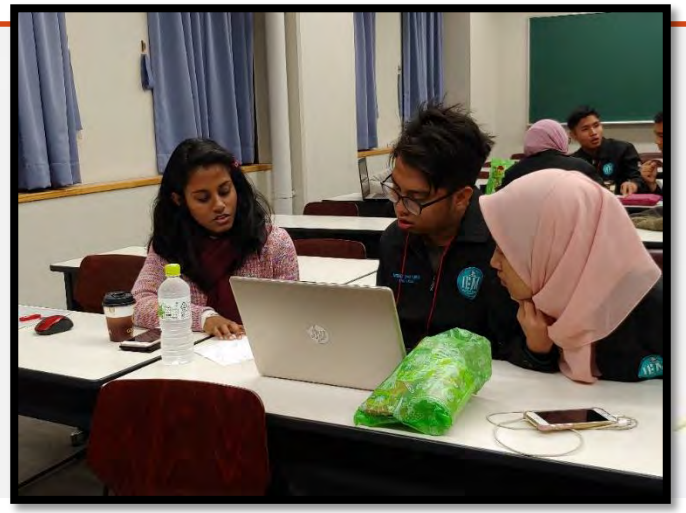
- Started in early 2019 and joined the Malaysian Space Agency Siswasat competition
- Won the 1st place; 9 teams from different Malaysian universities involved
- Discuss any improvement that can be made for the future competition



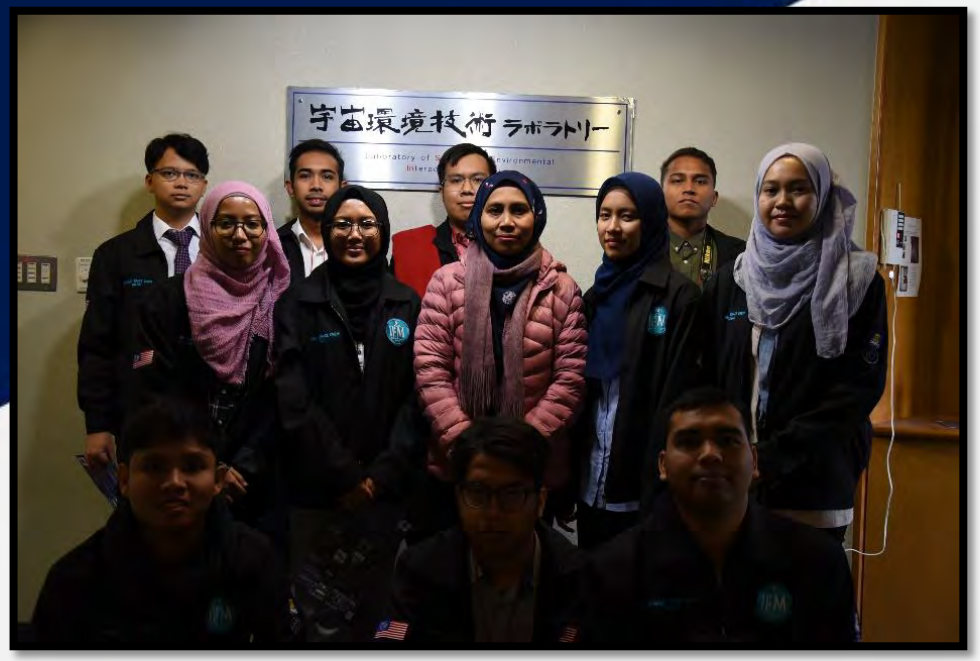
SPACE PROGRAM

UiTM SPACE CREW

- Established in the end of 2018; 20 active members
- Main objectives – outreach activities and satellite operators
- In 2020, Space crew will be upgraded to UNISEC



LaSeine LAB TOUR



Similar to last year, the advisor and students visited LaSeine Laboratory, ground station, and Center for Nanosatellite Testing building. The tour was conducted by Mr. Hasif Azami

GROUP PHOTOS

LAST PAGE OF THIS REPORT

Finally, the UiTM undergraduates had a wonderful experienced and received many feedback from the discussion of the mission idea. Some of them were interested to pursue their study in the space field. Other than LaSeine program, Mr. Wakabayashi had also organized other programs like visiting the Toyota Motor Kyushu factory and many more. We hope the symposium will be continue in the future; Kyutech students visit to UiTM!

UiTMSAT COLUMN

Column No. 2

Editor: FATIMAH ZAHARAH BINTI ALI
PhD CANDIDATE, LABORATORY OF SPACE WEATHER AND SATELLITE SYSTEM
FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA (UiTM), SELANGOR, MALAYSIA

UNIVERSITI TEKNOLOGI MARA

UiTM Sentiasa Di Hatiku
"UiTM Always in My Heart"

VISITS TO PENSMITH STEM INTERNATIONAL SCHOOL AND ASTROBERRY

Centre for Satellite Communication (UiTMSAT), Faculty of Electrical Engineering, UiTM, has conducted a visit to two institutions in Bangkok, Thailand, to discuss on the space collaboration project and the possibility for other strategic plans.

UiTMSAT was represented by the Director of the centre, Associate Professor Ir. Dr. Mohamad Huzaimy Jusoh and me. The first visit was conducted at Pensmith STEM International School (PSI) with the representative from F1 School, Sir Robert Ortiz and delegation from University of Perpetual Help System DALTA (UPHSD), Dean Lorena Ilagan. This visit was a follow-up discussion of ASEANSAT

Figure 1 : (From left) Aldrin and Sir Robert from PSI, AP. Ir. Dr. Mohamad Huzaimy from UiTMSAT, Dean Ilagan from UPHSD, and me taking picture in front of both PSI and F1 School gateway in Bangkok.

project. Through this meeting a consensus has been reached where Letter of Intent (LoI) has been signed off by the three stakeholders for the project's commencement.

Figure 2: Early discussion during breakfast before we went to PSI.

Figure 3: AP Ir. Dr. Huzaimy was explaining about Obitron to other meeting members.

Figure 4: Sir Robert brought the meeting members to site tour the PSI building and facilities.

Figure 5: The meeting was conducted in one of the F1 room in PSI.

Figure 6: Project leaders of each country (Malaysia, Philippines and Thailand) were exchanging the LoI during the signing activities

Figure 7: The understanding of collaboration project was legally acquired through LoI agreement.

Figure 8: The members of the meeting in Astroberry (MCMV, UiTM, and Astroberry representatives) were having early discussion during lunch at Nouvo City Hotel.

The visit in Bangkok continued with the second site visit at Astroberry on 6th February 2020. Astroberry is a start-up company of space activities in Thailand. This second meeting was an initiative to explore strategic project collaboration potential between Astroberry, MCM Value Sdn. Bhd. (MCMV), UiTM, and King Mongkut's University of Technology North Bangkok (KMUTNB). For information, MCMV provides consultation services for strategic planning, total assest management systems, value management and value engineering for projects, products, facilities, services and systems. Together with these stakeholders, the visibility of the expertise in the country can be achieved by the future collaboration projects with other countries. By doing this, the ranking of the stakeholders could be elevated through the international projects. Thus, more thing will come for space activities exposure.

Figure 9: Dr. Phongsatron from KMUTNB & Astroberry with other members from Malaysia (MCMV and UiTM) at the lobby of Novou City Hotel, Bangkok.

Figure 10: From left, AP Ir. Dr. Huzaimy from UiTM, Dr Pongsatorn from KMUTNB/Astroberry, Mr Jusatayanond and Mr Suwannatat both from Astroberry, and Mr Masnizan and Dr Mazlan both from MCMV.

Figure 11: Dr Pongsatorn was explaining about the facilities and equipments available in Astroberry.

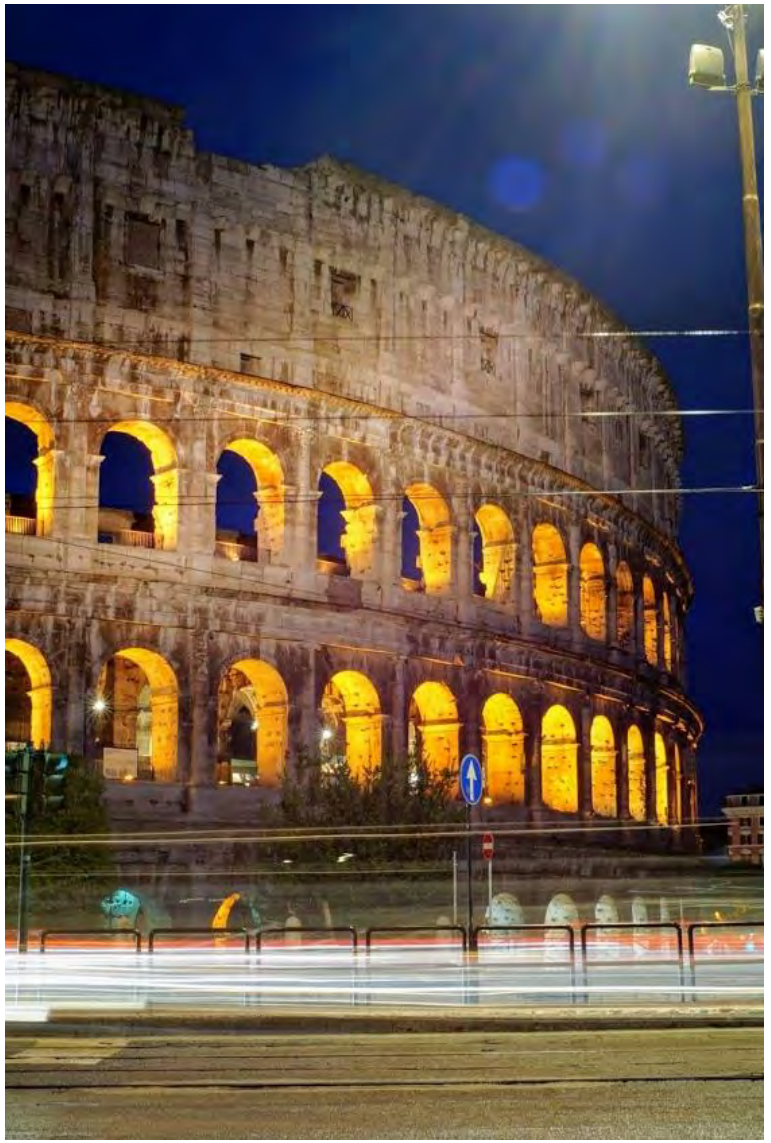
Figure 12: Some of the meeting's members taking picture near the DIY clean room in Astroberry.

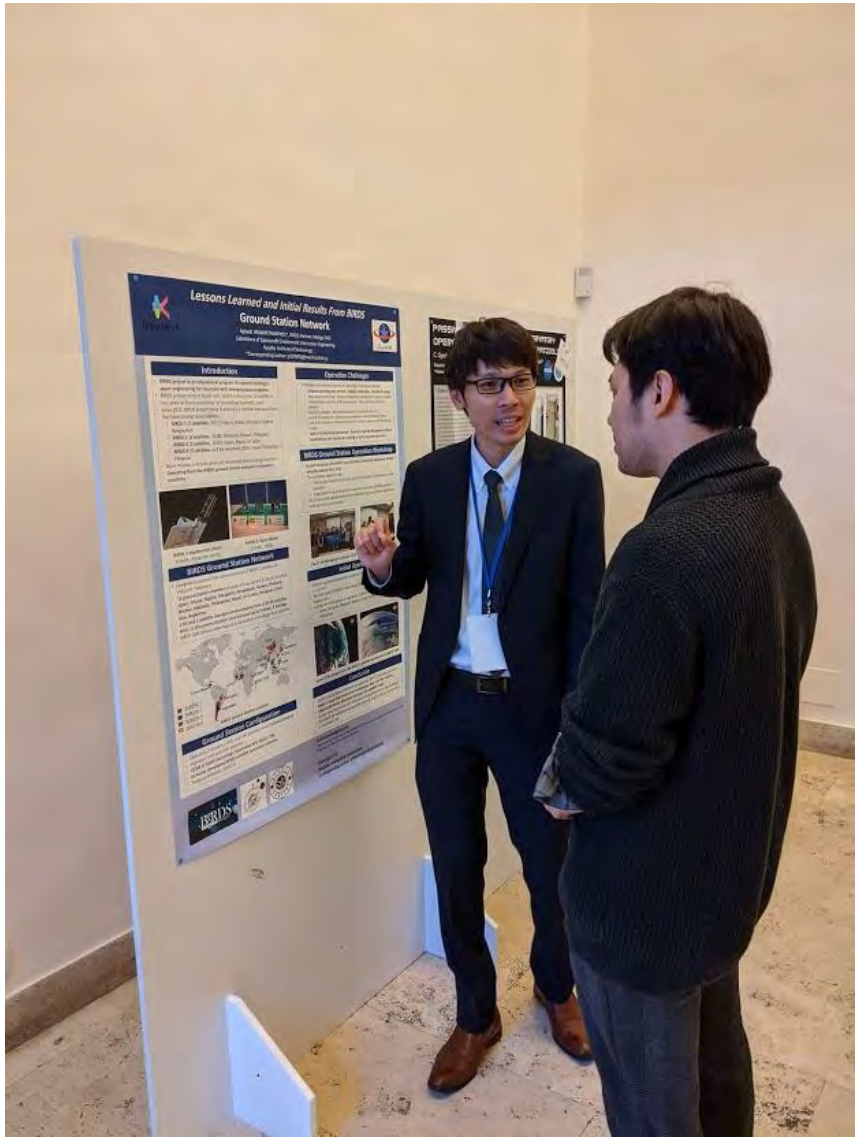
Figure 12: Dr Mazlan and Mr Masnizan from MVMC taking picture with the one of the Astroberry's works.

End of Malaysia's Column

18. 5th IAA CubeSat Conference 2020, Rome

A report by Abhas and Apiwat





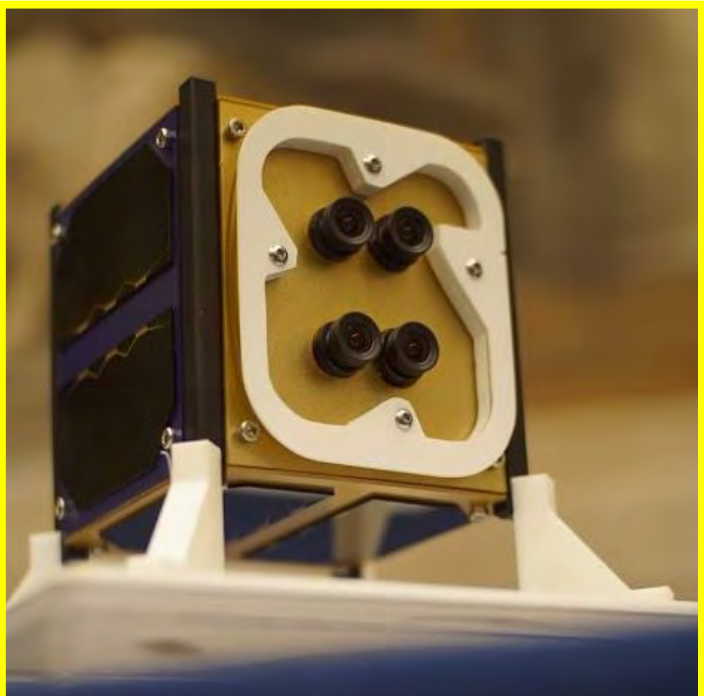
Venue

Presentation Hall

5th IAA CubeSat Conference was held from 28th -31st January of 2020

Exhibition Hall

Exhibitions



BCCSAT-1 is being built by high school students in Thailand and the project is estimated to have cost $1million

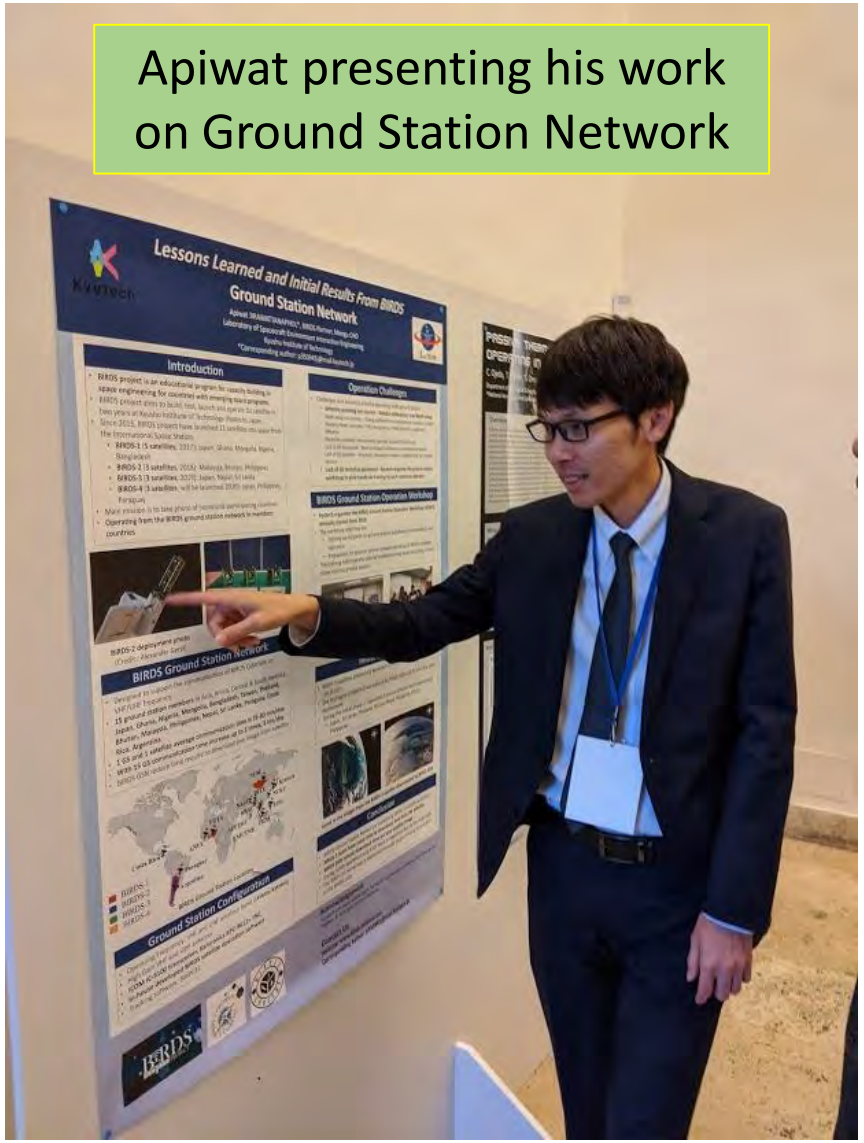
Astroberry from Thailand

Presentations (1)

Prof. Cho was an invited speaker for the conference

He spoke about CubeSat Interface Standards

Presentations (2)

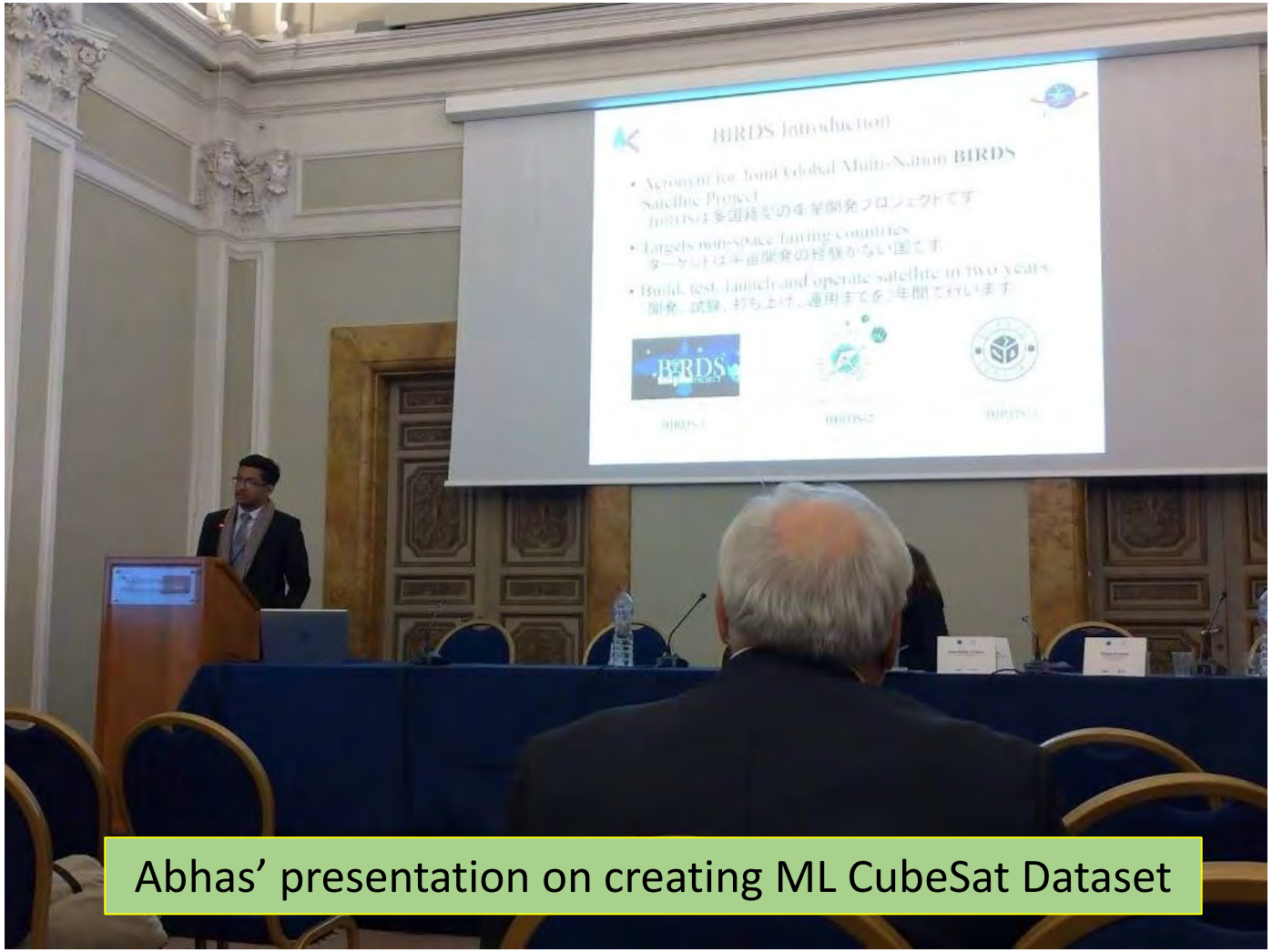


Apiwat presenting his work on Ground Station Network

Presentations (3)

Kirill Balagodarov is a *11 year old kid* from Ukraine and his presentation was on Space Debris

Presentations (4)

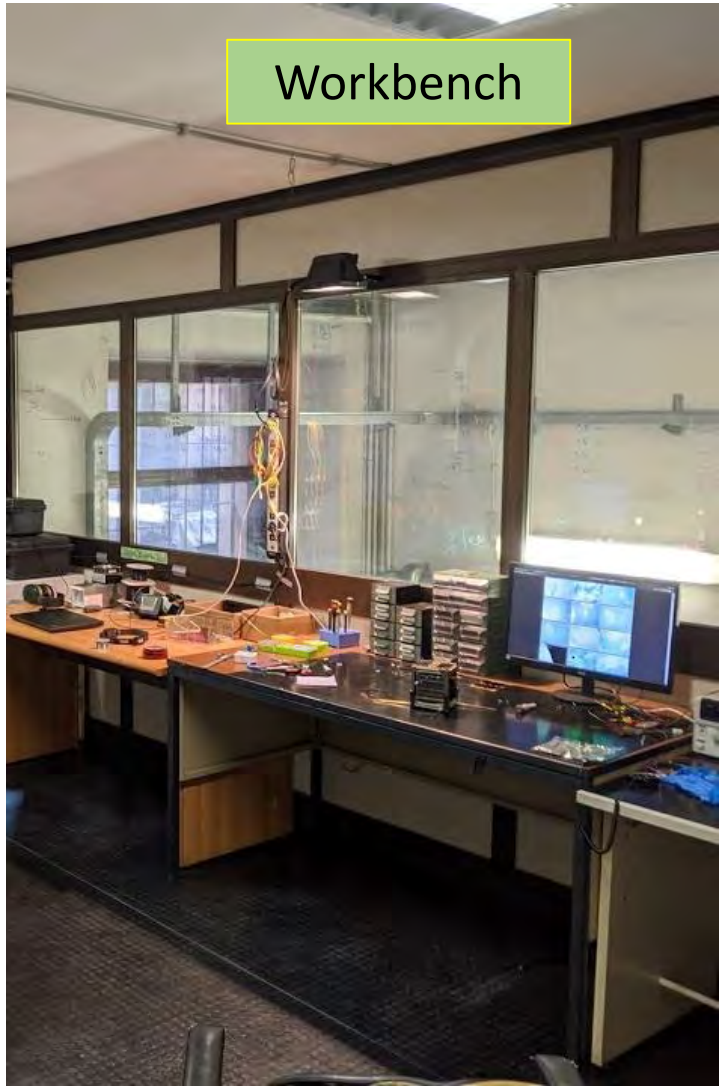


Abhas' presentation on creating ML CubeSat Dataset

Kirill and Abhas share the same hairstyle

Break time during Conference

Visit to Sapienza- University of Rome CubeSat Team



19. Bhutan Space Week, 17-23 Feb 2020

For the 1st Bhutan Space Week, the Division of Telecom and Space (DOTS), Department of Information Technology and Telecom (DITT) is organising the following activities:

- Space Quiz Competition (Register here)
- Space Conference
- BHUTAN-1 Ground Station Operation
- Space-themed Movie Screening

This event will be written up as a report in the next issue of this newsletter … so stay tuned.

Website for this event: https://www.dit.gov.bt/bhutan-space-week-17-23-february-2020

Participant Reports

Editted by

Apiwat (Thailand) and Pooja (Bhutan)

12 Feb. 2020

(both members of the BIRDS Project of Kyutech)

Individual Report from the GS Workshop Participants

Participant: Ming-Xian Huang, Department of Electrical Engineering, NCKU, Taiwan.

Individual Report from the GS Workshop Participants

Agencia ESPACIAL del PARAGUAY

3rd BIRDS Ground Station Operation Workshop

Name: Eladio Javier Ferrer Torres
Institute: Paraguay Space Agency
Country: Paraguay

What you've learned during the workshop?

The workshop was very useful since we get very valuable information ground station installation, setup and the tips and tricks related to their daily operation. It also provided us an opportunity to know more about BIRDS-4 operation and store and forward of BIRDS and the future KITSUNE

How do you feel?

I am very satisfied since this kind of workshop gives to you a space to share experiences. In our case, to learn about other countries experiences about ground station operation. Also, it was interesting to meet people from other countries and find culture similarities even if we were coming from far away.

What part of the workshop that you like?

Is very difficult to decide since everthing was very interesting, but I enjoyed most the whole process to analize the antennas, rotators calibration, and operation demonstration during BIRDS satellite pass. Also, it was nice to see BIRDS -4 team show us how a small satellite is able to perform many tasks. I really appreciate the effort performed by my colleagues from my country and the whole team of BIRDS and KITSUNE.

I

Individual Report from the GS Workshop Participants

Agencia ESPACIAL del PARAGUAY

3rd BIRDS Ground Station Operation Workshop






Individual Report from the GS Workshop Participants

Name: Luis Miranda Kunert
Institute: National University of Asunción
Country: Paraguay

What do you learn during the workshop?
During this workshop, I learnt a lot both about VHF/UHF ground station stuffs and the operation mode of the Cubesats. Besides, one more interesting topic-issue was related with Kitsune and the opportunity that more Paraguayan Universities, educational center have in the future to get involved with the Kitsune and satellite-project related in order to promote Capacity Building in Research & Innovation.

How do you feel?
I am really thankful with Kyutech to hold the Ground station Workshop and to allow more than one Paraguayan team could participate in it. Also, Due Paraguay will build its first Ground Station, it was both unique and valued opportunity to exchange ideas, to hear experiences related with successful and difficulties that other delegations had during the operation of the Ground station before. Also sharing our culture, and experiences with other participants are just priceless.

What part of the workshop do you like?
I was really interested in remote data collection mission for BIRDS-4 satellite. Because mission concept is still being improved and we had the chance to participate and giving some ideas in order to standardize the data packet format. That will be useful for our country and similar with our implementing project.

Any suggest activities for add in the next workshop (in any)
For next workshop, I would like that each participant could hands-on activity of all-mode-operation of the BIRDS Constellation, and at least a simulation on testing communication of ground sensor terminal (GST) and satellite because GST would be installed I remote areas, automation of GST is really an issue.

Individual Report from the GS Workshop Participants

Individual report for 3GSWS

Name: Tuguldur Ulambayar
Institute: National University of Mongolia
Country: Mongolia

What you learn during the workshop

During this workshop, we discussed many topics including Birds 3 project and the operational reports, Birds 4 project missions and operational concepts. We also familiarized with the KITSUNE satellite and its mission concepts. The workshop also reinforced my knowledge of satellite ground station systems and its communication components. The practical experiences that acquired from 3GSWS will be useful for our ground station's further improvement of operation and maintenance.

How do you feel

Thank you very much to the Kyutech and JSPS for inviting me to participate in the GSWS. It was not only making new friends throughout the world, but also marvelous to meet my old friends in Kyutech. Generally, it was unique opportunity to exchange ideas, culture, and experiences with other participants.

What part of the workshop you like

I was really interested in remote data collection mission for KITSUNE satellite. Because mission concept is very useful for our country and similar with our implementing project. Moreover, other sessions were also interesting and educative.

Individual report for 3GSWS

Name: Anne Vera A. Candelaria
Institute: STAMINA4Space Program, STeP-UP Project
Electrical and Electronics Engineering Institute, University of the Philippines - Diliman
Country: Philippines

What you've learned during the workshop?

The workshop has taught me valuable information especially on the ground station setup and operation where I can use the knowledge to fix and improve our ground station. It also prepares us for the store and forward mission of BIRDS-4 and KITSUNE satellites that will soon be in orbit.

How do you feel?

I am very happy to be a part of this workshop. It was my first time to experience this kind of workshop where you meet different people from different nations. It was nice to learn and find similarities about their country and their culture. I feel lucky that we were lectured and guided by the experts in this field. I am very thankful for this opportunity.

What part of the workshop that you like?

I enjoyed the actual demonstration of the lectures we had like the calibration of antenna and rotators, how the KIT ground station operate during BIRDS pass and the demo for the BIRDS-4 APRS digipeater. The presentation about the low cost ground sensor terminal was also helpful in serving as our guide for building our GST that will soon be used for the store and forward data collection. I also enjoyed the campus tour wherein we were able to see the testing facility for small satellites of Kyutech.

3rd BIRDS Ground Station Operation Workshop

The BIRDS GS Workshop is a great avenue for ground station operators to discuss issues and learn from one another about their experiences in the daily ground station operations. It will also be helpful for those countries who will be putting up their ground station in the future. This workshop enabled us to reach out to each other so that together we can solve and make improvements in our ground station. Kudos to the BIRDS GS team who made this workshop a success. どうもありがとうございました









Individual Report from the GS Workshop Participants

Name: **Dawa Phunsum Lodey**
Institute/Agency: **Division of Telecom & Space**
Department of IT & Telecom, Ministry of Information & Communications
Country: **Bhutan**

What you learn during the workshop?:

This workshop provided a platform to familiarize oneself with the operation of Ground Station. I experimented the calibration of the antenna using Vector Network Analyzer (VNA). I also became familiar with BIRDS-4 satellite missions and the concept of operations. I also knew about the KITSUNE satellite and the mission concepts. One of the most important takeaway is the concept of Ground Sensor Terminal (GST) and its useful applications. I also learnt on the data packet format and the LoRA missions as well.

How do you feel?:

I feel more competent than before in the field of Ground Station. Also, I feel self-satisfied with the knowledge and experiences I acquired.

What part of the workshop you liked?:

I mostly liked the hands-on activity like the calibration of antenna and using the EM model of BIRDS-4. The other part of workshop which I liked was the group activity on the Ground Sensor Terminal.

Individual Report from the GS Workshop Participants

During the group activity on GST.

Excursion: Visit to Nanzoin Temple

Acknowledgement:

I would like to thank the organizers of 3rd GSWS for their immense effort in making the workshop a success and helping the participants in making our stay pleasant. I would also like to thank Japan Society for the Promotion of Science for funding the workshop. Apart from the workshop, I enjoyed exploring the Japanese culture and the way of their life. I will cherish every moment I spent in Japan.

Individual Report from the GS Workshop Participants

Name: Dibodh Lamichhane
Institute: Nepal Academy of Science & Technology
Country: Nepal

It's an extreme Gratification to be the part of 3rd BIRDS Ground Station Workshop that made my Journey to Kyutech (Kyushu Institute of Technology), where my country First Nano Satellite was materialized.

The effort of Workshop Organizer is highly appreciated to made me understand every stuff of workshop in my perception level. Very excited for the development of Ground sensible Terminal for KITSUNE.

There is beautiful saying " keep Your Options Open the World has More opportunities" Being the part of Great circle of work on BIRDS project through this workshop ,provided me new dimension of learning, understanding & network Platform from Asia, Africa to North America.

Excursion Moment in the Land of Rising Sun:
Magnetic Levitation , Power of Electromagnetism had excited myself from my college days. Bullet Train journey was one of my first thing to feel in Japan. It was Exhilarating experience because Shinkansen is nothing but a wonder of Technology used by Japan since 1964. Roaming around Mojiko Retro, beauty of Kokura Castle and Garden is still fresh in my mind.

The lifelong inspiration is Matsumoto Seicho memorial Museum where an introduction to the broad array of creative activities of famous detective fiction writer was observed. His manuscripts, possessions, his house-from library to his drawing room gave a sense of his passion as a writer.
Japanese Children is another wonder of Nippon. These children enthusiasm, cheerful and smiling faces touched my heart. Their love and respect to their culture and Civilization is admirable

Individual Report from the GS Workshop Participants

Individual Report from the GS Workshop Participants

NAME: FATIMAH ZAHARAH ALI
INSTITUTION: CENTRE FOR SATELLITE COMMUNICATION,
FACULTY OF ELECTRICAL ENGINEERING,
UNIVERSITI TEKNOLOGI MARA (UiTM)
COUNTRY: MALAYSIA

UNIVERSITI TEKNOLOGI MARA

UiTM Sentiasa Di Hatiku
"UiTM Always in My Heart"

I am so grateful to be invited as participant representing my team for the 3rd GS Workshop. Honestly, it was a very interesting and mesmerizing event for ground station knowledge delivery, discussion, and idea exchanges from other countries who operate the BIRDS satellites. Personally, I have learned a lot of new things about the ground station and its related matter that I believed I could not acquire such thing if I did not attend the workshop. It has improved my knowledge and skills since there was also a hands-on activities, in operating and understanding about the operation of satellites including the new satellites of BIRDS-4 and Kitsune. UiTM's ground station was in a stage of troubleshooting and maintenance due to the lightning strike since few months before the workshop commenced.

During the installation and operation session

Antenna calibration

Learning on how to operate BIRDS-3 satellites

Learning about LoRa store and forward

I was presenting the updates of my country GS.

Individual Report from the GS Workshop Participants

In the workshop I have found the real issue of our GS where previously I couldn't see. I have brought the information back to my country to share with the team and to solve the issue in our ground station. Problem has solved! Thanks to the facilitators and comments from other participants.

But that was not all of it, besides of learning the operation, installation and troubleshooting process of ground station, I have also learned some of the Japanese cultures and history during the event. Me and the newly met friends (the other participants) went to the Kokura Castle, Japanese garden, and Matsumoto Seicho Memorial Museum. It was a very splendid experience.

During my stays in Japan for 3rd GSW, I was so happy and I felt the time flies so fast. A week isn't enough for me, there is so many things to learn. However, the event was handled perfectly by KYUTECH, well done! I am looking forward to attend next GSW as I believe new knowledge and information will be obtained. I love the workshop so much!

During the hands-on activity on operating BIRDS-4 satellite.

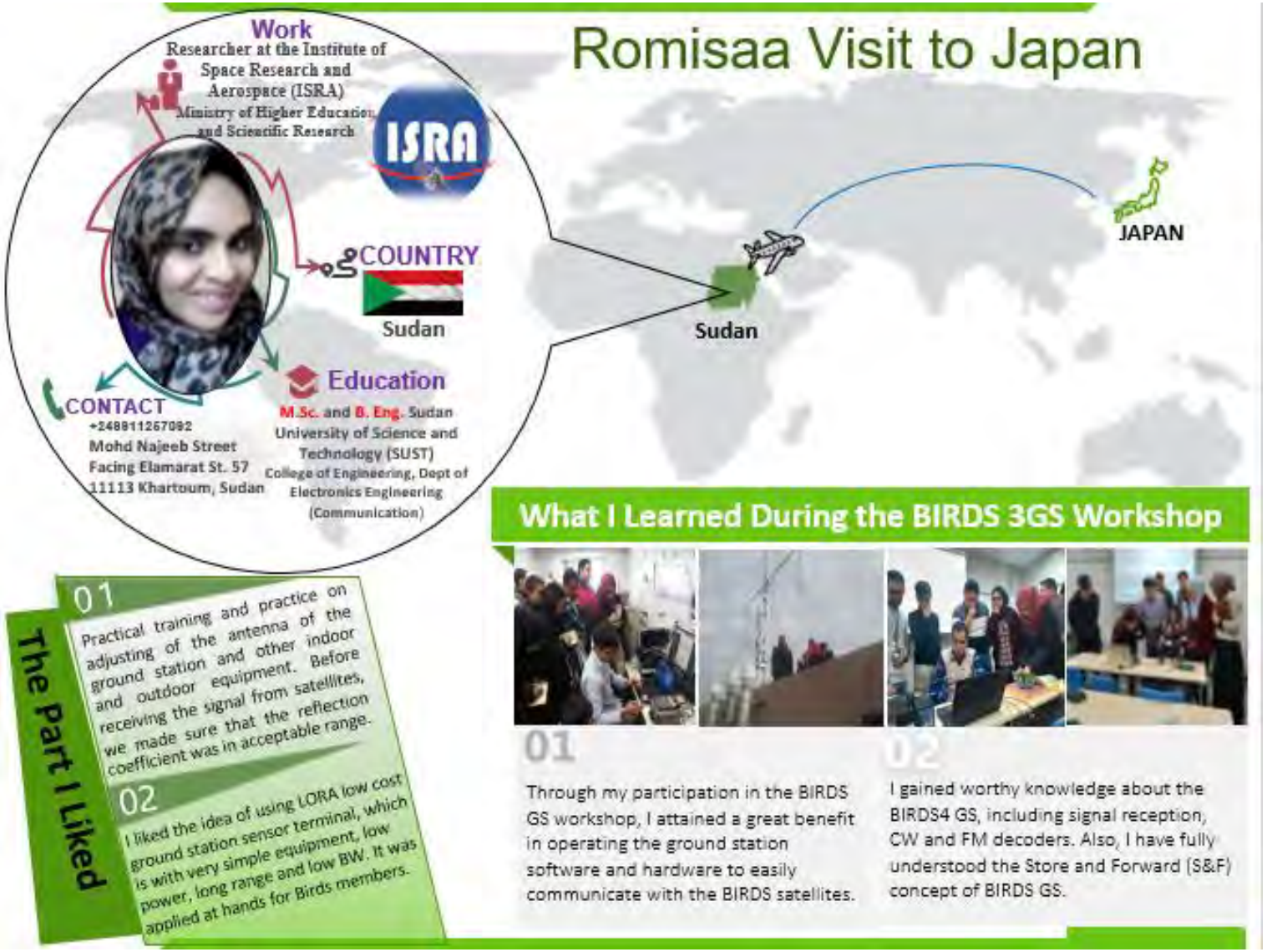
Discussion activity on possible ground sensor terminal in each participated country.

Me and other participants visited the Kokura Castle

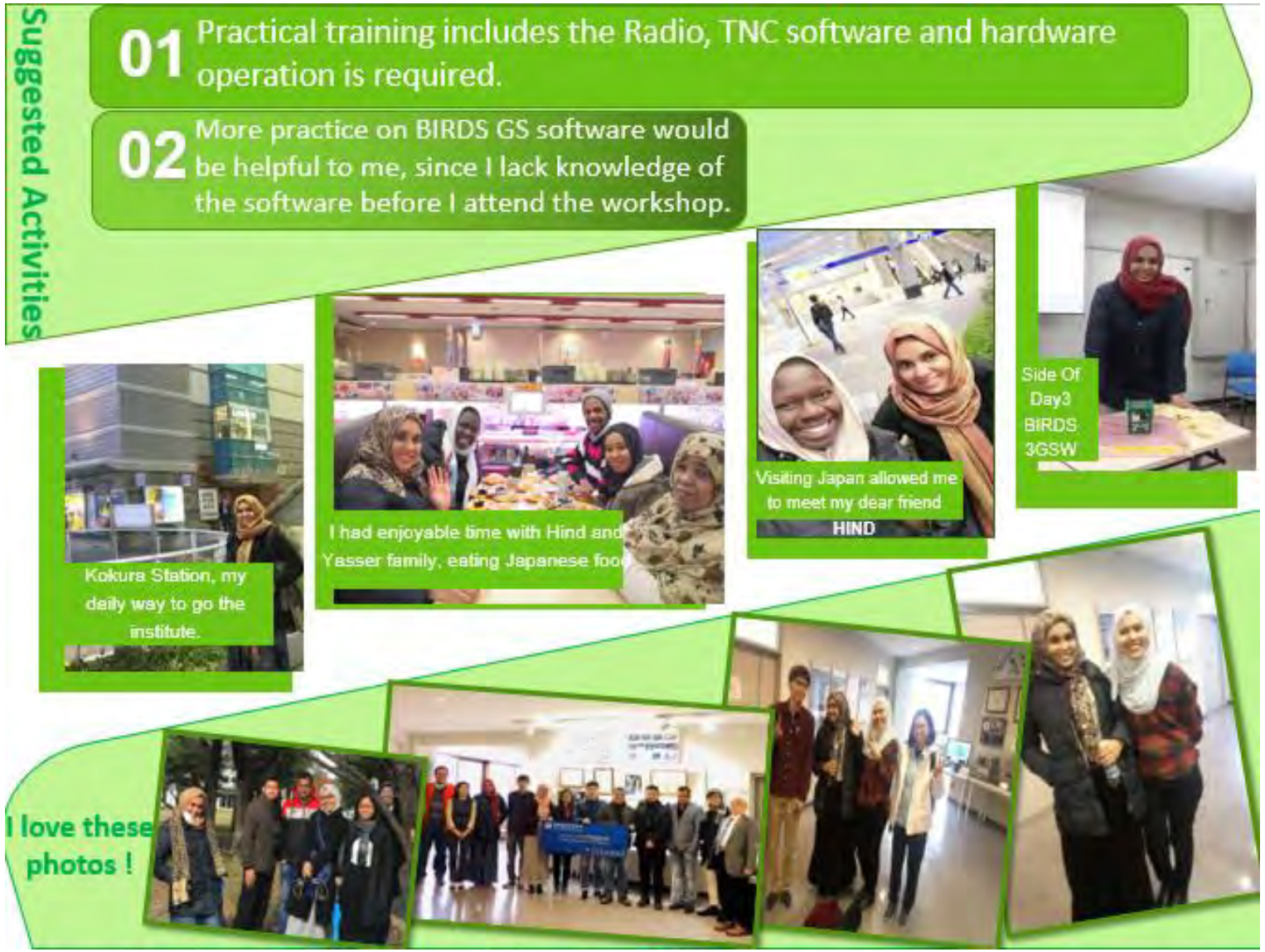
Japanese food is our favorite dish all the times!

From left, Anne (Philippines), Gary (Taiwan), Dawa (Bhutan), me, and Dibodh (Nepal) visited Japanese Garden

Individual Report from the GS Workshop Participants



Individual Report from the GS Workshop Participants



End of 3GSWS Report

21. Happy Birthday, UNISEC !!!

UNISECの皆
UNISEC事務局より

本日2020年2月14日は、UNISECがNPO法人として認められた記念すべき日です。18年間の歩みとこれからの指針について、UNISEC理事長宮崎先生が新年の挨拶で表明されていますので、再掲載致します。

UNISECも設立から18年近くが経ち，ワークショップや，ARLISS，能代宇宙イベント，ハイブリッドロケットの打ち上げ，Mission Idea Contest，UNISEC Global Meeting，UNISEC Takumi Conferenceなど，活動内容もしっかりと固まってきました．これらの活動を経験した多くの学生が宇宙業界で活躍をしていることはすごいことだと思いますし，これからも，みんなで一つ一つの活動を高めていくことが大切かと思います．

一方で，新しい試みを続けていくのもUNISECのよいところだと思います．昨年は，東京理科大の木村先生のご尽力で，8月の能代宇宙イベントのCanSat競技会に「ASTROSCALE-UNISEC賞」が設けられ，競技結果とUNISEC教員による審査により，首都大と慶応大の2チームに賞が授与されました．また，11月の宇宙科学技術連合講演会では木村先生をオーガナイザーとする能代宇宙イベントのセッションが組まれ，受賞チームの学生やCanSat WGの学生が成果を発表しました．このように，UNISONのWG活動に対して，UNISECとして学術的な要素を加えていくことは重要なことだと思いますし，今後もこの流れを継続・拡大していければと思います．

また，12月にも，UNISEC事務局の皆さんの発案で，初の試みとして，UNISEC SPACE JOB FAIRを日比谷で開催し，多くの企業の方々や学生の皆さんに参加いただきました．ありがとうございました．昨今，様々なJob Fairが開催されていますが，やはり，どうせやるなら，UNISECらしい，他にはない価値をもったものにし続けていければなと思います．

今年も，誰かの「こういうことをやってみたいけど，どう？」という一言からユニークな試みが実現・成功すると楽しいですし，それが年月を経てしっかりとしたものになっていければなと思います．

本年も宜しくお願い申し上げます．

22. Kyutech Mr Wakabayashi visits Prof Huzaimy and UiTM (Feb. 2020)

Toshi Wakabayashi is with Syazana Basyirah and Mohamad Huzaimy Jusoh at Dewan Naib Canselor, UITM Shah Alam.
February 13 at 9:55 PM · Shah Alam, Malaysia ·

Meeting with Universiti Teknologi MARA (UiTM) to foster academic collaborations on Space Engineering, Robotics, Solar Power / Renewable Energy, Electrical Engineering and so forth. Thank you Prof. Mohamad Huzaimy Jusoh -sensei for your arrangement. Thanks to Syazana Basyirah-san for welcoming us, too.

Prof. Huzaimy (who got his Phd at Kyushu University on a space weather topic) and UiTM are important members of the BIRDS Family.

UiTM is a member of BIRDS-2.

23. Report from Paraguay

FIUNA FPUNA UNG

CApacity BUilding in REsearch & Innovation

For Space

The "CABURE+I 4S" Project

Newsletter

News from Paraguay
February 2020

Contributors:
Students and members of
The CABURE+I 4S Project Team

Edited by:
Cristhian Coronel

Agencia Espacial del Paraguay
Paraguay Space Agency

The “CABURE+I 4S” Project Newsletter
News from Paraguay

Sharing the experience from the 3rd Ground Station Workshop at Kyutech to FIUNA Students

On February 11th, classes began at FIUNA (Facultad de Ingenieria – Universidad Nacional de Asuncion). This time, the first day of classes was very interesting for Electronic Engineering Students. **They had the chance to hear the experience that CABURE+I 4S Team member Luis Miranda Kunert brought from the Workshop held at Kyutech.** The presentation was during the Antennas and Propagation course, which Luis is in charge of as a teaching assistant.

New Electronic Engineering Students enrolled in Antennas and Propagation course at FIUNA.

It started with an introduction, goals, and challenges for the students who are to attend the Antennas and Propagation course by Prof. Diego Florentín.

Later, student Luis Miranda held the presentation and explaining about some mission of the BIRDS4 satellite that includes the GuaraniSat01 as the First Paraguayan Satellite.

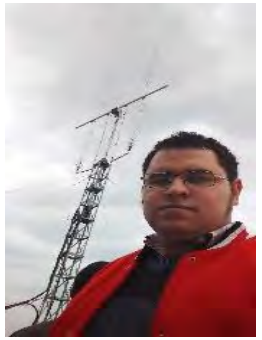
Prof. Diego Florentin welcoming to the Antennas and Propagation course (left picture) and Luis Miranda doing his presentation (right picture)

Sharing the experience from the 3rd Ground Station Workshop at Kyutech to FIUNA Students

At the class, we agreed that after Paraguay Space Agency (AEP) finishes mounting and calibrating their Ground Station, we will continue with hand-on training for any Ground Station Facility. Also, for the final project of Antennas and Propagation Course, the students will make homemade antennas, and this year will be for catching radio-signals for the BIRDS 3 or 4 satellite

Explaining about the challenge of this year for the students, that would consist on
(1) Making homemade VHF/UHF antennas.
(2) Taking a hand-on training course for operating the ground station, as soon as the Paraguay Space Agency (AEP) finish the installation and calibration of their Ground Station.

Explaining about the COM subsystem of the BIRDS3 and BIRDS4 to the students that soon will get involved on this amazing project too.
In this case utilizing an Arrow Antenna, that acts as a VHF/UHF Yagi-Uda antenna.



That’s me! at Kyutech Ground Station.

I am thrilled I was able to visit Japan and especially get in touch with both Kyutech and international colleagues, sharing experiences related to technical stuff and also the culture of their countries.

During the 3rd Ground Station Workshop with Paraguay team colleagues and EM of BIRDS4, from left to right: Javier Ferrer in charge of the AEP Ground Station, Luis Miranda support for the future operation of the Paraguay Ground Station, Birds4 Team Member Adolfo Jara in charge of the OBC and Prof. Federico Gaona in charge of Store and Forward sensors Mission for the Guaranisat01

Luis Miranda Kunert, Electronic Engineering student from Universidad Nacional de Asunción (UNA) – Facultad de Ingeniería (FIUNA)
January 2020

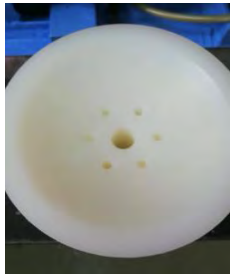
Updates from the final degree projects of the CABURE+I 4S Team members.

Air Bearings Prototypes

For our project called “Design and implementation of a frictionless platform as a test bench for nanosatellite Attitude Determination and Control Systems”, we’ve built two spherical air bearings prototypes.

1st Prototype:

The first prototype is based on a 6-hole multiflow configuration. The cup had to be built in two parts due to the design of the pneumatic circuit and then joined with screws.



Top view of the cup.

Upper part of the cup.

Lower part of the cup

2nd Prototype:

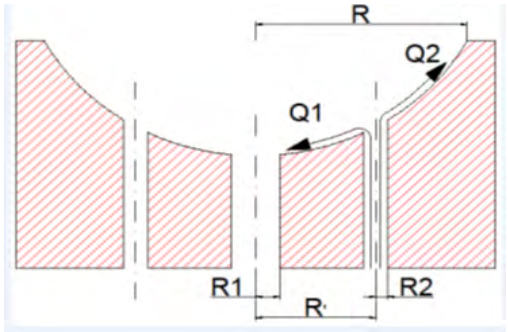
The second prototype has two main differences:
-The hemisphere is smaller in order to decrease each value in the matrix of inertia tensors.
-Instead of using perforations to supply compressed air to the air film, it uses a "ring" as shown in the figure. This way, the cup can be made entirely as a single piece.

Updates from the final degree projects of the CABURE+I 4S Team members.

Comparison in terms of design parameters

	HR(mm)	R(mm)	R1(mm)	R2(mm)	R'(mm)	Io1U(%)
1st	75	60	6	2,5	19,14	112,5
2nd	40	30	5	3	12,61	4,85

HR: Hemisphere radius.
Io1U: Percentage of moment of inertia with respect to a 1U Cubesat.
The parameters R, R1, R2 and R’ are illustrated in the figure bellow.



A cross section for both designs.

Notes:

- To build and test the prototypes, it was used the same material for both designs which is Nylon due its low cost and density. Other features of the material:

Material	Nylon 6.6
Density(g/cm3)	1,14
Coefficient of linear thermal expansion(1/°K)	8,00E-05
Tensile Modulus of elasticity (Mpa)	3550

- Both multiflow configuration prototypes were built at the Metal Mecanica Laboratory of the FIUNA, with the invaluable help of the professional laboratory staff.

END OF REPORT FROM PARAGUAY

Aldo J. Galeano A. and Esteban R, Fretes R.D., Mechatronic Engineering students from Universidad Nacional de Asuncion (UNA) – Facultad de Ingenieria (FIUNA) January 2020

My experience at Kyutech

by Paolo of Italy, 14 Feb 2020

My name is Paolo, I'm an Italian PhD student and I have spent five months at Kyutech as visiting research student from Sapienza University of Rome.

Between October 2019 and February 2020, I shared my experience with many new friends at Kyutech…

Cooking pasta for an Italian wine tasting night with friends (January 2020)

Doing our best (頑張る) at the year-end bowling competition in December 2019

Coffee break all together (Coffee is always a special moment to share for an Italian!)

My experience at Kyutech

In November 2019, me plus many BIRDS students have made a roadtrip to Takachiho (Miyazaki Prefecture), to enjoy the autumn leaves on the famous Takachiho

…In our seven-seater car we gave birth to the **Most International Roadtrip of All Time**

With 7 students from 6 nations and 4 continents!

My experience at Kyutech

During my months at Kyutech I also had a taste of the life and beauties of Kyushu during many weekends spent travelling around the Island…

The Kamishikimi Kumano-imasu shrine in Kumamoto Prefecture

The Karatsu festival in Saga Prefecture

The famous Sasebo burger in Sasebo, Nagasaki prefecture

The Saga Balloon Fiesta near Saga

My research at Kyutech

As my PhD topic is focused on passive tracking system for aerospace vehicles (from stratospheric platforms to small satellites), in Kyutech I predominantly studied navigation system for Near-Earth CubeSats and small satellites.

During my research period I had the chance to study how navigation can be performed through spaceborne components.
My focus was on how to perform ranging, i.e. measurement of the distance from a ground station, on-board a satellite and not from ground, and what kind of system architecture is needed to achieve sufficient performances for establishing such a positioning system for CubeSats.

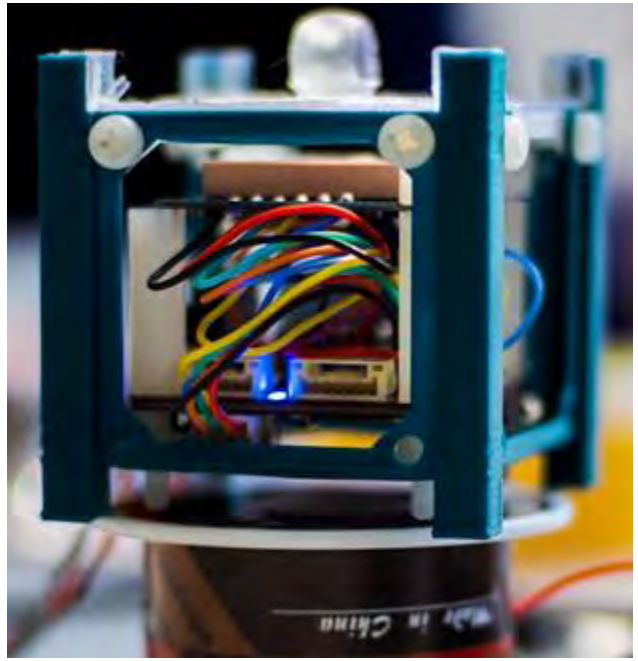
During my months at Kyutech I also had the chance to attend seminars, conferences and meeting inspiring people.

The Sapienza delegation at the UNISEC-Global Meeting in Tokyo with Ms. Naoko Yamazaki, first JAXA female astronaut

Me with Dr. Takao Doi, first JAXA spacewalker, involved in two Space Shuttle missions, after his seminar at Kyutech in January

End of Paolo's Report

25. CANSAT Training in Nepal

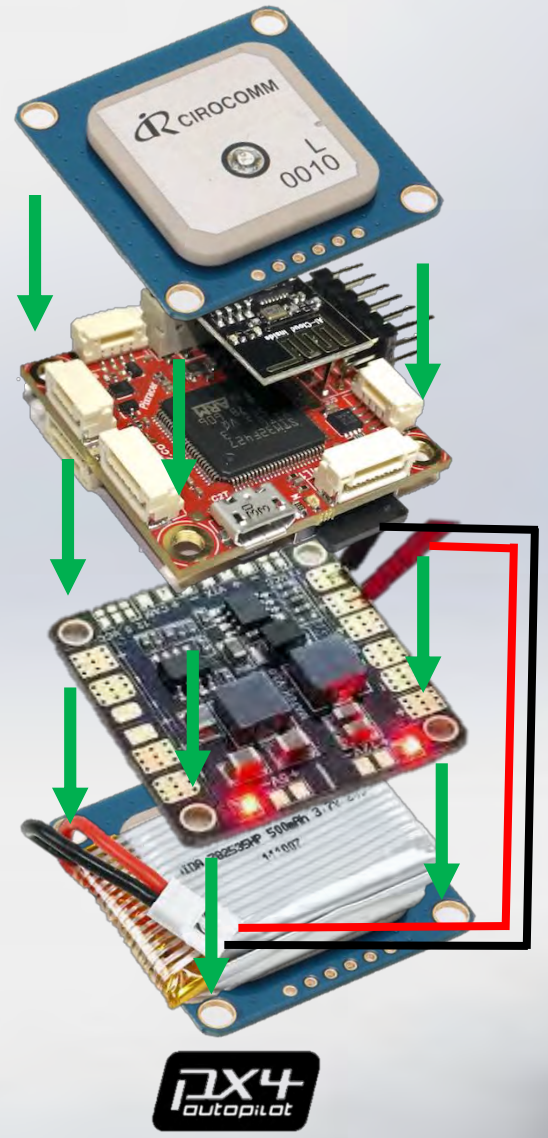


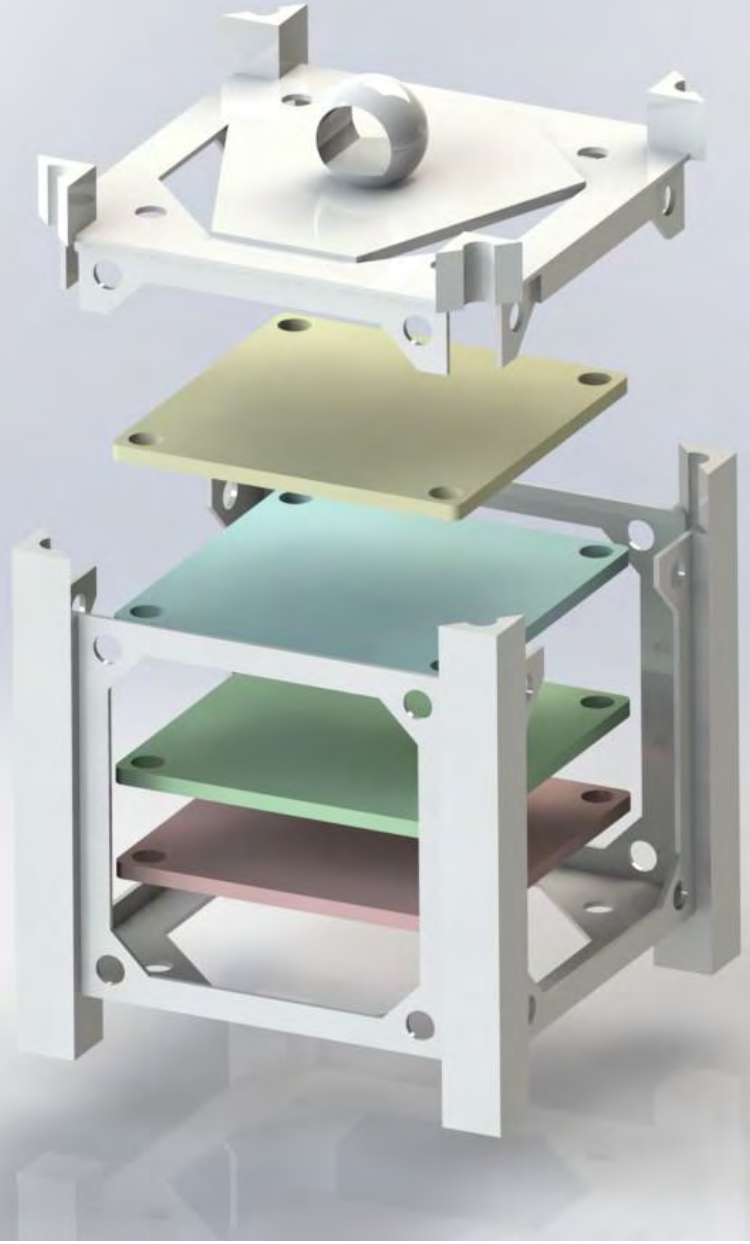
CanSat Training
In Nepal
(2016-2020)

By Abhas

CanSat Training

Hands-on, low-cost method to teach students the engineering process behind product design and development, and basic space engineering by building non-flying satellites that were first built inside a constraint of a can. Hence, Can-Sat.





So far in Nepal, a number of Cansat programs have taken place including competitions and UNISEC's HEPTASat Program. Under the SastoSat Program, six CanSat trainings have been conducted until **Jan 2020.**

Under the SastoSat CanSat Program

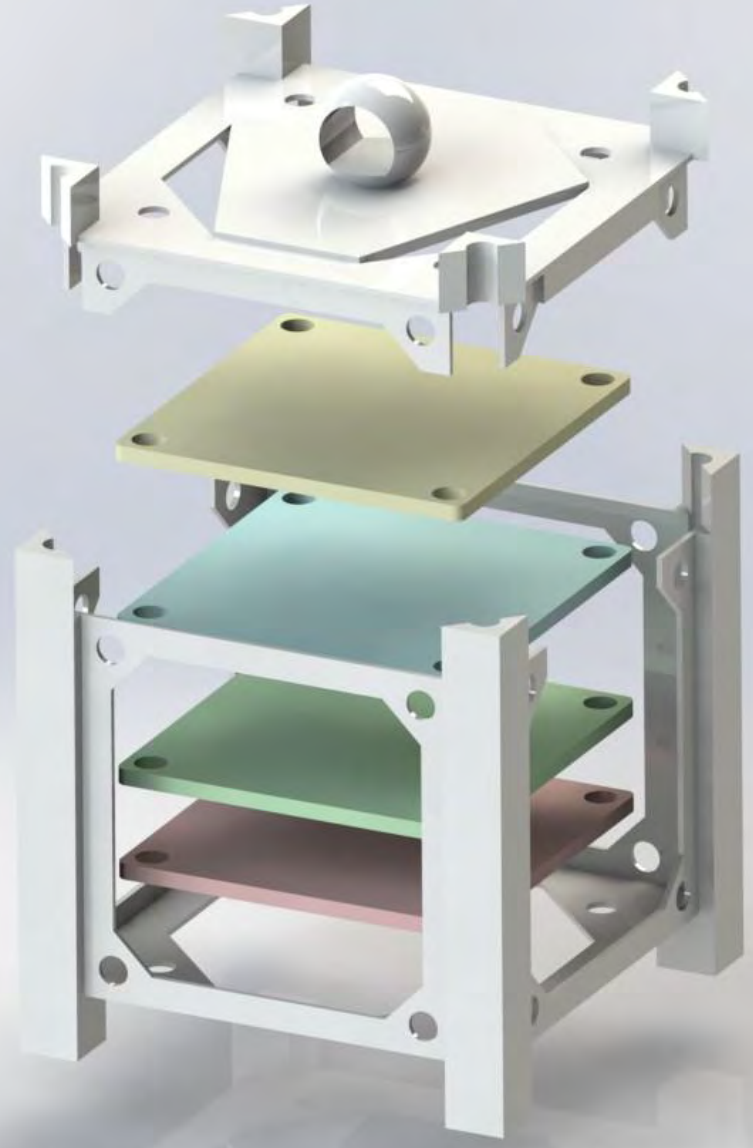
x150 students

x15+ schools

$20-$100/kit

$200-$500/training

x6 Trainings



CanSat Training Timeline

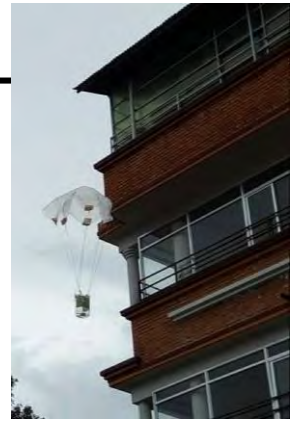
Nepal's First CanSat Training (Pilot)
Kathmandu University
2016

UNISEC CLTP 7
Hokkaido University
2016

First High School Pilot
Brihaspati School
2017

Uni. Level CanSat Training
Pulchowk Eng.
2017

High/Middle School Training
Brihaspati School
2018

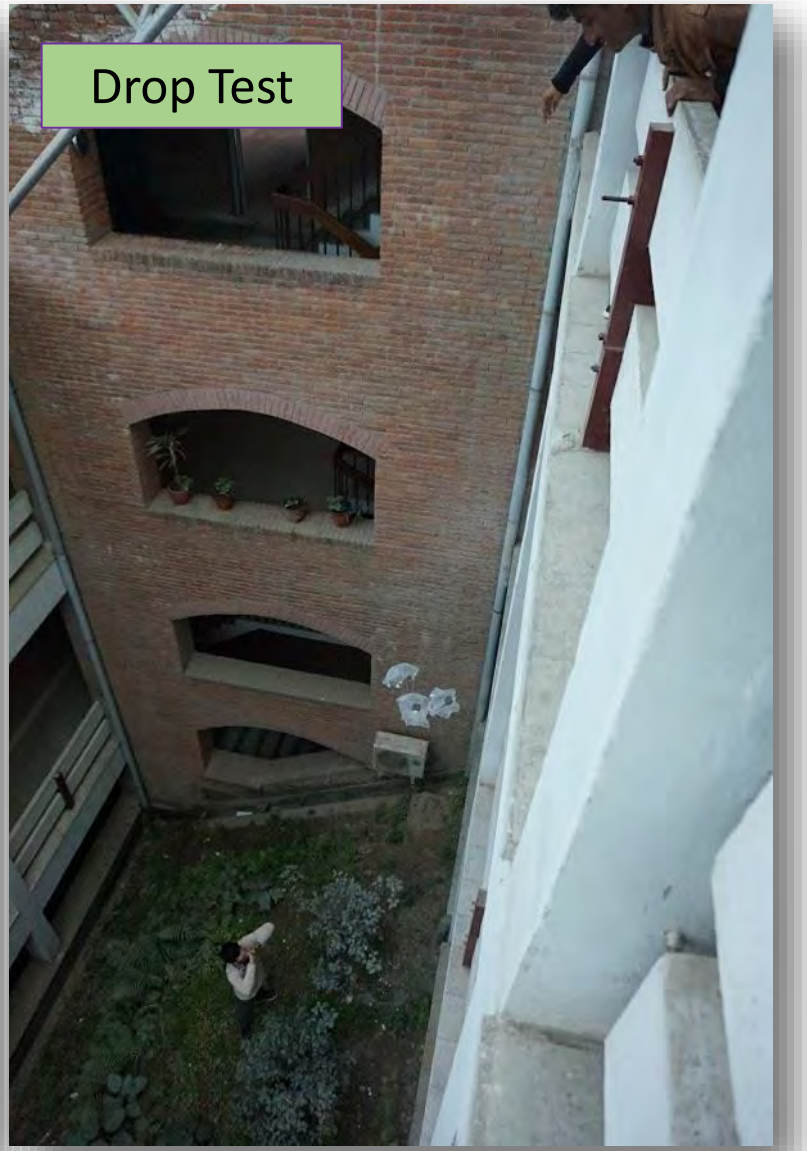


High/Middle School Training
Brihaspati School
2019

High/Middle School Training
New English Boarding School
2020

CanSat Training Image Gallery 2016

First CanSat Training in Nepal at Kathmandu University in 2016



Drop Test

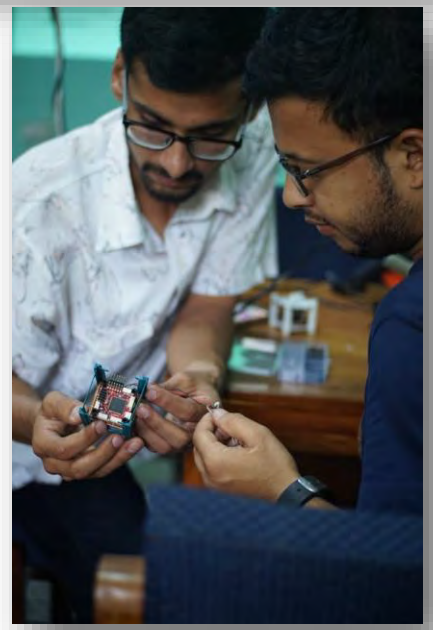
CanSat Training Image Galary 2017 (I)

CanSat Training Image Gallery 2017 (II)

Training for High School in 2017

Brihaspati School Kathmandu, Nepal

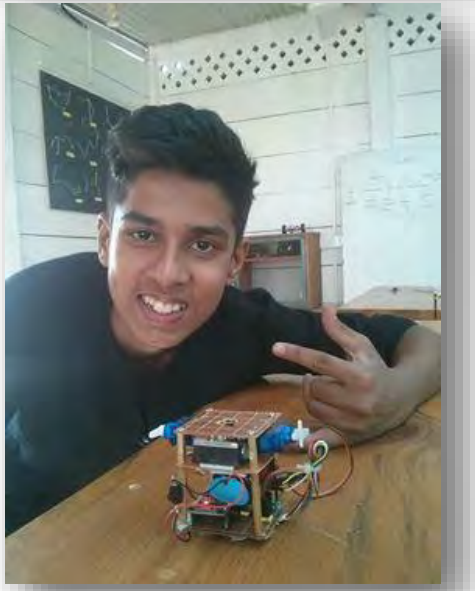
CanSat Training Image Gallery 2017 (II)



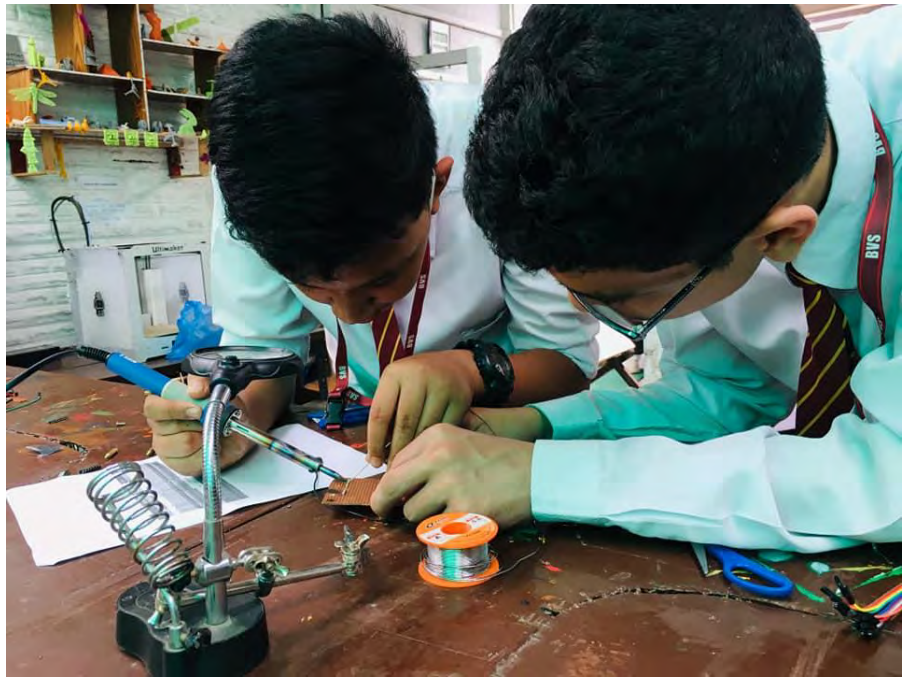
University Level Training in 2017

CanSat Training Image Gallery 2018

2017 Trainees taking Trainer role in 2018



CanSat Training Image Gallery 2019



CanSat Training Image Gallery 2020

End of report by Abhas

26. Media Coverage from Sri Lanka about BIRDS-3

This news says RAAVANA-1 is the first satellite in Sri Lanka. This was one of the first news on TV about Birds -3
Link : Link here

By: Dulani Chamika

Media Coverage from Sri Lanka

This news says that we had the official press conference in Kyutech
Link : Link here

මෙම වන්දිකාව මාධ්‍ය වෙත හඳුන්වා දීම පසුගිය සිකුරාදා (පෙබරවාරි 15) සිදුකෙරුණු අතර, ඒ සම්බන්ධයෙන් සම්මන්ත්‍රණයක් ද ක්‍යුෂු තාක්ෂණ ආයතනයේදී (Kyushu Institute of Technology) පැවැත්විණි.

Link : Link here

This news was in BBC/Sinhala website

Media Coverage from Sri Lanka

Location for this program was a laboratory in Arthur C.Clarke Institute for Modern Technologies Sri Lanka.

- Link here

We had an interview from a TV channel in Sri Lanka when me and Tharindu went back to Sri Lanka in November 2019. This is the first interview faced in Sri Lanka

Some of the newspaper articles in Sri Lanka


A12 THURSDAY, MARCH 7, 2019 Daily Mirror

NEWS FEATURES

The world is very keen on adventuring into Space and innovating inventions to fly into space. Although, it sounds alien to Sri Lanka, it would be no longer something strange to Sri Lankans as the Islanders' first research satellite RAAVANA-1 built by two Sri Lankan youth is set to launch into space this April, marking our entrance into the space age.

SL TO LAUNCH FIRST-EVER SATELLITE IN APRIL

Historic landmark in Sri Lanka's space journey

He said that unawennage had taken the bold decisions and satified the requirement capacity development f Sri Lankan engineers f the institute through overnment support and approvals

WHAT IS RAAVANA-1?

HOW RAAVANA-1 BECAME A REALITY

Internal Exploded View

Positions of MTQ

These newspapers talk about BIRDS-3 satellites


Daily News

RAAVANA RAISES AGAIN!

To re-kindle the passions of town & country folk

TOWN & COUNTRY

RUWINI JAYAWARDANA

They describe it as an experience out of this world! The names of these two Sri Lankan Research Engineers from Arthur C Clarke Institute, Moratuwa, have been synonymous with the first Sri Lankan satellite which will be launched into space next month.

YOUNG ACHIEVERS

Some of the newspaper articles in Sri Lanka

Sri Lanka's English Newspaper with the largest circulation

SUNDAY, AUGUST 4, 2019

Sunday Observer

Vol.92 - No 31
Pages 80
Rs. 80.00

www.sundayobserver.lk

THE PROBLEM WITH CANDIDATE GOTA — Pages 8-9

WORLD YET TO DISCOVER SRI LANKA — Focus

KANDY PERAHERA WORLD'S OLDEST RELIGIOUS PAGEANT — Spectrum

Reshuffle of Governors imminent

By Maneshka Borham

A reshuffle of Governors is expected to follow a spate of resignations, a highly placed source at the Presidential Secretariat told the Sunday Observer.

Uva Province governor, Marshal Perera who is also the father of MP Dilan Perera tendered his resignation on Thursday (1) citing personal reasons, while Central Province governor Maithree Gunaratne, who was appointed on January 4 this year, handed over his resignation yesterday (3). According to Gunaratne, he had resigned in response to a request by the President's Office.

More governors are expected to hand in their resignations. Authoritative sources said that a reshuffle would take place in the coming weeks, though he refused to give a reason for the sudden decision. He also said it is likely that some provincial governors serving currently, would not be reappointed.

Continued on PAGE 02

The first-ever Sri Lankan satellite Ravana 1 -built by two young Sri Lankan students- released its first photographs in space yesterday. The nano satellite had captured Sri Lanka from space. Ravana 1 belongs to the Bird 3 satellite project launched in collaboration with Japan, Nepal, and Sri Lanka.

Controversy mires NPC decision to defer transfers of Kurunegala top cops

NPC turns down transfer despite damning report on Kurunegala DIG by Acting IGP

Commission acted on complaint against the CID within the day

The National Police Commission (NPC) decision to prevent the transfer of two senior cops in Kurunegala over their involvement in framing a Muslim doctor in a pseudo illegal sterilisation scare has raised serious questions about its alleged role in the communally charged controversy.

The NPC stopped the transfers despite therecommendation for Kurunegala DIG Kithsiri Jayalath to Trincomalee and SP Mahinda Dissanayake to Kattankudy, Batticaloa, being accompanied by a two page justification for their removal by Acting IGP Chandana Wickremaratne.

In his note to the Police Commission dated July 27 and seen by *Sunday Observer*, the Acting IGP explained that allowing...

Continued on PAGE 02

National Police Commission

NPC refuses to transfer DIG CID

The National Police Commission has courted further controversy by denying the Acting IGP's repeated requests to remove the current DIG CID D.R.S.R. Nagahamulla and make him DIG Badulla Range on a service requirement, the Sunday Observer learns.

Continued on PAGE 02

This news paper published a picture of Sri Lanka which we took from Raavana-1

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තරුණ විද්‍යාඥයන් දෙදෙනා

This paper also talks of Raavana-1

STAMINA4SPACE

UPDATES FROM THE PHILIPPINES

February 15, 2020

University of the Philippines-Diliman
Quezon City, Philippines

PREPARED BY:

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Research Fair 2020 Educational Tour

January 31, 2020

University Laboratory for Small Satellites and Space Engineering Systems, Electrical and Electronics Engineering Institute, University of the Philippines Diliman

The Research Fair is an annual three-day research-based competition for high school students all over the Philippines. This year's event is organized by the University of the Philippines Academic League of Chemical Engineering Students (UP ALCHEMES). Over 20 students from different schools in Manila, Bicol, Bacolod and Negros Occidental were toured around the ULyS3ES facilities as part of the event's educational tours.

Amateur Radio Unit and Satellite Station Demo and Workshop

January 27 - February 3, 2020

Amateur Radio and Satellite Station (ARSS) and Amateur Radio Unit (ARU) Demonstrations and Workshops were held in different universities across the country through the STAMINA4Space Program's Space Science and Technology Proliferation through University Partnerships (STeP-UP) Project. The universities are:

1. Malayan Colleges, Laguna;

2. University of San Carlos, Cebu City; and

3. Mindanao State University - Iligan Institute of Technology, Iligan CIty

Malayan Colleges, Laguna
(January 27, 2020)

University of San Carlos, Cebu City
(January 28-30,2020)

Mindanao State University - Iligan Institute of Technology, Iligan CIty
(January 31 - February 3, 2020)

Outreach and Information Campaigns

February 5 & 7, 2020

Ateneo de Davao

Ateneo de Davao University talk for 40 BS Aerospace Engineering students (the first batch of its kind in the country) last February 7, 2020.

Mr. Labrador discussed the history of the PHL-Microsat and STAMINA4Space program, as well as introduced small satellite technology fundamentals.

Fr. Daniel McNamara, Professor of the Department of Physics of Ateneo de Manila University and Dean of the College of Arts and Sciences in Ateneo de Davao University, also joined the lecture.

The Philippine Science High School – Main Campus (PSHS-MC) held its 19th Youth Math, Science, and Technology (YMSAT) Festival with the theme "Science and Technology in the Service of Society". Engr. Leur Labrador from the STAMINA4Space Program was one of the guest speakers.

Outreach and Information Campaigns

January 17, 2020

University of the Philippines Diliman

The program was invited to participate in UP Diliman's Saliksikhay: Pagdiriwang ng Dangal at Kahusayan Sa Saliksik, Malikhaing Gawa at Ekstensiyon on January 16-17, 2020 at the Benito Sy Pow Auditorium, UP College of Architecture.

Saliksikhay is a conferencethat showcased selected UP Diliman research activities. Among these was a presentation by one of our researchers, **Ariston Gonzalez**, who gave a talk titled "Computers in Orbit: Utilizing Space as a Key Vantage Point for a Borderless and Data-Driven Society".

Amateur Radio Unit and Satellite Station Demo and Workshop

February 7, 2020

The demo and workshop were also conducted for the Communications, Electronics and Information System Service, Armed Forces of the Philippines (CEISSAFP) at Camp Aguinaldo, Quezon City, Philippines.

Three members of the STeP-UP Team, Christian Jay Flores, Anne Vera Candelaria, and Jeric Brioso facilitated the demo-workshop.

NASA International Space Apps Challenge Winners

February 13, 2020
UP-EEEI and DOST-ASTI

The Advanced Early Dengue Prediction and Exploration Service (AEDES) Project visited the PEDRO Center at DOST-ASTI and the ULyS³ES Buildings 1 and 2 at UP Diliman, and met with DOST-ASTI Acting Director and STAMINA4Space Program Leader, Dr. Joel Joseph Marciano Jr. The AEDES Project is the team from the Philippines that won the NASA International Space Apps Challenge 2019 Best Use of Data Award.

Photos: Members of the AEDES Project and NASA Space Apps visit the PEDRO GRS (above); Vanessa Tan, researcher of the PHL-50 Project, showing and explaining the Diwata-2 Visualization (top left) ; the visitors experiencing the full anechoic chamber housed in ULyS³ES Building 2 (middle, left); the visitors witnessing the PEDRO Center operations (bottom left)

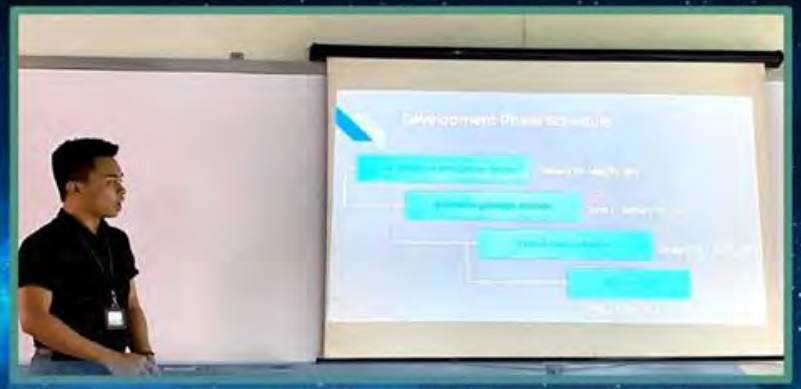

STAMINA SPACE
PHL MICROSAT
Updates from
STEP-UP
scholars
"The tenth step..."
February 15, 2020
University of the Philippines- Diliman
Quezon City, Philippines
Renzo S. Wee
Layout Designer
Bryan R. Custodio
Project Manager
Contributing Writer
Lorilyn P. Daquioag
Contributing Writer

STeP-UP Preliminary Design Review

-Lorilyn P. Daquioag

The PDR presentation was held on January 17, 2020, at EEEI building, UP Diliman Quezon City (pictured above together with Dr. Joel Marciano Jr., and other STeP-UP staff). The scholars are smiling during closing the phase and inspired to welcome the next stage.

STeP-UP Preliminary Design Review



Bryan Custodio presenting the Development Phase Schedule of the Satellites' Flight Models

Judiel Reyes, assigned to Mission Payload and Camera System, presenting the Ground Data Acquisition Using Store and Forward (S&F) Mission

Gladys Bajaro presenting the Mission Introduction for Automatic Packet Reporting System - Digipeater (APRS-DP)

The scholars of the Space Science and Technology Proliferation through University Partnerships (STeP-UP) Project of the STAMINA4Space Program conducted the Preliminary Design Review (PDR) of Maya-3 and Maya-4 --- reckoned to be the country's first university-built satellites --- to establish results of the functional capabilities as well as the feasibility and behavior of every component during preliminary tests.

Cristy Raterta discussing the Block Diagram for their Communications Subsystem

End of the report from the Philippines

Initiative to Establish the National Space Center in NAST, Nepal

Sari Ram SHRESTHA

BIRDS-3

February, 2020

Concern: Established the National space center in NAST,Nepal

Written By: Hari Ram Shrestha

Introduction and current status of NepaliSat-1, the First Satellite of Nepal

Hari Ram Shrestha
BIRDS-3
(under Prof. Mengu CHO)

Laboratory of Spacecraft Environment Interaction Engineering (La SEINE),
Kyushu Institute of Technology, Kitakyushu, Japan

Future Plans

- Upgrade and Fully Utilization of NAST Ground Station: Research and service Purpose
- CANSAT program: Basic satellite course for High School Students
- Developing Engineering Module (EM) -1U satellite in Nepal
- Networking and collaboration
- Open source data utilization

NAST GS

Why National space center in Nepal?

Written by: Hari Ram Shrestha

- The prime objective of space Research Center of Nepal at NAST is to use space technology and its application to various national tasks and the center shall play a meaningful role nationally to overcome real problems in the society through application of space research and technology.

- Nepal academy of Science and Technology (NAST) is the apex body so it shall be provide guidelines, formulate policies and monitor implementation of the national space policy to the Nepal Government as a think tank of the government.

❖ The focus shall be on:
Hazard Management and climate studies
Space research and development
International Cooperation in Space
Space Education and Awareness
Space Industry Capacity Building

Important Person of Nepal for Science and Technology

Written By: Hari Ram Shrestha

Hon.Chairman of the National Assembly Shree Ganesh Prasad Timilisina(middle),Hari(left) and Puran Giri sir at singdarbar

Hon. Minister Giri Raj mani Pokhrel, Ministry of Education, Science and Technology Nepal(Middle), vice chancellor,Dr.sunil Babu Shrestha (Right) and Hari (Left)

Opportunity to meet Hon.Vice-President of Nepal

Written By: Hari Ram Shrestha

During Presenting momen about the NepaliSat-1 and BIRDS-3 satellite project to Hon.Nand Kishor Pun,Vice Presedent of Nepal.

Hon.Nand Kishor Pun(middle),Puran Giri sir(Left) and Hari (Right) at Vice President office in Kathmandu,Nepal

Interview

Written By: Hari Ram Shrestha

क्रान्तिपुर

फिचर

'स्याटेलाइटबारे सुनेको थिएँ, बनाउँछु भन्ने कहिल्यै सोचेकै थिइनँ'

माघ २६, २०७६ | गोविन्द पोखरेल

काठमाडौं – जापानको क्युटेक विश्वविद्यालयसँगको सहकार्यमा नेपालले पहिलो पटक आफ्नो झन्डा अंकित स्याटेलाइट अन्तरिक्षमा प्रक्षेपण गरेर एउटा इतिहास रच्यो । हातमा बोक्न सकिने नानो स्याटेलाइट उडाउनु विकसित मुलुकका विद्यार्थीका लागि सामान्य काम हो ।

ekantipur.com

NAST Program: Bigyan Ra Prabdhi @ NTV

Media following to the Nepal's first satellite

Written By : Hari Ram Shrestha

This is the collection of news sources links from the website which had published from National media about the NepaliSat-1 and BIRDS-3 satellite Project in Nepal and international media had also covered.

I have collected the news from many newspapers and online media as well as from Television in one year duration which are focused and related to the BIRDS-3 and Nepalisat-1.

I prepared the list of News Links about the BIRDS-3 and NepaliSat-1 in English version.

Title: Stress On Inclusion Of Science And Technology In Curriculum

1. Published Date: 12 Jan, 2020

National Daily Paper/Online: The Rising Nepal

Link: https://risingnepaldaily.com/miscellany/stress-on-inclusion-of-science-and-technology-in-curriculum?fbclid=IwAR3G-Jn2mh9yGfM38cKHH_HcEcwsYe07vw3OUQvezv8VwLrfYEt_9MRacq8

2. Published Date: Sep 13, 2019

Title: NepaliSat-1 ground station starts functioning

Media: Paper/Online: The Himalyantimes daily

Link: https://thehimalayantimes.com/kathmandu/nepalisat-1-ground-station-starts-functioning/?fbclid=IwAR17v3Jc5jY0G19CNjGr8yQp7MomJBQsEbpmoMusD2Pm8Cgbtf4URmyqJow

National/International Online Portal

Written By: Hari Ram Shrestha

3.Date of Published: July 1, 2019

Title: Ground station fails to receive satellite-captured photographs

Link:http://www.therisingnepal.org.np/news/32595?fbclid=IwAR0Ed4IDYuOeOHKflMjF_vqph5RvnLtL20TS9608Xv6q75wVMf05jwm2fnI

4. Date of Published: April 29 2019

Link:https://www.orfonline.org/research/the-importance-of-nepals-first-satellite-launch-50336/

Title: The importance of Nepal's first satellite launch

Writer: Dr. Rajeswari Pillai Rajagopalan

5. Date of Published: August 7, 2019

Title: Nepal's satellite NepaliSat-1 captures pictures of space

Link: https://www.nayapage.com/archives/151119?fbclid=IwAR3JKprZzL63Z4t6glxq-WXIkLEfucO2zwu5OoDtvpTIed0zpflJkKHPwaQ

Following Links about the BIRDS-3

Written By: Hari Ram Shrestha

6.Published date: April 2019
Title: NepaliSat-1 to travel around Earth from June 17
Link:https://en.setopati.com/social/147817?fbclid=IwAR31HzKxjGj-cJ7sAgX6BHF7w3hIylb7KSxQcd_RusmeF-shoYgRM_JPQS0

7.Published Date: Aug 8, 2019
Title: Nepal First Satellite Launched [BIRD-3 Project]
Link:https://ourtechroom.com/nepal/nepal-first-satellite-launched-bird3-project/?fbclid=IwAR3w4vEjUfNJDvzVqdUapfD5oP0pv5eJDnR2hAS5At0ecahKEmiDkgHGSfY

Media: online
8.Published Date: June 11, 2019
Title: NepaliSat-1 to travel around Earth from June 17
Link:http://nepalekhabar.com/2019/06/89687?fbclid=IwAR3ys1xx3QvUECjJU4GWje6F4RrlFwzKodlO1LDFjiQIgG9UcRT36KFFZoQ

Continue..

Written By: Hari Ram Shrestha

9.Published Date: June 10, 2019

Title: NepaliSat-1 to orbit Earth from June 17

Link: https://english.khabarhub.com/2019/10/25442/

10.Published Date: June20, 2019

Title: Nepal's first satellite starts revolving around the Earth

Link:http://spacewatchafrica.com/nepals-first-satellite-starts-revolving-around-the-earth/?fbclid=IwAR3-SuCJF-sNib9EwtKR5tvE6hfpNimUUffm8OK-I_XutSV9WBJcWZKrFn4

11.Published Date: Jan 20, 2020

Title: Nepal's first ever satellite launched into space

https://kathmandupost.com/science-technology/2019/04/18/nepals-first-ever-satellite-launched-into-space

Media: Online/Kathmandupost

End of report from Nepal

29. “Exploring Space” by HIGHLIGHTING JAPAN (the government of Japan)

PUBLIC RELATIONS OFFICE
GOVERNMENT OF JAPAN

Home > Highlighting JAPAN

Tweet Share

The online magazine HIGHLIGHTING JAPAN is published once a month by the Japanese government to help readers better understand Japan today.
もっと知りたい、伝えたい。日本の'今'をアップデート ～ オンライン・マガジン HIGHLIGHTING JAPAN

#141 February 2020

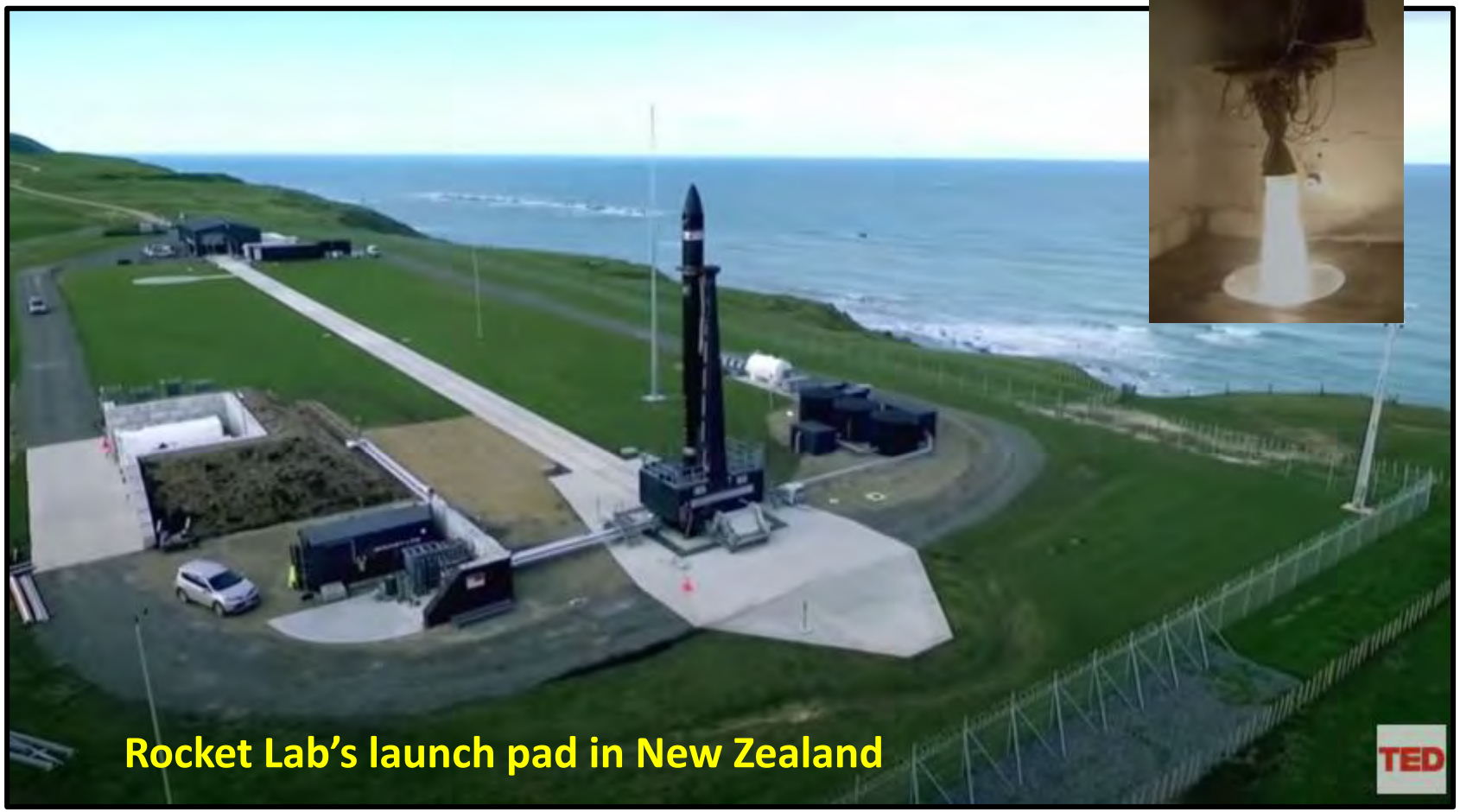
Exploring Space

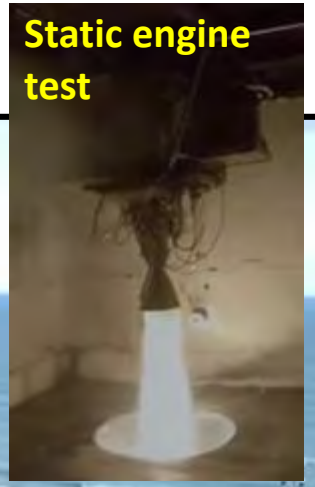
Japan’s fascination with outer space is recorded in its earliest literature and is evident today in fields as varied as fashion, amateur stargazing and traditional rocket making. Japan’s expertise in satellite manufacturing and space exploration meanwhile is attracting the attention of the world. All of the above come under the “telescope” in this month’s issue of HighlightingJapan, “Exploring Space.”

HERE: https://www.gov-online.go.jp/eng/publicity/book/hlj/index.html

30. Small rockets are the next space revolution | Peter Beck

I highly recommend this video (*TED Talk*) by Peter Beck, who founded Rocket Lab in 2006



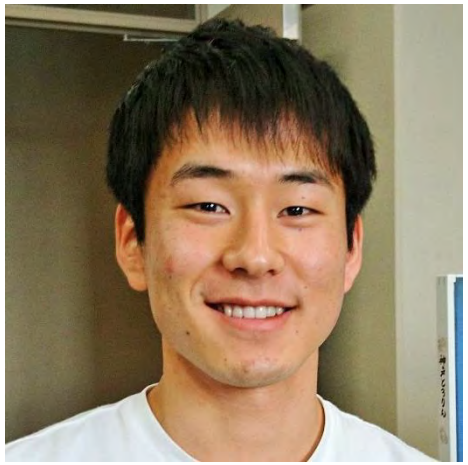


12-minute video: https://www.youtube.com/watch?v=DhnBn_c9f8Q

Read about Peter Beck:
https://en.wikipedia.org/wiki/Peter_Beck_(engineer)

BIRDS-4 reports for Feb. 2020 are on the following pages

Team Jackets



Tomoaki MURASE

February 8, 2020

BIRDS-4

JOINT GLOBAL MULTI-NATION BIRDS SATELLITE PROJECT

Team Jackets

Written By: Tomoaki Murase

We are working on a design to make a jacket for BIRDS-4 members. In each previous BIRDS projects (BIRDS-1, 2, and 3), they have made their team jacket at the end of the flight model schedule. The jacket made them unite and those cloths are one of the reasons they are still strongly connected.

At first, we have decided on the color of the jacket. There were some candidate colors we voted among and decided it to be navy-colored.

Secondly, we gave some images of the logo which we want to put on the jacket to the manufacturer. And they generated four samples on the right.

Now we are discussing among the team, which is the best design. I want to make sure it will be the jacket that everyone in BIRDS-4 agrees with its design. The design will be completed this month and we'll start to wear our jackets!

Design 1

Design 3

Design 2

Design 4

Thermal Vacuum Test on BIRDS-4

Anibal MENDOZA

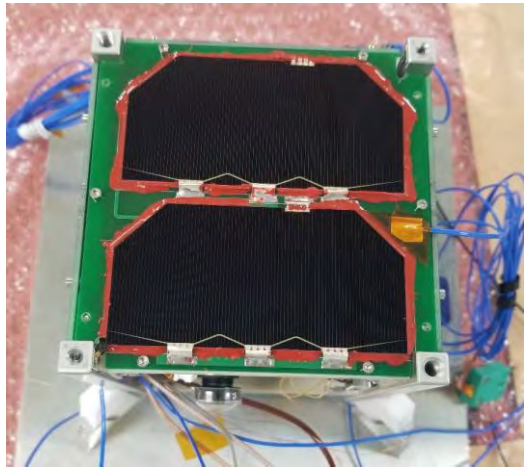
February 7, 2020

BIRDS-4
JOINT GLOBAL MULTI-NATION BIRDS SATELLITE PROJECT

Thermal Vacuum Test on FM BIRDS-4

One of the last tests done to the FM stage of the satellites is the Thermal Vacuum Test. The 3 satellites of BIRDS-4 were prepared beforehand placing the thermocouples (TCs), this time was more difficult to attach them on the outside since solar cells were installed.

In this case, only 8 thermocouples were attached, 2 internals for the battery box and reaction wheel, and the rest 6 TCs on the external panels; one for each.



TCs position on external panels

TVT was done inside the "big chamber" of the Center of Nanosatellite Testing (CeNT), and this opportunity also was my first official experience of operating it from its setup to recovery.

For the setup, a custom frame was assembled with the heaters becoming the walls of the frame, to test all satellites at once. Thermocouples also were attached to each heater to use its temperatures as a control for the power supplies.

The dummy satellites were put on the sides of the frame so that all the FM satellites are in similar conditions, this is because on that position (side) the satellite is facing 3 heaters instead of 2 on the horizontal plane.

Heaters casing and dummy satellites

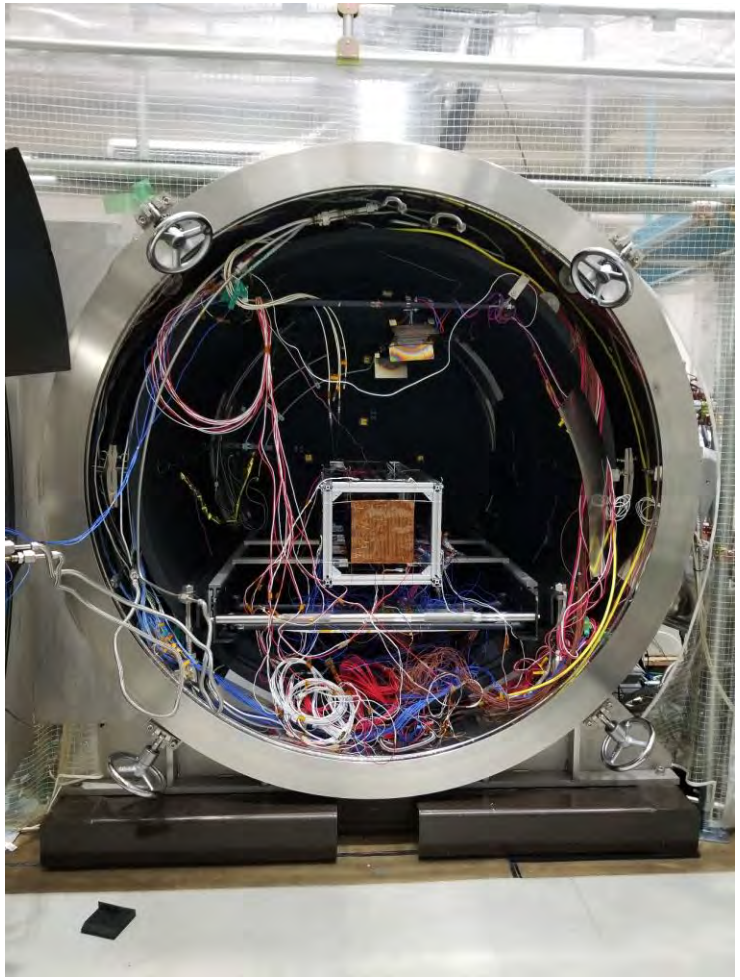
Thermal Vacuum Test on FM BIRDS-4

Satellites inside the heater frame

After closing the chamber, it is important to check whether all the readings are correct and power supplies are working. The overall test took a week to finish.

The procedures once the test starts are same as previous TVTs, doing the thermal cycles and performing functional tests to make sure that the satellite will operate as intended in its orbit.

There is always something new to learn even if the project is on its ending stage of development.



One last look before closing the chamber

Flight Model Assembly

Yiğit Çay

January 31, 2020

BIRDS-4
JOINT GLOBAL MULTI-NATION BIRDS SATELLITE PROJECT

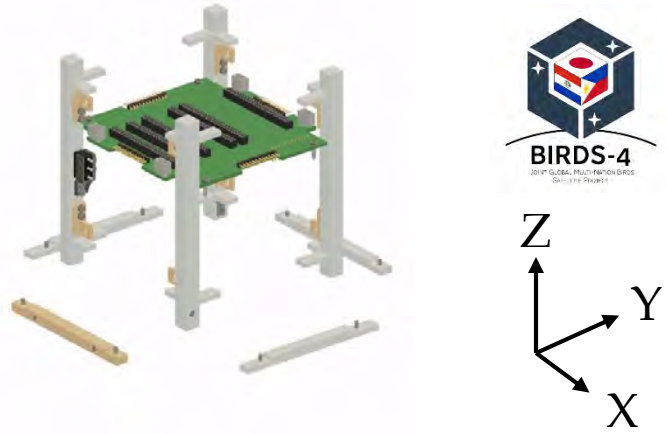
Flight Model Assembly

Written By: Yiğit Çay

The assembly of a satellite is done very carefully as a simple mistake can result in a launch delay. Knowing this, every assembly session puts a burden to the students of the project during the action, whether they actively assemble/disassemble or double-check the steps or just record each step. How small the mistake could be, one might ask. The answer would be in the handling if you consider that as an easy task.

Handling the satellite has many aspects that could lead to hazard on the satellite hardware, but let's investigate an example related to the assembly procedure. BIRDS-4 satellite structure assembly starts combining the rails along its Z-axis, the frames set on the XY plane and the back plane board, put in the same plane.

The axes of the satellite are given in the figure on the right side. During the step we attach the bolts between these frames and rails with the back plane board, there's a possibility that the expected perfect square shape becomes a diamond that an eye cannot recognize. You would expect the satellite measurements at this step equal to 100.0 mm along X and Y axes when you measure from a rail to rail 4 times, but the reality comes through the sensitive measurements. Hands-on experience showed us that the diamond shape would be 99.8 mm at two sides and 100.2 mm at the other two sides although the satellite looks like a perfect cube! In this case, we need to remove the screws and make sure the measurements will be around 100.0 mm with +/- 0.1 mm sensitivity. This can mean redoing the same step 5 times during an assembly. We're using the Fit Check Case provided by JAXA to ensure the satellites fit into the structure that they're going to be released. If we cannot achieve the assembly with these tolerances, it simply doesn't enter the case smoothly or enters by removing…



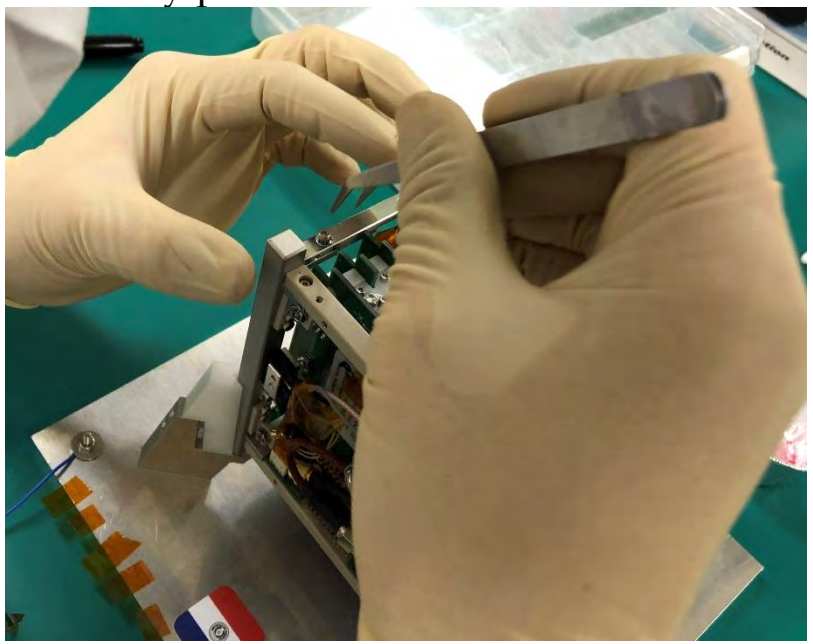
CAD representation of assembling frames to the rails and the back plane board

Flight Model Assembly

Written By: Yiğit Çay

some material on the surface of the rails. The surface roughness of the satellite rails is defined by the JEM Accommodation Handbook publicly released by JAXA in November 2018 [reference]. When the material is removed from the rails of the flight model satellites, the surface roughness condition is not satisfied and the launch could be delayed considering the repair of a structure takes time and this time may not be met according to the schedule set by JAXA to hand over the satellites for the launch. Hence, if you don't pay attention to how you hold the satellite during the assembly, you may end up pushing the tolerances.

The flight model's structural parts have arrived at the end of November from our manufacturer and we performed an assembly for the satellites to prepare them for the upcoming environmental tests. We performed long-range and anechoic chamber and thermal vacuum tests before the final assembly held in January 12~17. The assembly procedure has been carefully planned and revised to implement the BIRDS-3 heritage into our unique structure and complex integration



Careful handling of each fasteners – Anibal working on GuaraniSat-1, Paraguay's first satellite on January 16, 2020

Inserting spacers – Me working on Maya-2, the next satellite of the Philippines on January 15, 2020

Flight Model Assembly

Written By: Yiğit Çay

methods. We got additional training from Dr. Jose Rodrigo Cordova Alarcon regarding the points to pay attention to when working in the clean room, before we assembled anything. The training session is done as early as November 21 in the BIRDS room.

The clean room training on November 21, 2019

Within the same week, the clean room was organized and prepared for the final assembly.

BIRDS-4 on Facebook

The photo we shared on Facebook on November 20 when the assembly tables were prepared. Don't forget to follow our updates from that page!

Before the assembly starts, I procured the fasteners needed and the FM boards were prepared for the integration. We used dedicated toolboxes for each satellites setting the fasteners in the order of the assembly procedure and made necessary preparation on boards such as cutting the long pins, double insulating using Kapton tape… etc. I was the main responsible of the assembly sessions and setting them as 2-3 sets per day, each session having 3 hours of working time. We tried to keep it at most 3 hours so that we don't fail on a step just because we're tired inside the clean room.

On January 17, 2020, after the satellites assembled – me, Adolfo, Izrael and Yuma (from left to right) discussing on testing methods of our flight models

Flight Model Assembly

Written By: Yiğit Çay

We assigned Marloun, Anibal and Murase for the assemblies of Maya-2, GuaraniSat-1 and, Tsuru, respectively, when I was actively coordinating and switching with the assembler, if necessary. Anibal was also responsible for guiding members when they have questions regarding the assembly steps.

In the last assembly session held on January 12-16, we applied adhesive to the main structure and outer panel fasteners as the secondary protection method after applying proper torques. The red adhesive, known as Loctite was applied to many bolts and nuts while for the cable connectors, we applied another called Araldite. Once the adhesive is applied, within 20 minutes, it gets sticky enough so that removing the screw is already hard even if you use the torque driver.

Hence, we had to act quicker at these sessions with uttermost care. 3 fit checks are happening in every assembly session (ref. The Fit Check article in January issue written by Anibal), and the steps before these steps were the times the stress level was at the peak. Before putting the satellite inside the testing case, you take a deep breath, firmly hold the satellite at that step of assembly and try to push inside to see how smoothly it enters. If it's having trouble to enter, recovery actions must be also taken quickly. We check the alignment of the frames and boards to identify the possible problems before the 20 minutes window is finished. We encountered some problems but were also quick to overcome so that all satellites passed the 3 fit checks during the final assembly.

The Loctite and Araldite take 24 hours to completely dry, so we had to wait before conducting any other tests on the satellites. After they're dried, we were proudly attaching the country flags on the satellite's GPS antennas as the last step. I believe this unique experience was very fulfilling at that point but I was also very exhausted.

On the next page, you could see some photos from the assembly sessions. I'd like to thank all members who were willingly helping to complete this task.

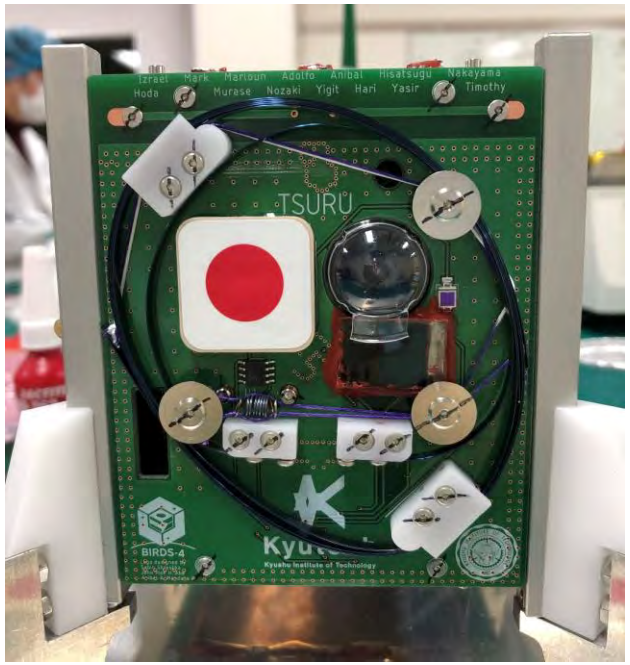
On January 17, 2020, when I was performing fit check for Maya-2

Flight Model Assembly

Written By: Yiğit Çay

Tsuru getting ready for the thermal vacuum test

Yuma tying the strings holding the stowed antennas



After attaching the country flag to Tsuru

Hey Mom! This photo was taken after we prepared the mission boards for the assembly with Mark.

Flight Model Assembly

Written By: Yiğit Çay

BIRDS-4 Flight Models
Maya-2 / Tsuru / GuaraniSat-1

Inhibit Test Results of Maya-2

Mark Angelo C. Purio

February 7, 2020

BIRDS-4
JOINT GLOBAL MULTI-NATION BIRDS SATELLITE PROJECT

Inhibit Test Results of Maya-2

Written By: Mark Angelo C. Purio

In the past month, the BIRDS-4 project was at the point of finalizing the three satellites in terms of hardware and software requirements and conducting different tests. These include long-duration test (LDT), thermal vacuum test (TVT) and other space environment tests.

In compliance with JAXA's system safety standard, the design, and development of the satellites undergone different phases of safety review as discussed in previous BIRDS newsletter articles. As one part of the safety requirement, the provision of safety features in the satellite is an important aspect of the satellite design to prevent accidents while the satellite is handled.

This article will discuss the independent inhibits designed for BIRDS-4 satellites and the results of the inhibit test for Maya-2 (Philippine Satellite).

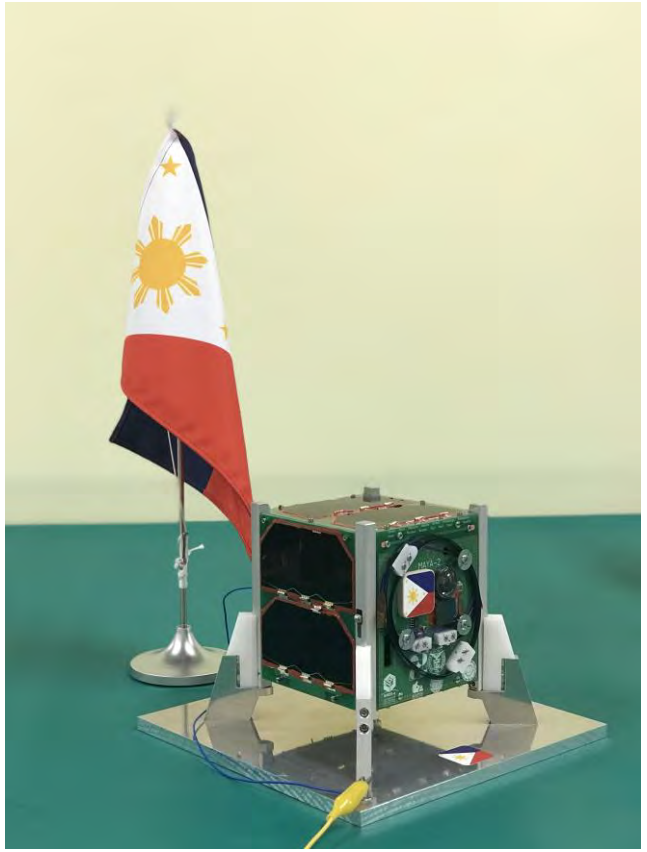
It is reiterated in the JAXA's system safety standard document [source] the following:

4.3.1.3 Retarding functions leading to accident (Retarding hazardous functions)

Functions that may lead to an accident shall satisfy the following requirements to prevent the functions from operating on an unwanted occasion due to a failure or a human error, and to reduce the likelihood of occurrence to within an allowable level.

(1) For functions that could potentially cause a catastrophic accident, ***at least three independent inhibiting measures*** *shall be provided between the functions and energy source. It is desirable that the ground-return circuit of the function should be controlled with one of the above inhibiting actions.*

(2) For functions that could potentially cause a severe accident, at least two independent inhibiting measures shall be provided between the functions and energy source.



Maya-2 flight model after the assembly

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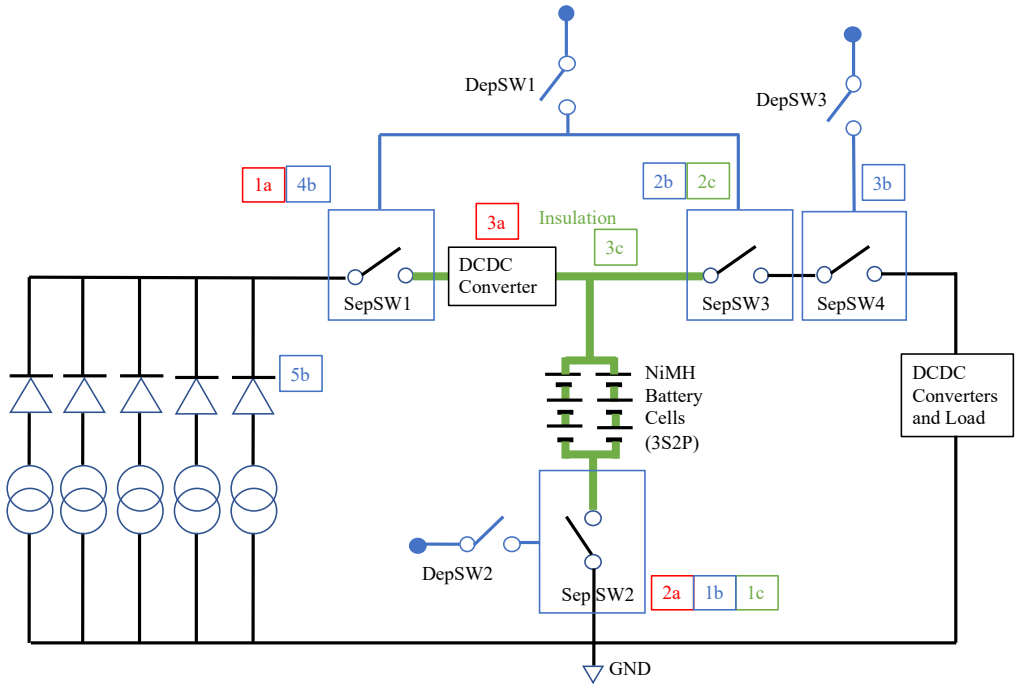

Hazard		Hazard Control #1	Hazard Control #2	Hazard Control #3
Overcharge		SepSW1[1a]	SepSW2[2a]	DCDC convertor[3a]
Overdischarge	Load side	SepSW2[1b]	SepSW3[2b]	SepSW4[3b]
	Solar cell side	SepSW2[1b]	SepSW1[4b]	Diode[5b]
External short	Load side	Insulation[1c]	SepSW2[2c]	SepSW3[3c]

Inhibit schematic of BIRDS-4 satellite

In his August 2019 article, Hari discussed the updates of the Electrical Power System (EPS) of the BIRDS-4 satellites. He also explained the independent inhibit features to comply with the JEM Payload Accommodation Handbook as aligned with the system safety standard. To refresh us with such features the following is the update.

There are three deployment switches and four separation switches for the main EPS circuit. The deployment switches are physical switches located at the satellite structure while the separation switches are electronic switches (MOSFET) employed in the front access board (FAB).

The three deployment switches cut the power supply of the satellite when it is placed in the J-SSOD. The deployment switches operate as a three-way inhibit necessary for compliance with safety requirements.

The next slide provides the specifications of the deployment switches and their location in the satellite structures. It should be noted that there are two different switches used as deployment switch: (1) installed in the side of the rails and (2) installed at the bottom rails.

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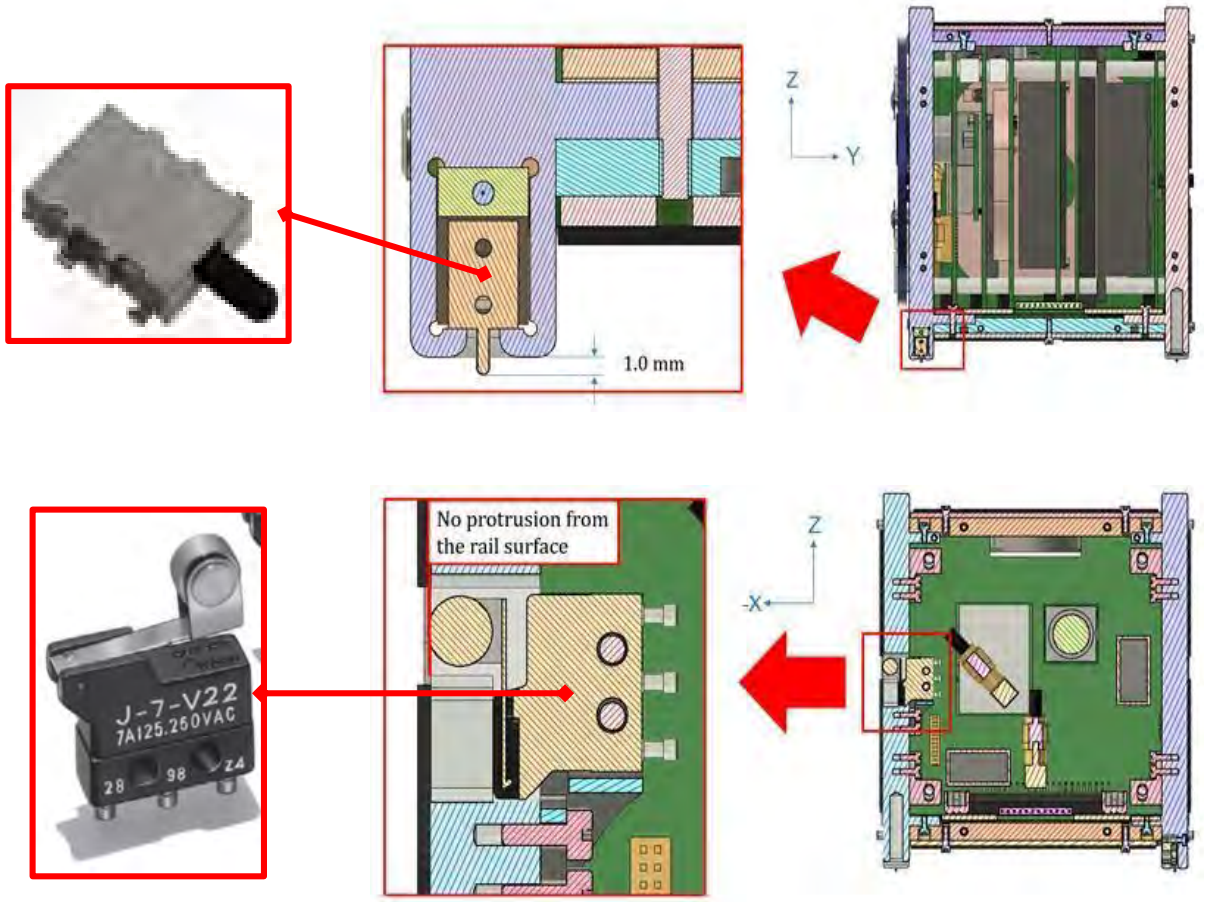
Deployment switches specifications

Component	DepSW 1 and 2	DepSW 3
Manufacturer	C&K COMPONENTS	OMRON Corporation Electronic
Part Number	SDS001	J-7-V22
Rated Current	100 mA(DC)	7 A
Rated Voltage	12 V(DC)	125-250 V(AC)
Actuating Force	0.74 N	0.54 N
Over travel	2 mm	1.6 mm
Life Cycle (electrical)	50,000 cycles	50,000 cycles
Operating Temperature	-40 °C ~ +85 °C	-10 °C ~ +80 °C



Locations and types of deployment switches as they are integrated in BIRDS-4 satellite structure

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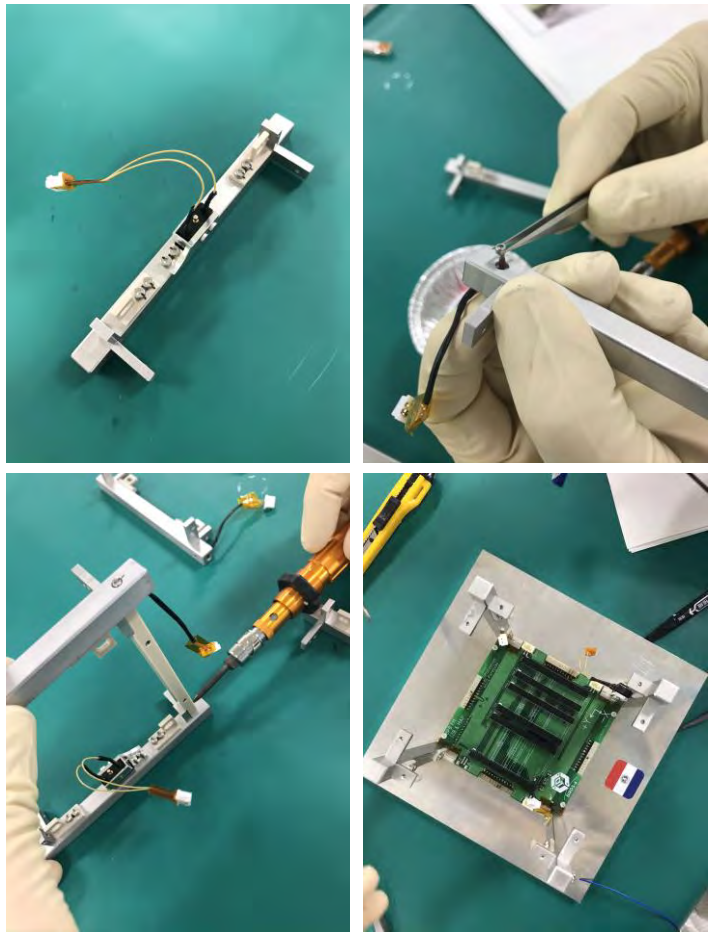

Deployment switches integrated with the structure and back plane board during flight model assembly

During the satellite flight model assembly, the deployment switches were integrated with the structure and back plane board. After each deployment switches were integrated with their positions in the structure and back plane board, they were tested individually using a multimeter. After full integration, the switches where checked if they perform exactly as designed. This is done by pressing the deployment switches one by one and putting it inside the pod and checking the battery voltage. The battery voltage was checked using a UART cable connected to a computer.

Putting the assembled satellite (Maya-2) inside the pod for fit test and inhibit test of the lever switch inside the rail structure

Based on the test conducted, Maya-2's deployment switches are functioning according to its design. While inside the pod (where all the deployment switches are pressed), the satellite is not powered on as seen from the PC screen.

Contribution to *3rd Ground Station Workshop*

Adolfo Jara & Izrael Zenar Bautista

February 7, 2020

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Operation Demonstration

Written By: Adolfo Jara

The 3rd Ground Station Workshop was held in Kyutech in January with the purpose of strengthening the cooperation between members of the BIRDS Ground Station Network. This is a global tracking network for all BIRDS-related and Kyutech-related satellites.

The BIRDS-4 team was assigned in one of the training sessions to explain all the details of our satellite. First, Izrael made the general presentation of the BIRDS-4 Project as well as a complete explanation of all the missions that the satellite will execute once it is deployed in space. After that, I explained the satellite subsystems, giving a greater emphasis on the operation of the OBC (On-board Computer).

Izrael and I during the presentation

I also explained the commands for the execution of the missions, subsystem-oriented commands and specific commands for downloading data, the format of the data and how they are stored in the memory of the satellite.

For the practical demonstration of the satellite operation, we used the Engineering Model of the satellite with a completely wireless configuration. The ground station we used is the IC9100 radio connected to a laptop with the BIRDS-4 ground station software exclusively designed for our satellite.

Izrael explaining the details of the user interface

Operation Demonstration

Written By: Adolfo Jara

The use of the satellite Engineering model, Radio and Ground station software was designed so that the participants can operate the satellite in the condition that is as similar as possible to the actual operation condition once the satellite is in orbit.

For the Camera Mission demonstration, we asked help from Mark, who explained the different commands and modes to operate the camera mission. Details of where these images are stored in memory and what commands to use to download the images were also discussed. Because the images represent a large amount of data, the joint operation between all the Ground Stations of the BIRDS network will be very important.

Mark during the camera mission explanation

On behalf of the BIRDS-4 team, I would like to thank the participants for their enthusiasm and we hope we could work together very soon in doing BIRDS-4's missions.

Store-and-Forward

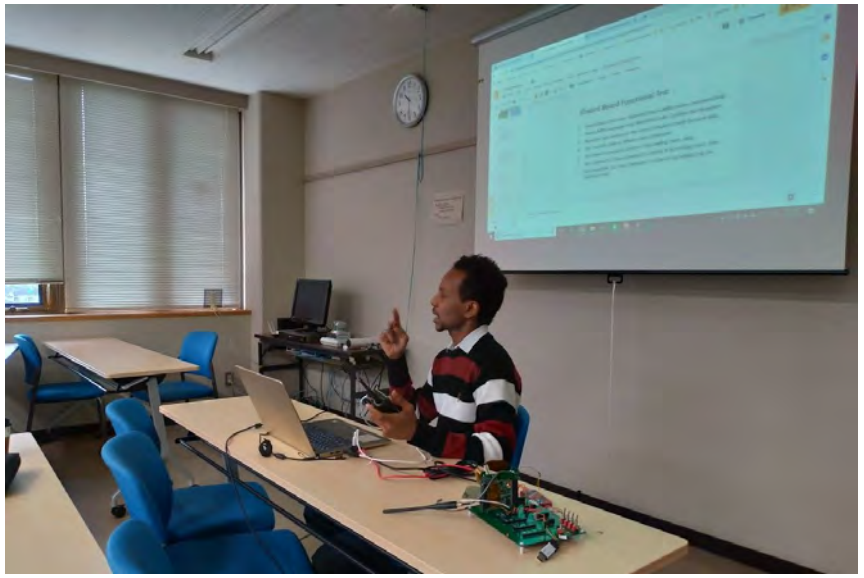
Written By: Izrael Zenar Bautista

Every year BIRDS member nations come together to discuss the operations and learn how to operate the BIRDS satellite for new participating countries. This year, as part of the Annual BIRDS Ground Station Workshop, held in Kyushu Institute of Technology, Tobata campus, BIRDS-4 members discussed how the satellite is operated and controlled using the ground station software developed by the team.

One of the missions of BIRDS-4 is the Store-and-Forward mission which functions by receiving data from sensor terminals, storing them inside the satellite's flash memory, then downlinking it to the ground station for further data processing.

Yasir Abbas and I talked with the BIRDS ground station workshop attendees about the execution of the SFWARD mission during the operations. We also showed them the design for the ground sensor terminals that they could build if they want to utilize this mission of the BIRDS-4 satellite.

BIRDS-4 member Yassir Abbas discussing the SFWARD mission to the ground station workshop attendees



Store-and-Forward

Written By: Izrael Zenar Bautista

Paraguay and the Philippines particularly have several science missions that they want to do with the data they could obtain from ground stations that they are planning to deploy once the satellite is commissioned.

For Paraguay, they want to use data from insect traps that carry disease to map out areas that they should focus on to eradicate this disease. For the Philippines, the several weather sensors they have deployed around the country could use the SFWARD to deliver data from these weather sensors. They are also looking into the possibility of using this for animal wildlife tracking.

Hands-on demonstration of the SFWARD mission for Ground station workshop attendees

Store-and-Forward

Written By: Izrael Zenar Bautista

Finally, we discussed and decided on the data format for the sensor terminals to make the operation and data processing consistent for all those who are going to make their ground sensor terminals.

It was decided that the data would be formatted as Time, data byte size followed by the actual data collected by the sensors.

For more details regarding the usage of the Store-and-forward functionality, you may contact us at our email: kyutech_birds4@googlegroups.com or check out our website at https://birds4.birds-project.com/

Workshop attendees discussing the data format for the sensor terminals

End of this **BIRDS Project Newsletter**

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This newsletter is archived at the BIRDS Project website:
http://birds1.birds-project.com/newsletter.html

When a new issue is entered in to the archive, an email message is sent out over a mailing list maintained by the Editor (G. Maeda, Kyutech). If you wish to be on this mailing list, or know persons who might be interested in getting notification of issue releases, please let me know.

This newsletter is issued once per month. The main purpose of it is to keep BIRDS stakeholders (the owners of the satellites) informed of project developments.