



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.*

ISSN 2433-8818

BIRDS Project Newsletter

Issue No. 53
(22 June 2020)

Edited by:

G. Maeda

革新的宇宙利用実証ラボラトリー

Laboratory of *Lean Satellite Enterprises*
and *In-Orbit Experiments (La SEINE)*

Kyushu Institute of Technology (Kyutech)
Kitakyushu, Japan



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.

Table of Sections

1. "LaSEINE Annual Progress Report 2019" is available for your perusal
2. NASA's probe to Titan, a moon of Saturn, will blast off around 2026
3. Self introduction by Fatima – new PNST student from El Salvador
4. Virgin Orbit's maiden launch failed ... but it is still in the game
5. Self introduction by Minh – new PNST student from Vietnam
6. Tellus: Satellite data platform in Japan
7. Self introduction by Bramandika – new PNST student from Indonesia
8. Learning Japanese outside of Japan
9. Self introduction by Ariel – new JICA SDG student
10. Introducing "BIRDS Nest": The BIRDS Project smartphone application
11. The Kyutech Futaba Satellite Project
12. Report from Nepal
13. MEXT survey on nanosatellite capacity building around the world
14. How to use the Orbiton software package
15. Report from Colombia

Continued on the next page

From Honduras

The Guest Box



Roatan Marine Park

The Roatan Marine Park, together with the Bay Island Marine Park, protects a significant sample of the reef ecosystem known as the Mesoamerican Reef System. Roatan is surrounded by a majestic living coral on all sides. Almost every single coral species growing around the Caribbean today is found in the waters around the Bay Islands. This includes the famous Black Coral and a variety of sponges of all colors, shapes, and sizes. Find out more at

<https://www.roatanmarinepark.org/>

-- by Reynel, new SEIC student of Honduras

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

16. Advice on how to study Nihongo – by Dr. J. Ofosu (new member of LaSEINE)
17. BIRDS-4: English exams in Japan
18. BIRDS-4: Anechoic chamber: what is it?
19. BIRDS-4: Work at Kyutech during the state of emergency (pandemic)
20. BIRDS-4: Writing about space science and technology at a Turkish website
21. BIRDS-4: “Image classification unit” team takes home an IEEE prize
22. BIRDS-4: Commemoration of Paraguay independence
23. BIRDS-4: Coronavirus in Paraguay
24. Column #6 from Malaysia
25. BIRDS-3: Reset data collection
26. Report from Sri Lanka
27. Report from the Philippines
28. BIRDS-5: Establishing its missions
29. BIRDS-3: "CW-SMS"ing service - a novel public service initiative
30. BIRDS - Platform of CubeSat Program

End of Table



The Kanmon Bridge (1975), linking the islands of Honshu and Kyushu over the Shimonoseki Strait, was the first major island bridge in Japan.

It is a few kilometers north of the Tobata Campus of Kyutech. Under this road traffic bridge is an under sea pedestrian tunnel. It takes only 15-20 minutes to walk it one way.

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.



JSPS provides the airfare funds of BIRDS Int'l Workshops and for Ground Station Workshops.

It would help us a lot.

01. “LaSEINE Annual Progress Report 2019” is available for your perusal



64 pages -- 7.3 MB pdf

This annual report covers
April 2019 through March 2020
(FY 2019, or 2019年度)

AVAILABLE FOR DOWNLOADING

Most of it is written in Japanese but some of it is written in English

USE THIS LINK : <https://kyutech-laseine.net/news.html>

Locate this →
part of the
screen

- 2008年度ラボラトリー見学者一覧
- 2007年度ラボラトリー見学者一覧

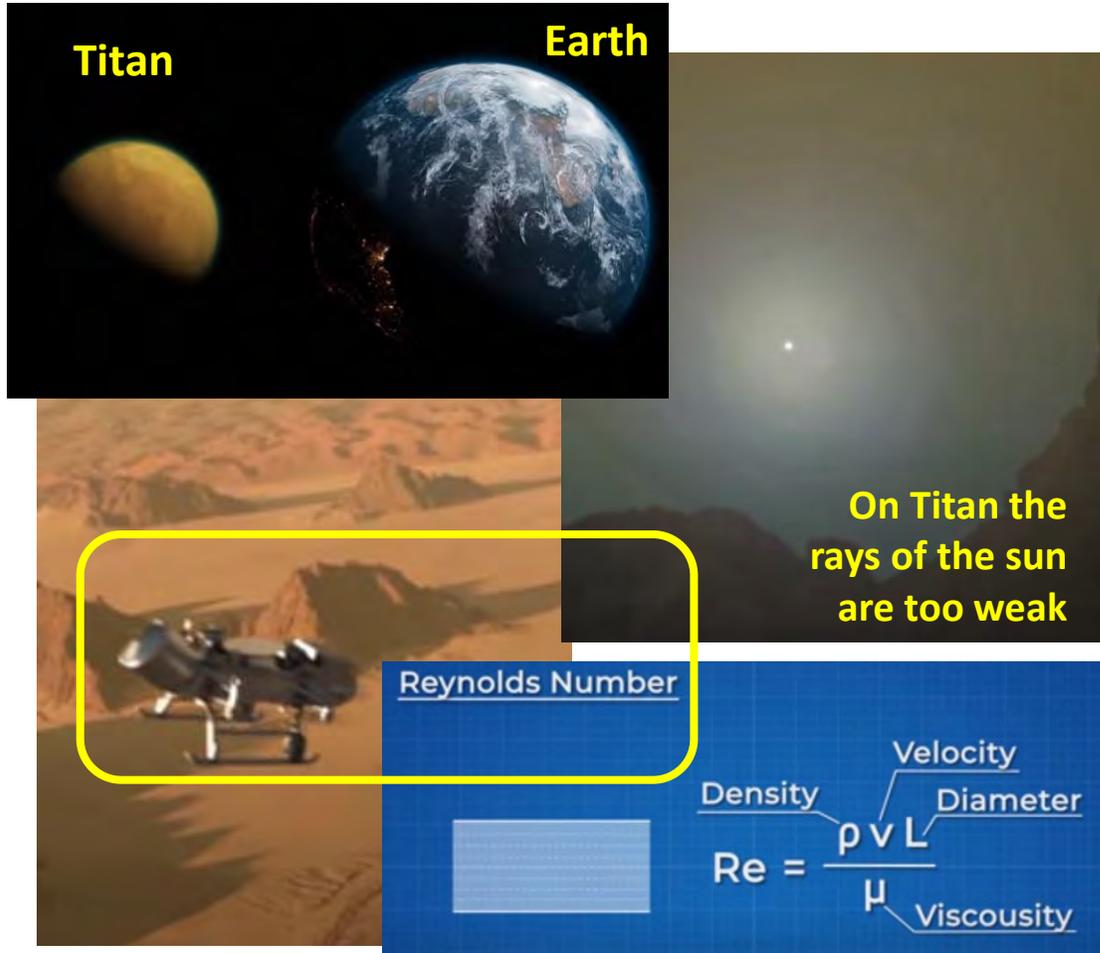
各種資料

資料のダウンロード

Click
on this

02. NASA's probe to Titan, a moon of Saturn, will blast off around 2026

NASA's amazing and fantastic mission to Titan: **Dragonfly**



Dragonfly will be a rotorcraft lander, much like a large quadcopter with double rotors, an octocopter. Such redundant rotor configuration will be able to tolerate the loss of at least one rotor or motor. Each of the eight rotors will be about 1 m in diameter. The aircraft will travel at about 10 m/s or 36 km/h and climb to an altitude of up to 4 km.

The aerial flight on Titan is aerodynamically benign as Titan has low gravity, low winds, and its dense atmosphere allows for efficient rotor propulsion. The **RTG power source** has been proven in multiple spacecraft, and the extensive use of quad drones on Earth provides a well-understood flight system that is being complemented with algorithms for independent actions in real-time. The craft will be designed to operate under space radiation and temperatures averaging 94 K (-179.2 ° C).

-- from [https://en.wikipedia.org/wiki/Dragonfly_\(spacecraft\)](https://en.wikipedia.org/wiki/Dragonfly_(spacecraft))

What is **RTG power source** ? see: https://en.wikipedia.org/wiki/Radioisotope_thermoelectric_generator

15-MIN. VIDEO : <https://www.youtube.com/watch?v=wJuWuJBbc1s&t=679s>

CONTINUED ON THE NEXT PAGE

Artist's conception:
Landing on Titan



A full-size replica of the probe,
1.3 metres across.

(Wikipedia)

Dragonfly was conceived from the success of this 2005 mission to Titan:

Huygens (spacecraft)

From *Wikipedia*, the free encyclopedia

Huygens was an atmospheric entry probe that landed successfully on Saturn's moon Titan in 2005. Built and operated by the *European Space Agency (ESA)*, it was part of the **Cassini–Huygens mission** and became the first spacecraft to land on Titan and the farthest landing from Earth a spacecraft has ever made. The probe was named after the Dutch 17th-century astronomer Christiaan Huygens, who discovered Titan in 1655.

The combined Cassini–Huygens spacecraft was launched from Earth on October 15, 1997. Huygens separated from the Cassini orbiter on December 25, 2004, and landed on Titan on January 14, 2005 near the Adiri region. This is the only landing accomplished in the outer Solar System. It was also the first landing on a moon other than Earth's Moon.

Huygens touched down on land, although the possibility that it would touch down in an ocean was also taken into account in its design. The probe was designed to gather data for a few hours in the atmosphere, and possibly a short time at the surface. It continued to send data for about 90 minutes after touchdown.

--- from [https://en.wikipedia.org/wiki/Huygens_\(spacecraft\)](https://en.wikipedia.org/wiki/Huygens_(spacecraft))

03. Self introduction by Fatima – new PNST student from El Salvador

On the following pages you will find the self-intro written by *Ms. Fatima Gabriela Duran Dominguez*. She will be a PNST scholar at Kyutech SEIC in the Fall of 2020. She is from El Salvador of Central America (see the map at the right).



1. Self-Introduction



- My name is Fatima Gabriela Duran Dominguez. I was born in San Salvador, El Salvador. In 2015, I obtained my associate's degree as an Aircraft Maintenance Technician from Universidad Don Bosco (UDB), El Salvador. At the same time, I was selected as a grantee of the *Korean Government Scholarship Program* (KGSP). Earlier this year, I obtained my bachelor's degree in Aerospace Engineering from Pusan National University.
- I'm interested in aerospace engineering, specially focused on space systems and small satellites research and development. Moreover, I would like to be one of the leaders to develop a small satellite program in my country.

2a. General Information about El Salvador

- El Salvador, officially the Republic of El Salvador.
- For years, El Salvador's main economic activity was agriculture. However, since 1960 and on it changed to the industry and service sectors.
- El Salvador has a tropical weather, with dry and raining season only. El Salvador offers a beautiful and diverse landscape composed of mountains, lakes, waterfalls, beaches, and more!

Total Area: 21,040 km^2
Population: 6,702,000 (2019 est.)
Capital: San Salvador
Official Language: Spanish
Monetary Unit: US dollar.



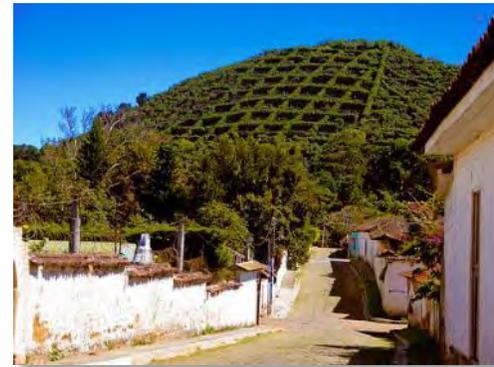
El Salvador's flag and coat of arms. The flag is composed of two blue stripes that represent the two oceans that border Central America, and a white stripe in the middle that represents peace.



Night view of Historic Center of San Salvador, surrounded by San Salvador Cathedral, National Palace, Great National Theater, and Plaza Libertad.



Joya de Cerén, declared by UNESCO a World Heritage Site in 1993. Provides an insight into the daily life of Mayan farming village from 1,400 years ago.



Coffee plantations around 'Ruta de Las Flores'. Salvadoran coffee is still recognized worldwide for its high quality and delicious taste.



El Rosario Church, San Salvador, built in 1971. Its unique architectural design broke with the traditional construction canons of that time.



2b. General Information about El Salvador



Santa Ana Volcano, or Ilamatepec one of the highest and most active volcano.



Coatepeque Lake, from a volcanic origin, located in Santa Ana.



El Tunco Beach and its iconic rock formation with a shape of pig.



Night view of Plaza and Torre Futura, in Salvador. It offers exclusive restaurants and coffeeshops.



Micro-Macro Observatory, at Universidad Don Bosco, first Salvadoran observatory, opened on August 2019!



'Pupusas', main traditional dish. Dough stuffed with cheese, beans, chopped pork. Served with 'Curtido' and 'Salsa'.

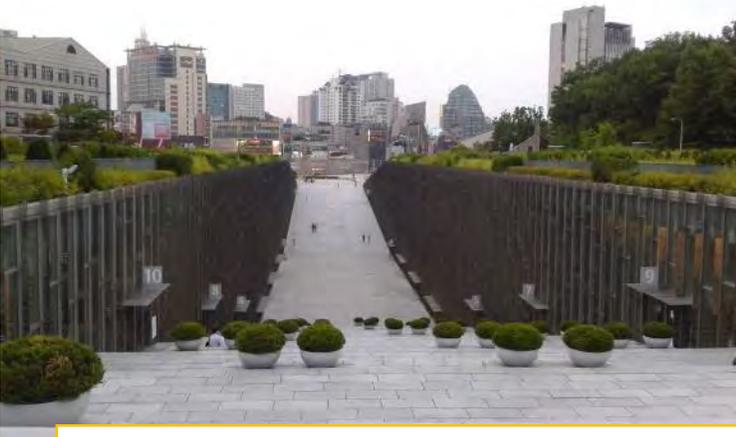
3a. Life and studies in South Korea

From El Salvador to South Korea!

I came to Korea by the end of winter in 2015. Thanks to the scholarship program, I was able to learn Korean language at *Ewha Womans University*, located in Seoul.



Ewha Centennial Library.



Ewha Campus Complex (ECC), Korea's largest underground campus structure.

From Seoul to Busan!

After one year of intensive Korean language course, I could start my bachelor's degree at Pusan National University, located in Busan.



Seoul



Busan

Seoul & Busan

Living in South Korea, I enjoyed visiting different places and eating a lot of delicious food!!



Samgye-tang, a Korean traditional soup for body health.

← "Busan" is sometimes spelled as "Pusan"



Administrative Building, PNU



3b. Life and studies in South Korea

Other Activities!

While studying my bachelor's degree, I also had the opportunity to participate in different extracurricular activities such as volunteering, training, festivals, etc.



Wearing Hanbok, a traditional Korean dress

During a technical visit in of a smart-farm during the 13th Youth Workshop



Training Experience!

In 2019, I participated in the 13th Youth Workshop "Accelerating SDGs Achievement through ICT", organized by the United Nations Institute for Training and Research (UNITAR).



My team and I at the 13th Youth Workshop

Volunteering

I volunteered in the KT Dream School Program, as an English and Spanish mentor for Korean children living in remote areas.

PNU mentors and I, for the 2019 KT Dream School Mentoring Program



Closing Ceremony of the 2019 KT Dream School Mentoring Program





4a. My career in the space field



Hangar at AEROMAN, El Salvador

Internship - AEROMAN

In 2014, while in El Salvador, I did an internship at department of Engineering Management and Technical Training of AEROMAN, a company leader in airframe heavy maintenance.

El Salvador Aerospace Institute

As an honorary intern, I'm responsible of the Satellite Operations and Research Section, that aims to place in orbit the first Salvadoran satellite and further develop a small satellite program.



SPACE GENERATION
ADVISORY COUNCIL

National Point of Contact

Earlier this year, I was selected as the National Point of Contact (NPoC) for El Salvador at the Space Generation Advisory Council (SGAC). My role is to guarantee effective communication between El Salvador and SGAC.

At Pusan National University

While studying at Pusan National University, I could participate in two labs. The first one was Reactive Flow Laboratory, and the second one, Flight Dynamics Laboratory.



부산대학교
PUSAN NATIONAL UNIVERSITY



4b. My career in the space field

International Space Training

I participated in the 2017 KARI International Space Training (IST) in representation of ESAI. This program was organized and sponsored by the Korea Aerospace Research Institute (KARI). This was the most outstanding experience while living in Korea. In a period of two weeks, we received seminars about different topics on satellite R&D and satellite applications such surveillance, crops monitoring, weather and disaster monitoring. Additionally to the seminars, we went on technical visits to space related companies, as well, as KARI'S facilities and Naro Space Center. Last but not least, we also experienced different cultural activities.



First day at 2017 KARI IST



At KARI's ground testing facilities



At KARI's ground control station

04. Virgin Orbit's maiden launch failed ... but it is still in the game



I am rooting for **Virgin Orbit** because it specifically targets the smallsat market. It is a viable alternative to ground-launched rockets.

The first attempt on 25 May 2020 failed – but I hope the engineers will figure out what went wrong and will make another attempt soon.

Cosmic Girl carrying LauncherOne



Virgin Orbit's carrier plane, Cosmic Girl, hauls the company's LauncherOne rocket aloft on the Launch Demo mission on May 25, 2020. LauncherOne did not reach orbit on the flight.

(Image: © Virgin Orbit via Twitter)

This also looks very interesting:

Virgin Orbit Could Launch Polish Cubesat Mission to Mars in 2022

<https://www.space.com/polish-mars-cubesat-mission-virgin-orbit.html>

Big plans, small satellites

Virgin Orbit plans to claim a large chunk of the growing small-satellite launch market with **Cosmic Girl** and **LauncherOne**, which is capable of hauling to LEO payloads that weigh up to about 1,100 lbs. (500 kg).

There's stiff competition in this sphere already. **Rocket Lab** offers dedicated rides to orbit with its Electron booster, for example, and SpaceX is making a push to carry smallsats as piggyback customers aboard its powerful Falcon 9 rocket.

But Virgin Orbit's air-launch strategy gives the company a great chance of success, Hart said, stressing that the system provides flexibility, mobility and responsiveness. "We can fly to space from anyplace that can host a 747, which is almost any place," he said. "And we can go to any orbit."

Virgin Orbit already has a number of customers lined up including NASA, the U.S. Air Force and the U.K. Royal Air Force. The deals already inked represent hundreds of millions of dollars of business, Hart said.

-- from <https://www.space.com/virgin-orbit-first-rocket-launch-failure.html>

LauncherOne

From Wikipedia, the free encyclopedia;
<https://en.wikipedia.org/wiki/LauncherOne>

The original *LauncherOne* concept, 2007-2015, for a smaller launch vehicle (200 kilograms (440 lb) to low-Earth orbit) was shelved in 2015 and replaced by a larger rocket design capable of putting a 300 kilograms (660 lb) minisat payload in a 500 kilometres (310 mi) Sun-synchronous orbit, suitable for CubeSats and small payloads, with an expected cost less than US\$12 million.

Design

LauncherOne is a two-stage air-launched vehicle using two Virgin-designed and built Newton RP-1 / LOX liquid rocket engines. The rocket has a diameter of 1.6 metres for the first stage and 1.3 metres for the second stage and payload fairing. The first stage uses one NewtonThree engine, while the upper stage uses one NewtonFour engine.

In October 2019, the company announced plans to develop a three-stage variant that would be capable of launching 100 kg to the Moon, 70 kg to Venus, or 50 kg to Mars.



05. Self introduction by Minh – new PNST student from Vietnam

On the following pages you will find the self-intro written by *Mr. Pham Anh MINH*. He will be a PNST scholar at Kyutech SEIC in the Fall of 2020. He is from Vietnam.





Personal Introduction

Minh A. Pham
12 June 2020



Name: Pham Anh **MINH**

Nationality: Vietnam

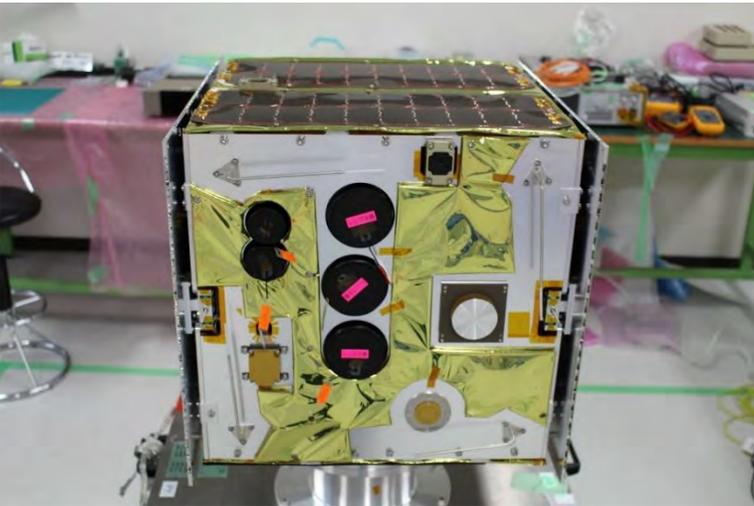
Date of Birth: 05/02/1991

Contact Information: minh.hust@gmail.com

Academic Journey:

- Electrical and Electronic Engineering, Hanoi University of Science and Technology.
- System Engineering, Graduated school for System Design and Management, Keio University.

- ❖ MicroDragon Project: Development of the 50kg observation satellite. Ocean color observation to assess coastal water quality and locate living resources is a main mission of MicroDragon satellite.
- ❖ I worked as project leader for 2 years



MicroDragon
Flight Model



Structure Thermal Model Test Campaign

- ❖ Hyperloop pod competition 2: a competition sponsored by SpaceX in 2016 in which a number of student and non-student teams participate to design, build a subscale prototype transport vehicle in order to demonstrate technical feasibility of various aspects of the Hyperloop concept.
- ❖ I was in charge of electrical and electronic design.

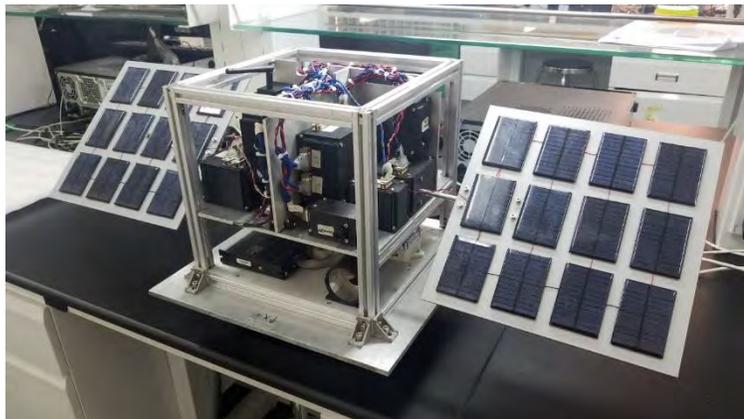


Hyperloop pod flight model



Keio Hyperloop Project, Keynote 2017

❖ MicroSat KIT: Development of MicroSat Kit for educating Space Engineering in university. The model with visual demonstration is used to attract and train young engineers and students in aerospace engineering, including satellite design, assembly, integration, testing and operation



MicroSat Kit Engineering Model



Space system design class for third year students



Motorbike trips



Hiking



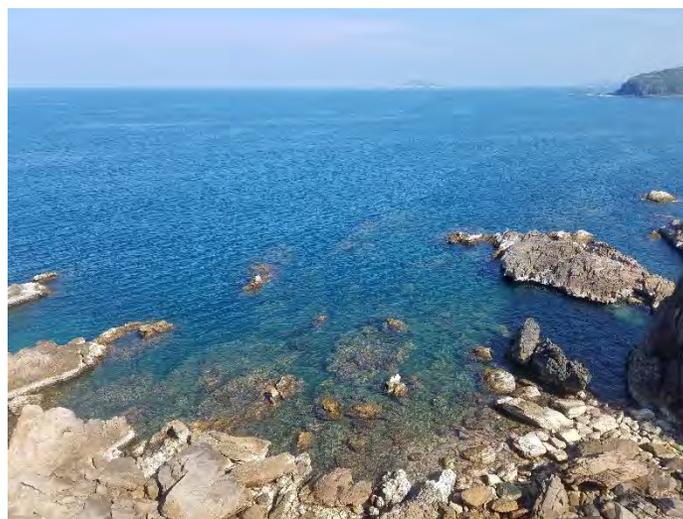
Trekking

Beautiful and peaceful places

All pictures were taken by me



A view of O Quy Ho pass,
northern part of Vietnam



A part of the coastal line
In Phu Yen province,
middle part of Vietnam



A white sandhill,
In Mui Ne,
southern part of Vietnam

End of Minh's self intro

Satellite data platform in Japan

Tellus is the Government of Japan's data platform to democratize Japanese national satellite data with user-friendly environment. Tellus is not an 'open and free' data platform in Japan, but also collects a panoply of data all over the world, including information that can be acquired from satellite.

Towards a world where anyone can easily handle data anytime and anywhere.

[Sign up / Sign in](#)

If you are seeking to use data from Japanese satellites, ***Tellus*** would be a good place to start. However, you do need to register for the service.

<https://www.tellusxdp.com/en-us/>

Probably

Tellus is not an 'open and free' data platform in Japan, should be

Tellus is not only an 'open and free' data platform in Japan,

07. Self introduction by Bramandika – new PNST student from Indonesia

On the following pages you will find the self-intro written by *Mr. Bramandika Holy Bagas Pangestu*. He will be a PNST scholar at Kyutech SEIC in the Fall of 2020. He is from Semarang City, in Central Java of Indonesia (see the map at the right).



BRIEF PROFILE

 **INDONESIAN**

(Click the icon)



**BRAMANDIKA HOLY
BAGAS PANGESTU**
(22 y.o.)

“I will join SEIC KyuTech starting in Fall 2020 as a UNOOSA PNST Fellowship Student.”

Dreams



- Promoting space technologies for Indonesia

Hobbies



- Contemplating
- Badminton
- Learn new things

Languages

- English
- Indonesian
- Javanese

Favourites

- Seafood!
- Tea!
- Space Technologies!
- Batik!



(Click the icon)

Contacts



(Click the icon)



PERSONAL LIFE

- Currently, in order to prepare my departure to Japan, I spend a lot of time in online courses, learn some basic of Japanese Language, and some budget planning.

“I live with my parents, one little brother and grandmother.”



(Click the icon)



SEMARANG CITY, INDONESIA

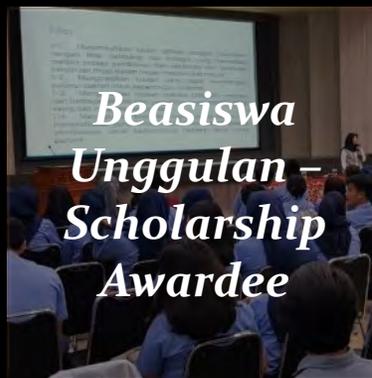
“I was born and raised in Semarang, Indonesia.”



Source: <https://www.semarangkota.go.id/>

WHAT I'VE DONE...

(For more information, click the icon)

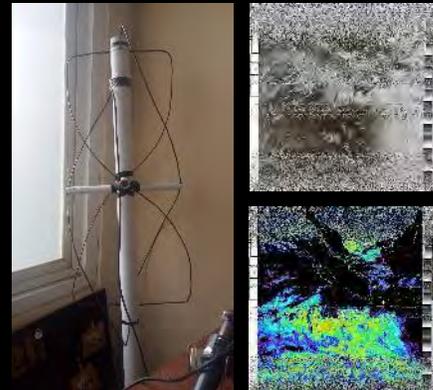


FOREGOING PROJECT ACTIVITIES

- Nanosatellite Laboratory, Telkom University



- Student Internship, Telkomsat



THE MAGNIFICENCE OF INDONESIA

“Hither my allegiance recline. My homeland, Republic of Indonesia.”



(Click the icon)



SATCOMMRADAR TELKOM UNIVERSITY X INDONESIA IEEE AESS / GRSS
PROUDLY PRESENT

INTRODUCTION TO SATELLITE TECHNOLOGY COURSES

1st SESSION
Introduction to Satellite Tech,
Development and Regulations



SPEAKER
Dr. ARIFIN NUGROHO
(IEEE AESS GRSS)

MODERATOR
WIDODO MARDIJONO
(Satellite Systems Consultant)

2nd SESSION
Small Satellite Application
Fundamental and Design



SPEAKER
WAHYUDI HASBI M.Sc
(Satellite Technology Center-LAPAN)

MODERATOR
IBNU RUSYDI
(Satellite Bus & Mission Engineer, PSN)

3rd SESSION
Orbital Mechanics
Introduction



SPEAKER
Dr. RIDANTO EKO POETRO
(FTMD, Bandung Institute of Technology)

MODERATOR
EDWAR
(Lecturer in Telkom University)

TIME

1st Session
June 23rd, 2020
2nd Session
June 25th, 2020
3rd Session
June 27th, 2020

FREE!!!
REGISTRATION
*LIMITED SEAT ONLY

FOR MORE INFORMATION :
shinji.kimura20@gmail.com (Shinji)
+62 85701267702 WA ONLY (Alpujana)

REGISTER HERE :
s.id/IntroSatTechCourse

VIA ZOOM

13.00-16.00 UTC+7

***E-CERTIFICATE INCLUDED**

**DISCOVERING SPACE EXPLORATION TECHNOLOGY
HAS NEVER BEEN THIS EXCITING**

Organized by:    Supported by:    

← This poster was received on 15 June 2020.

Bramandika and his team mates at Telkom University are currently organizing this online short course in collaboration with the Indonesian section of IEEE AESS/GRSS.

END OF THIS SECTION

Learning Japanese Outside of Japan

By Reynel Josué Galindo Rosales

8 June 2020

1st year SEIC Student

*Project Morazan
National Autonomous University of Honduras*

This article is meant to show how as a Kyutech international student applicant, I started learning the language before getting to Japan and the interest I have in the country outside the academic scope.

The path to learn a new language is very fun and gives a lot of advantages, and given the opportunity to live in Japan, it is my goal to master Japanese while I am a student at SEIC.

Learning Japanese Outside of Japan

Why Japanese?

Japanese culture is very different than my own, and unique in a lot of ways. Social problems and advantages are completely opposite than those presented in my country.

This cultural difference makes a very practical option to find solutions and improvements from a different perspective.

I think the best way to immerse in a different culture is learning the language, which in itself brings a lot of additional perks.



Where to Start?

Learning any language from zero may seem like a daunting task, but there are several ways to approach this.

For the Japanese language, it may be very difficult to find places where the language is taught, as other languages such as English and Spanish dominate the language learning market. Most of the time, Japanese courses don't get more advanced than casual greetings and an introduction to the writing system as there are too few students who continue after that.

However, we live on a time where the internet is widely available, and with it a lot of information on how to learn a language becomes easy to get.

Learning Japanese Outside of Japan

BE INSPIRED
BY THE JAPAN
WITHIN YOU



JAPAN FOUNDATION



[Tae Kim's guide to Japanese](#)

Tae Kim's guide is very practical and its emphasis is not to teach Japanese *fast* but in an organic manner to understand every part of the language instead of memorizing expressions. Even though it is not interactive, the explanations are very congruent and teach how to understand the language as-is instead of translating the grammar.

[Kanji Tree](#)

Kanji Tree is a free App that helps learning kanji on mobile devices as if you are writing them on paper.

If you want to learn the language, these three resources are very good for both beginners and more advanced students.



**THE OF
THIS
SECTION**

Internet Resources

There are a lot of resources available online to learn the language, and some are more useful than others.

I personally found most useful three completely free resources:

[Japan Foundation MINATO](#)

Minato offers a series of interactive courses that makes you use the language from the get-go, which helps a lot with retention without the need of pen and paper.

09. Self introduction by Ariel – new JICA SDG student

On the following pages you will find the self-intro written by *Mr. Ariel Mazaru Manabe Safi*. He is scheduled to join SEIC in the Fall of 2020.

He is from **Paraguay** in South America.



Front



Back





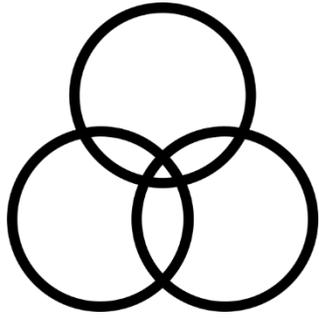
Hi there! This is **Ariel Mazaru Manabe Safi**, a **28 years old** guy. Despite the cultural combination of my full name, I am **from Paraguay**. And yes, people in my country find this name somewhat weird and usually they have hard time when trying to pronounce it. I don't know why.



I really like to know about origins and meanings of people's names. Ariel, for example, is Hebrew origin and its meaning is "Lion of God". This is a reason I am glad about my name for. So, when in confidence with other, I usually ask them about their names.

As for Mazaru, the idea was to give me a name of Japanese origin, but in the civil registry it was misspelled. Originally it must have been Masaru, although it still seems cool to me

Photo by [Allie](#) on [Unsplash](#)



The reason my name have such combination is because my grandparents, on my dad's side, were Japanese. They came to Paraguay during the second wave of immigrants, in the early 1950s, after the end of the World War II. And, my grandfather, on my mom's side, was a descendant of the Arab world, I don't know exactly which country, but there is a city named Safi (suspicious)

I born and still live in Lambaré, a city next to Asunción, the capital of Paraguay. Below, we can see the Lambaré's hill (actually part of Asunción). At the top, there is a lookout open to tourists and a monument representing the figure of the Cacique (chief) Lambaré; indigenous leader at the time of the Spanish Colony. There is a dispute over whether such a chief really existed, but the truth is that the monument does exist, and it is also true that in Paraguay there are still indigenous tribes that preserve their own languages and customs, they are descendants of the first inhabitants who already inhabited these lands even before they were discovered in 1492.





Front



Back

There are no mountains, although some low mountain ranges of no more than 842 meters high. Hundreds of rivers and many places to visit.



Paraguay is considered the heart of south America, it has a unique flag with two national shields, one on the front and one on the back.



Its population is predominantly mestizo, a mixture of the Spanish and Portuguese blood of the conquistadors with that of the native Guaraní. We are characterized by our national drink, an infusion made from yerba mate leaves (*Ilex paraguariensis*) and water with a lot of ice, to which medicinal herbs are often added. And we take it mostly in a round of friends (temporarily suspended). We hope this practice does not end due to the pandemic crisis

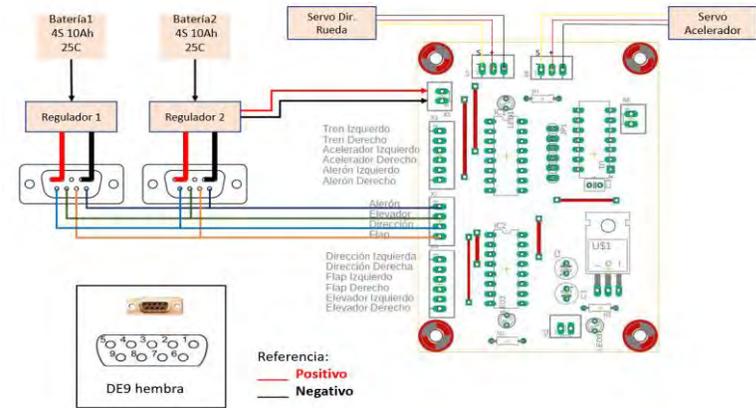


I hold a degree in electronic engineering with emphasis in mechatronics, granted by the Polytechnic Faculty of the National University of Asunción (FP-UNA).

Actually, I am working at the Mechatronics and Electronics Research Group (GIEM-FPUNA) as a researcher and technical instructor for students. We define ourselves as a university non-profit scientific and technological promotion team, whose objective is to support teaching and research in Electronic Engineering and Mechatronic Engineering, mainly through inter-institutional projects.

Within this framework, I had the opportunity to collaborate on a project with a company whose objective was to design and manufacture a prototype of an electromagnetic induction cooker, from scratch, in order to promote industrialization and thus generate other sources of work. This project then becomes my final degree work to obtain the title of engineer





Now, we are working on the development of a RPAS prototype, in order to lay the foundations for the development of this technology, in collaboration with Professors Oswaldo Loureda and Carlos Lavrado, Brazilians who gambled and decided to help us in this challenge. You can see more details here:

<https://www.facebook.com/giemfpuna/posts/2860076520678238>



These and many other projects were only possible through a **cooperation network**, where people with the same ideals converge. And this is what motivates us to participate in the **BIRDS project**.



We have already taken our first steps in space exploration, thanks to the High Altitude Balloon AEP-UNA-GS001 project, led by **PhD. Jorge Kurita** of the **Paraguayan Space Agency (AEP)** and Professor of the Aeronautical Engineering degree, together with the members of the **GIEM** (I am here) and students, we could obtain the first photo of our country from a height of 27 thousand meters but, we want to go further!!



I am a participant in the SDGs Global Leadership Program of JICA and, in representation of these institutions and my country, hope to join you soon!

END OF THIS SECTION

10. Introducing “BIRDS Nest”: The BIRDS Project smartphone application



This is the app that all of you have been waiting for:
“BIRDS Nest” for Apple iPhone and for Android

The following article introduces “BIRDS Nest”. The article was written by Keenan Chatar on 10 June 2020.

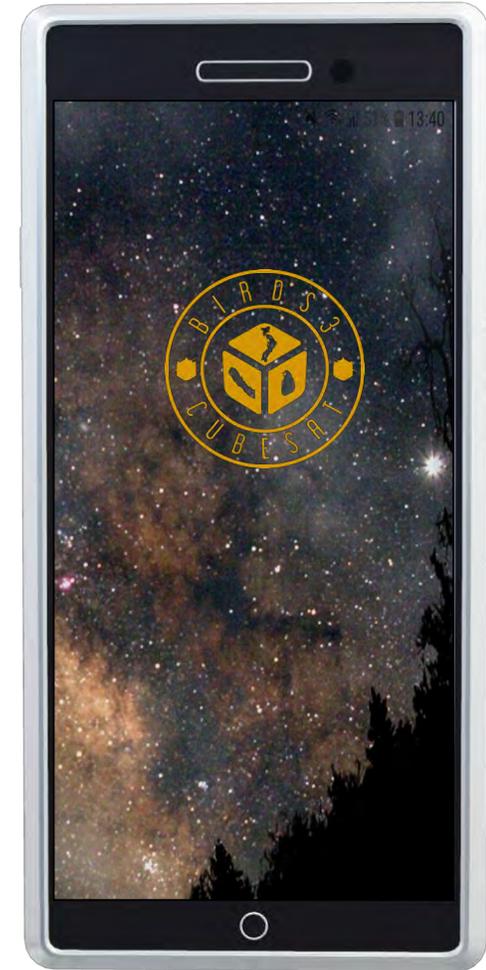
The persons who contributed to ***BIRDS Nest*** are:

- ◆ Software Developer, Keenan Chatar (M1) - Trinidad and Tobago
- ◆ Database Designer, Fahd Moumni (M1) - Morocco
- ◆ Documentation, Sayaka Kose (M1) - Japan
- ◆ Documentation, Noruji Muto (D1) - Japan



BIRDSNEST: BIRDS Phone Application

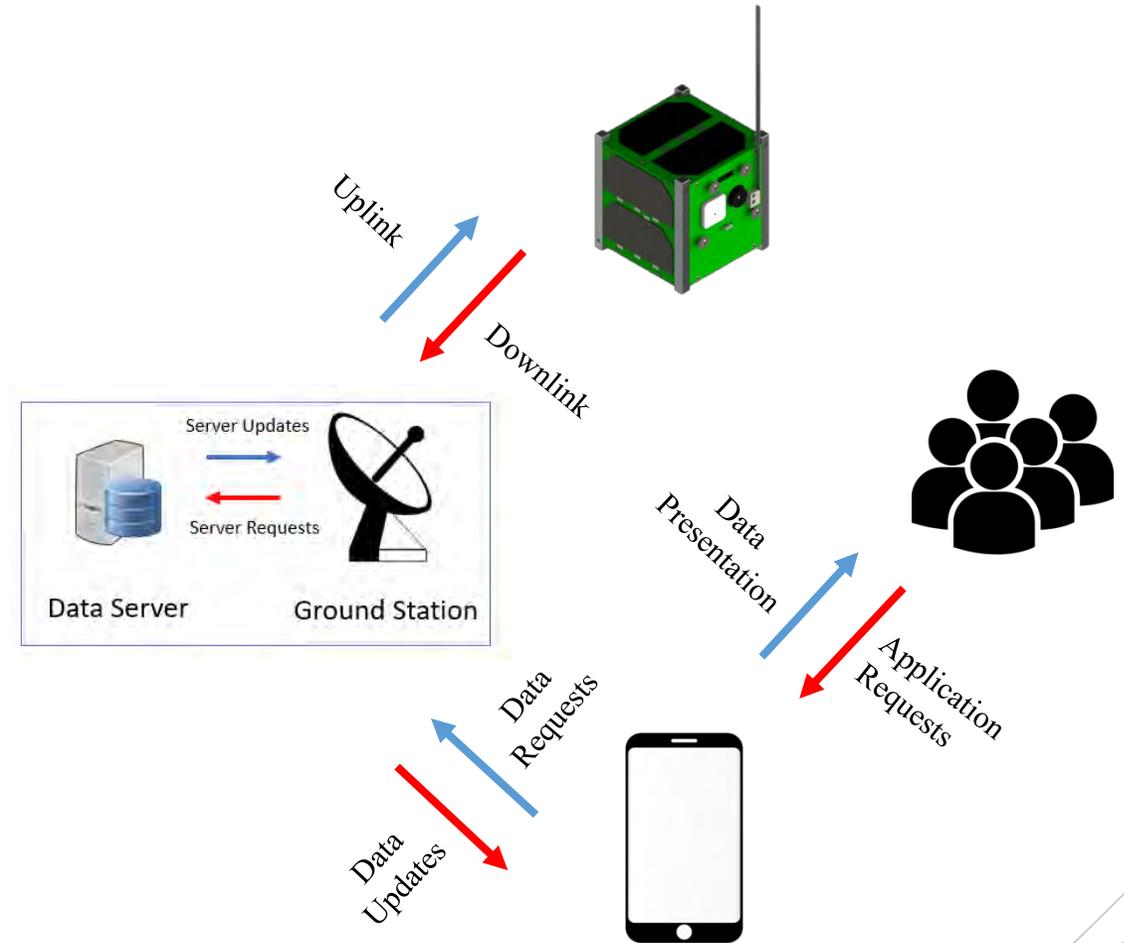
The BIRDSNEST is a phone application designed for the BIRDS Project. The primary goal of the BIRDS project is educating students and generating interest in the space industry by providing countries the opportunity to develop their first satellite. However, generating interest amongst the public is conducted through traditional means such as newspaper articles, news media and radio. These outlets do not reach a considerable audience and thus awareness of the educational satellite and its initiatives are not adequately achieved. Therefore, the BIRDS NEST (Network of Educational SaTellites) Phone Application was conceived, and its primary purpose is to impact a wider target audience and provide users visual interaction access to the collected BIRDS satellite data. The phone app can visualize all the BIRDS satellites during its orbits and present the data they collect in graphical formats or as a gallery of images captured.





Communication Architecture

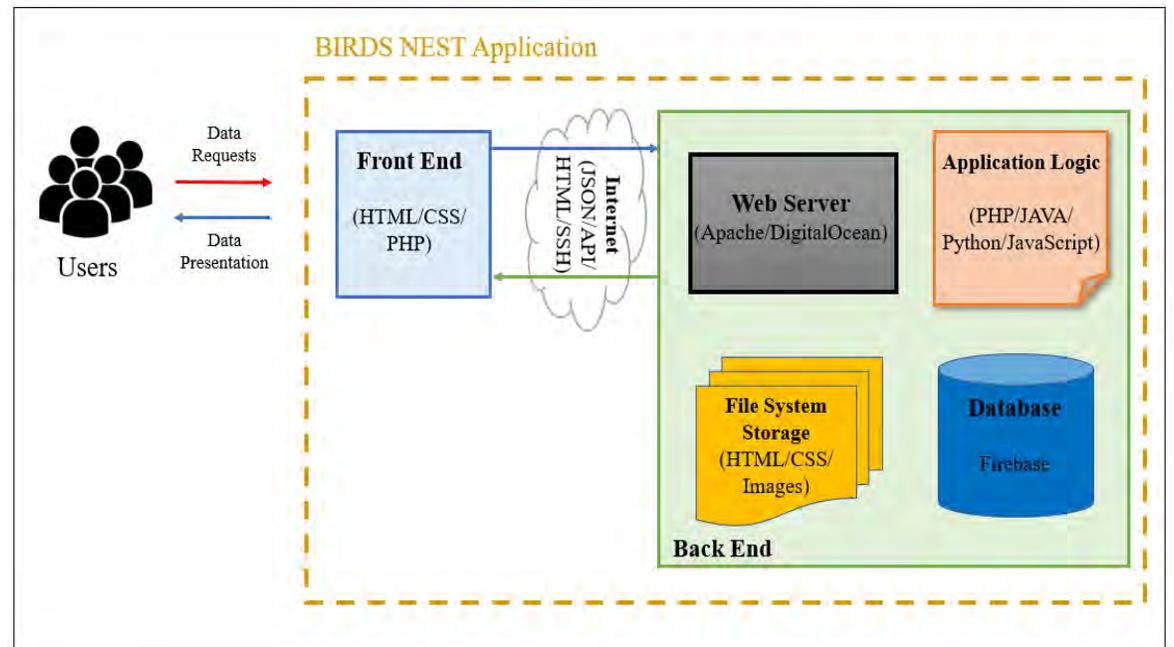
The BIRDSat communicates with the ground station and sends the collected data such as its location, solar panel parameters, LED status and temperatures via downlink protocols. The data is then stored in the data server to be retrieved whenever an application request is made. The smartphone application will serve as the bridge between the user and the data to be displayed from the data server. The users will make data requests via button presses and screen interactions. These data requests will be communicated by the smartphone application over the web server as HTML requests to the data server. The data is then relayed as HTML responses and subsequently displayed in the application.





Software Architecture

The users interact with the front end of the application, which was developed using React Native. This front end will provide the interface for the users to make the data requests to the server for graphical displays, location requests, satellite tracking etc. Once a data request is made by a user, this request is transmitted via internet protocol to the Back End of the architecture. The web server facilitates communication between the application and the database services as well as between the front-end services and the back-end system. The application logic are the functions and services that work in tandem with the front-end to enable these requests to be made. The database component is developed to house the data to be used in the application. The File Storage System stores large data files onto the SD card.





Tracking Screen

The application is developed for both Android and IOS smartphones so all smartphone users may have access to this free-to-use application. The app features four primary screens: 1) The Tracking Screen 2) The CAD Design Screen 3) The Data Screen 4) The Gallery Screen.

The Tracking Screen will illustrate all the satellites in the BIRDS project on a map as well as their projected orbit path. The map can be centered onto the user or any one of the satellites via the action buttons on the lower right corner.

This screen will show the real-time position of all the BIRDS satellites and can be used to determine whenever the satellite will be passing overhead or in a communicable range.





CAD Model and Data Screen

The CAD Screen presents a 3-D AutoCAD model of the completed satellite. This screen allows the user to interact with the rendered version of the design such as: expanding the view, manipulating components, viewing and measuring components, rotating views. The Data Screen illustrates the data collected by the satellites in an organized list based on the most recent data transmission. These data parameters include the battery information, temperature, current, operation mode etc. These screens are intended to give users an understanding of all the components that went into building the satellite, as well as what is necessary to keep the satellite maintained and in normal operating status.

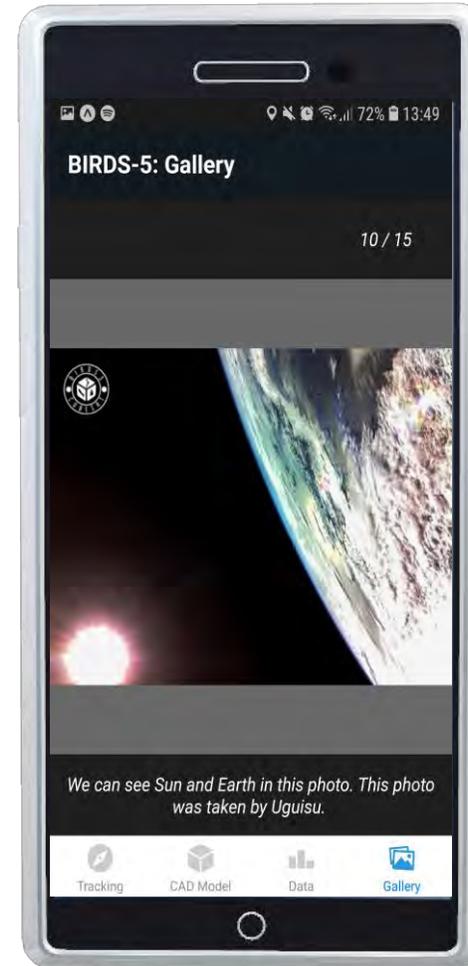




Gallery Screen

The Gallery Screen allows the user to scroll through the images captured by the satellite during its transit around the earth. Each image has a short description describing what was captured.

The application is currently being polished and uploaded to the Google and Apple App stores. It will be rolled out for testing purposes in future **BIRDS Project Newsletters**. Stay tuned.



11. The Kyutech Futaba Satellite Project

The following article was written by

大谷 將壽 (Otani Yukihiisa)

九州工業大学 工学部 総合システム工学科
趙研究室 学部4年

4th year undergrad student of Cho Lab

He is the Project Manager of this project





1. 鉛フリーはんだのウイスカ検証

多くの宇宙機の基板には、鉛を含んだはんだを使用しています。一方で、地上で使用されている電子機器には、環境や健康の面から、鉛が含まれていない鉛フリーはんだが使用されています。宇宙空間は熱の温度差が激しく、鉛が含まれていない場合、はんだが延びることがあります。それをウイスカと呼びます。このウイスカによって、ショートし故障する恐れがあります。そこで私たちは、鉛フリーはんだがどのくらい宇宙で使用することができるかを検証します。

本プロジェクトは学部生主体で人工衛星の開発を行っています。宇宙システム工学科だけに限らず、電気電子工学科・機械知能工学科などの学生も参加しています。目標は、“FUTABA”の打ち上げです。現在はEMの開発を行っています。昨年度は打ち上げ資金を確保するためにクラウドファンディングを実施し、見事、目標を達成することができました。



実験によって発生したウイスカ(×100)

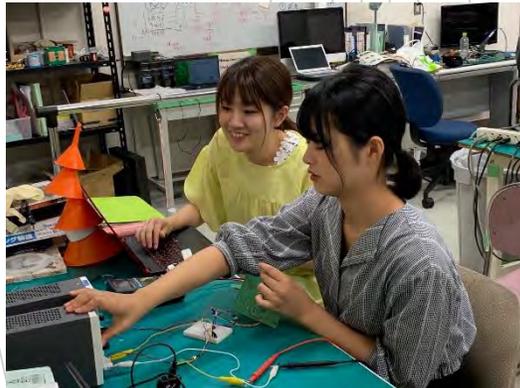
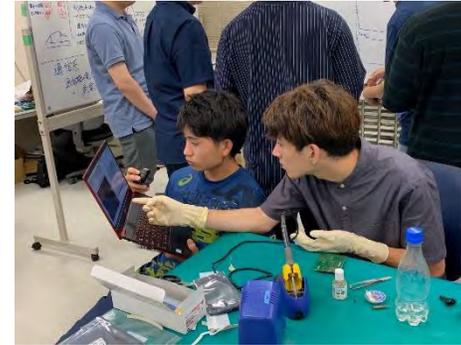


2. 磁気トルカを用いた三軸姿勢制御

これまで本プロジェクトで開発された衛星には姿勢制御を行う機能がありませんでした。そこで、今回は磁気トルカを用いて姿勢制御を行い、カメラで地球を撮影します。使用する磁気トルカは学生が製作しています。



製作した磁気トルカ



END OF ARTICLE

3. 2.4GHz無線通信試験

無線通信素子(Twe-LITE)をミッション基板に取り付けデータの送受信を行います。これまでは、ハーネスによる通信を行っていましたが、劣化や人為的ミスによって断線するおそれがあります。そこで、無線通信試験を行い、衛星内のデータ通信を行うことができるかを検証します。

12. Report from Nepal

“EXPLORING THE SPACE TECHNOLOGY” MY EXPERIENCED: THREE DAYS SPACE WORKSHOP AND EXHIBITION



Prastuti Adhikari, 12 June 2020

New English Secondary Boarding School Sinduhli ,Grade: 10

Nepal



Introduction

Exploration of space and space based technologies has geared up its pace since decades. Today the world is competing for technological development to its extreme possibility and thus assisting us to comfort our life. Continuation of space race and progressive change within around fifty years human have conquered from Moon to Mars all regards to the space based technological development.

Today, even we Nepalese are glorified that **Nepal's own satellite NepaliSat-1** has been launched into the space for the first time.

As the world is changing, technological development plays a pivotal role in this era, so it is the time to put our endeavors for the learning of technologies. With the same motto, there had been the conduction of **"First Space Workshop and Exhibition Program 2020"** in Nepal. We are grateful that the program was being conducted in the premises of New English Secondary Boarding School and fortunate to be a part of the program.

Three days' workshop had been conducted beginning from orientation, proceeding to the training and eventually concluding after the exhibition. Learning, collaborating and interacting with team work, also being guided by the mentors and engineering experts during the training made our journey much more interesting. I was desperately excited.

From my viewpoint, the three days' workshop and training was really helpful as it enabled us to understand the space technologies especially the functioning of the satellite system through the CanSat development in an effective and reliable way. We even got to know how the ground station functions receiving data from the satellite and practically we looked at the decoded data.

A large crowd had been gathered and were excited to see our innovations. Indeed, this program has been helpful to change the perspective of our society towards our education. It was in fact a matter of pride for our fellow dwellers that the space program being conducted in our place and were eager to see the stomp rocket being launched. Among all, I found the primary class students much more curious to learn about our activities. The program most importantly has paved the way for these young minds, it had been a real inspiration to them.



Learning a bit about space technologies

We who had seen the rockets and satellites being launched on the Television screen, even though the demo of the rocket, which could only fly some feet but we were delighted to see them being launched in the sky of Sindhuli. What else can be more exciting and happy moment for us?

Learning a bit about technologies, I felt the necessity of technological education to be taught to the students practically in every school. Personally, three days training had been eye opening for me. I realized how our educational system has kept us steps backward and isolated from the world. Far beyond the light of practical education, we had just been the algae floating on the surface of the lake. I found myself being seduced inside the web of our education whose sole aim is the marks in your certificate, a certificate race going on which is as pouring water on sand. I felt that if our education was more practical, we would not have faced brain drain, we would not be in the trap of poverty, we would not have to sell our water and import electricity.

We know that America has promoted it's economic growth after the World War. Have we ever wondered why? During the world wars America continuously began to produce and supply the atomic and nuclear weapons and had been successful to grow its economy. China, Japan and Russia, they also have a large extent technical experts and skilled human resource. Unfortunately, we are sorrowful that we are just under the shadow of development going on around the world Obviously, our successful participation and great devotion in the program had been exemplary to others. After the end, I felt the acute need of such programs to be conducted at least once in every school of Nepal. Though we were lately exposed, I would like to avoid this procrastination for the coming generation so that they easily foster and be a part of the technological development. It supports the young mind to foster their growth, making them more creative to generate their own innovate ideas which can help them come out of pit of our educational system broadening and imparting their knowledge.

If the program cannot be conducted in all the places, if there is no proper accessibility to provide training, the government can at least put the training videos in the government's website for the young and technology enthusiasts. If students are provided with the proper access and opportunity, contribution can be made, technological advancement and rapid societal change is possible.

In detail , you can read in here [Link](#) about the workshop and exhibition.

**BIRDS Project Newsletter
Issue No. 50, pages 49 to 52**



Photos



A three day's space workshop and CanSat leadership training programs photos.(Jan 8- Jan 11, 2020)

Prastuti Adhikari is grade 10's student of the New English Secondary Boarding School Sinduhli Nepal. she was a participated student for that space Workshop and Exhibition moreover she is very talented and very interested in the space science field so she has written about her experienced and how to she got a motive to learn in this sector in the future after the NepaliSat-1/BIRDS-3 project launched into space. During in COVID -19 pandemic situation, she wanted to share her experience with an article.

--Hari/BIRDS-3



End of report from Nepal

Photo credit:  prashant and Deebodh (NAST)

13. MEXT survey on nanosatellite capacity building around the world

Late in 2019, MEXT (Japan's *Ministry of Education, Culture, Sports, Science and Technology*) commissioned UNISEC and Kyushu Institute of Technology to conduct a study (or survey) on how Japan might support emerging nations in terms of nanosatellite capacity building. The product of this study is a final report, written in Japanese. It is now available to the general public.



This study involved interviews with scores of experts and graduate students. For example, Dr Kitazawa (a member of the study team), interviewed Prof. Herman Steyn (University of Stellenbosch, South Africa) on 01 Dec 2019, in Tokyo.

Title of the final report in Japanese

超小型衛星研究開発に係るアジア等の宇宙新興国に向けた日本の支援可能性に関する調査研究

本報告書は、文部科学省の令和元年度地球観測技術等調査研究委託事業による委託業務として、国立大学法人九州工業大学・特定非営利活動法人大学宇宙工学コンソーシアムが実施した令和元年度「超小型衛星研究開発に係るアジア等の宇宙新興国に向けた日本の支援可能性に関する調査研究」の成果を取りまとめたものです。

To download the report,
see the next page

Download

Home / Download

文部科学省委託業務・調査報告書

- [超小型衛星研究開発に係るアジア等の宇宙新興国に向けた日本の支援可能性に関する調査研究 \(31.0MB\)](#)

宇宙環境技術ラボラトリー・年次報告書

- [2019年度宇宙環境技術ラボラトリー年次報告書 \(7.5MB\)](#)
- [2018年度宇宙環境技術ラボラトリー年次報告書 \(8.3MB\)](#)

<https://kyutech-laseine.net/download.html>

GO TO THIS WEBSITE AND CLICK ON THIS TO DOWNLOAD THE FINAL REPORT

UNISECの皆様

昨年末から皆様に協力を依頼していた超小型衛星に関する調査研究が今年3月末に無事終了いたしました。この度、業務委託元の文部科学省の合意を得て、その報告書を公開できることになりました。

報告書では

海外の超小型衛星に関する政策や取り組み
超小型衛星の市場動向、運用成果、技術トレンド、深宇宙探査ミッション
超小型衛星を通じた宇宙新興国へのキャパシティビルディング支援
国内におけるキャパシティビルディング活動の現状
超小型衛星の試験、打ち上げの現状
超小型衛星に関して日本がとるべき政策の提案
といったような事項についての調査研究結果をまとめており、
付録の衛星データベースを含め448ページの超大作となっております。

Comments about this report by

◆ **Prof. Cho, Kyutech**

◆ **Prof. Miyazaki, UNISEC**

なお、報告書を研究発表等で使われる際は、報告書名と著者名(九州工業大学・UNISEC)を参考文献として明示していただきますとともに、特に付録の衛星データベースの2次利用に際しましては、出典を「九州工業大学」と明記していただきますようお願いいたします。

なお、本報告書は、文部科学省の令和元年度地球観測技術等調査研究委託事業による委託業務として、九州工業大学とUNISECが実施した令和元年度「超小型衛星研究開発に係るアジア等の宇宙新興国に向けた日本の支援可能性に関する調査研究」の成果を取りまとめたものです。文部科学省殿に対しまして、調査研究の委託と報告書の公開に合意いただいたことに対して、深い謝意を表します。また、調査研究にご協力いただきましたUNISEC関係者の方々並びに国内外の関係者の方々に感謝いたします。

趙孟佑(九州工業大学)

宮崎康行 (UNISEC)

2020.06.18

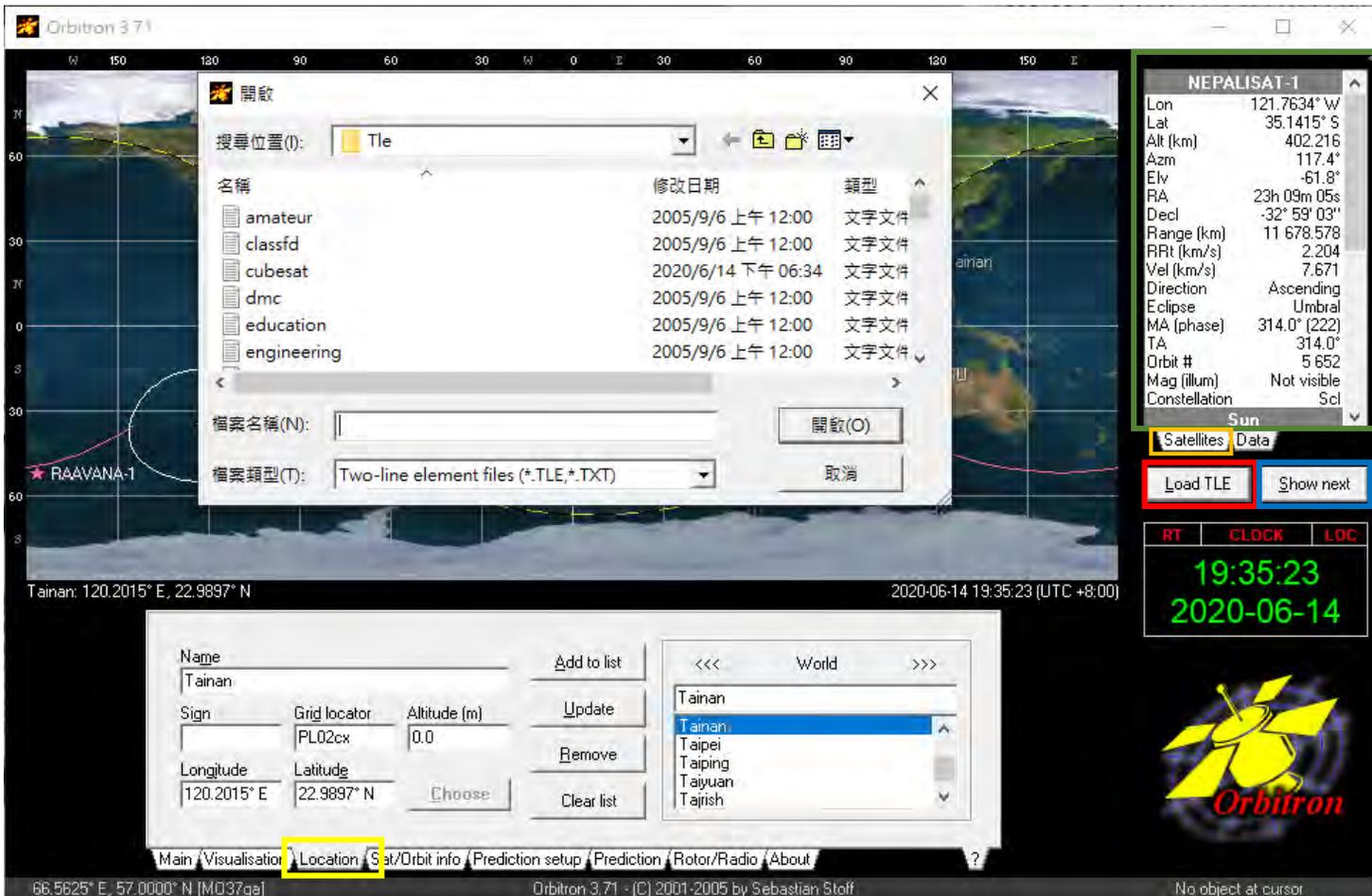
14. How to use the Orbiton software package



How to use Orbiton

Written by
Ke-Yen Hsu ("Gary")
of NCKU, TAIWAN
15 June 2020





Step1: Open Orbitron.exe and click “Load TLE” button as shown at red box. There are different kinds of satellites you can choose. BIRDS satellites are classified into “cubesat”.

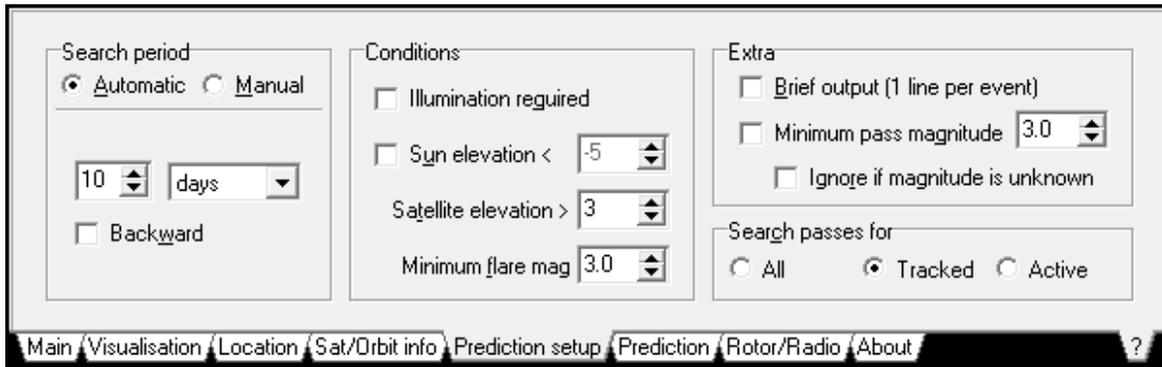
*You can also modify them directly under path “C:\Program Files\Orbitron\Tle”.

*Download latest TLE of satellites at website below <http://www.celestrak.com/NORAD/elements/>.

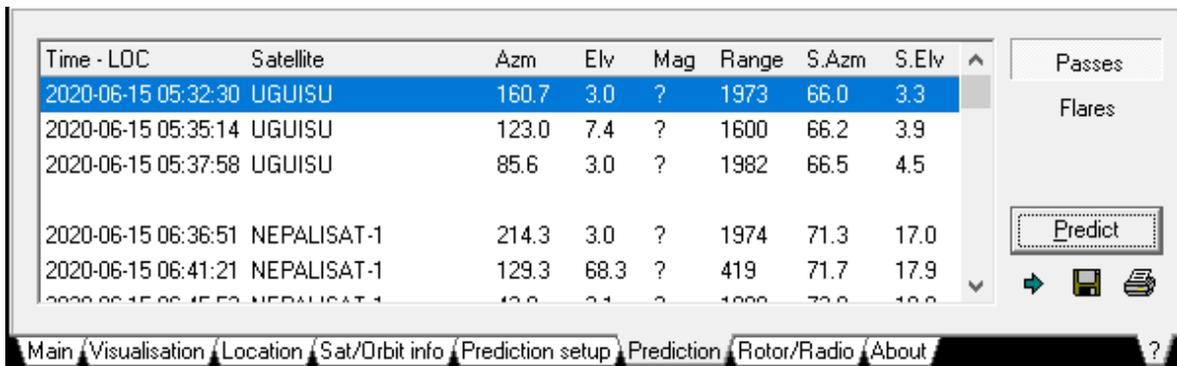
After load TLE, you can see the data about satellites as shown at green box. If you choose more than one satellite, you can click “Show next” button as shown at blue box to show different satellites data.

Step2: Go to “Location” as shown at yellow box and set your ground station location. After that, you both have satellite and ground station information.

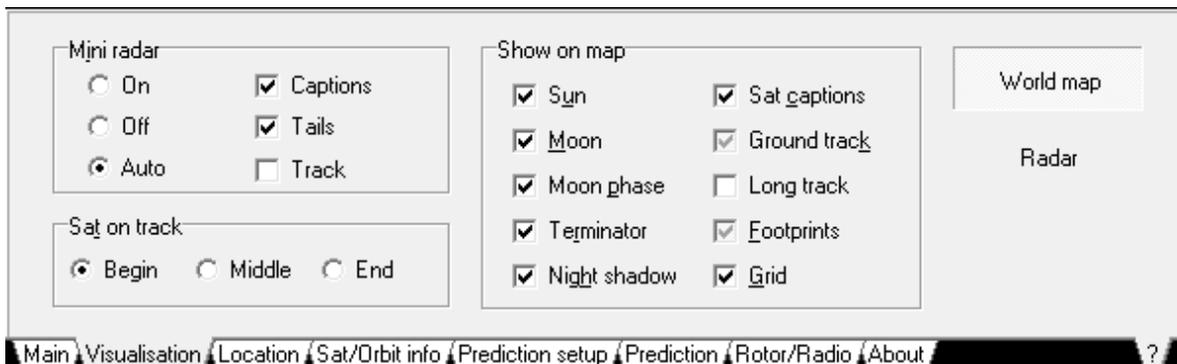
Step3: Click “Satellites” button as shown at orange box and choose the satellite you want to prediction.



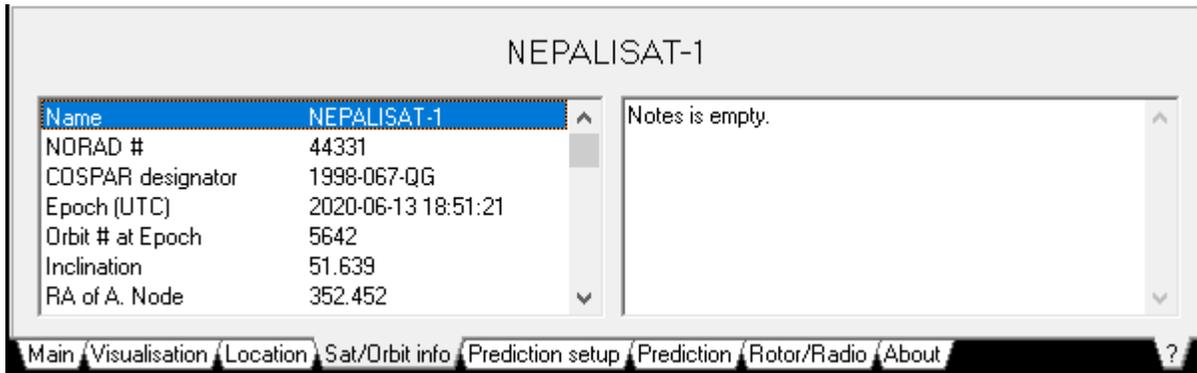
Step4: Go to “Prediction setup”. You can predict the time that satellite will pass your ground station. Set how many days you want to predict and conditions about prediction. After that, go to “Prediction”.



Step5: At “Prediction”, click Predict button. You can get the time of arrival, the time at max elevation angle, time of leave and some other information based on your set up at step3. At this step, you have already finished the prediction about satellite basically.



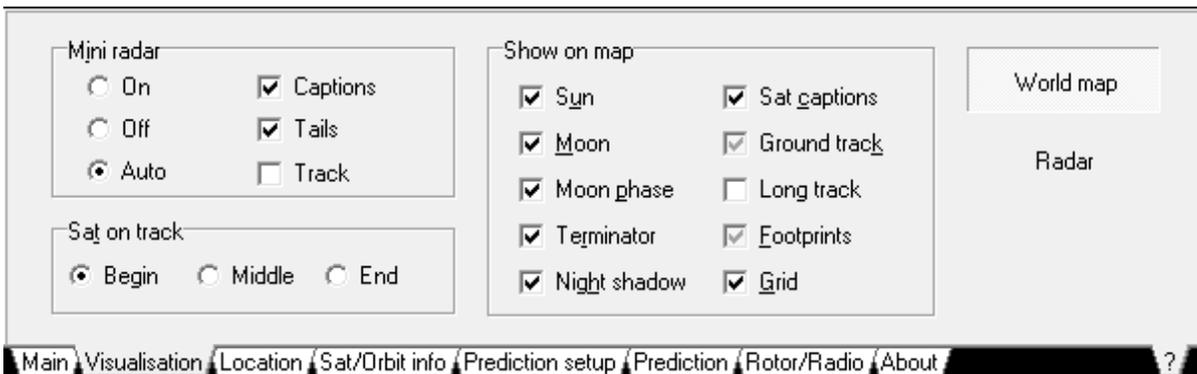
At “Visualization”, you can set what would you like to see at world map screen.



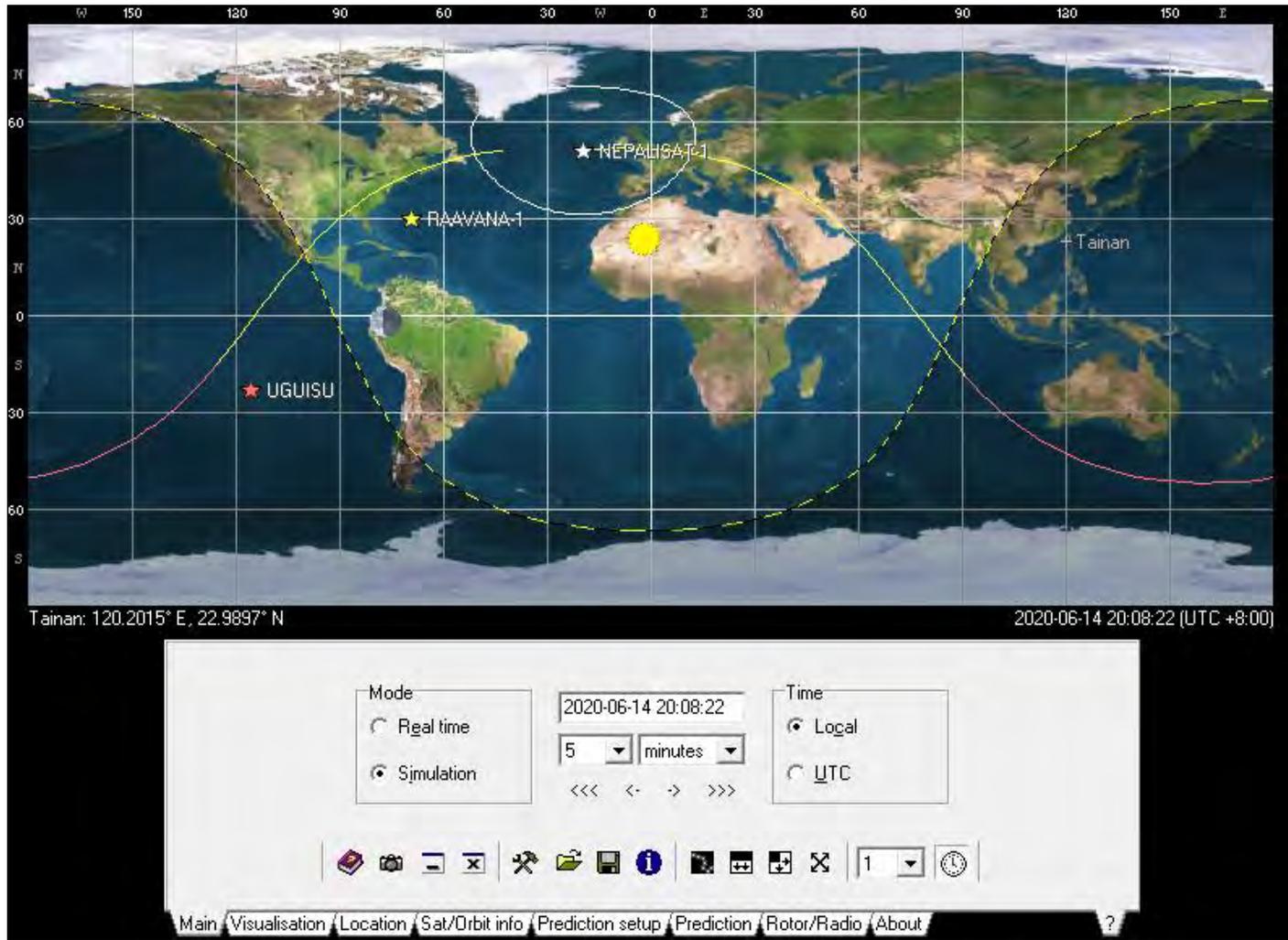
At “Sat/Orbit info”, it shows the orbit information about satellite



At “Rotor/Radio”, you can control your ground station antenna via driver.



At “Visualization”, you can set what would you like to see at world map screen.



At “Main”, you can change to “Simulation” mode. Set the time and step time to simulate satellite.

For example, if you have the time when satellites took the photo, you can set that time and see where the satellite is at that time via world map screen. This will help you recognize where this picture taken.

Normally, Orbitron should under “Real time” mode.

End of this tutorial
(Thanks to Gary – Editor)

...Colombia...



by Dr. Jesus Gonzalez-Llorente
Kyutech SEIC Alumni 2019
-- update on my current activities
15 June 2020

The university

I am working for Universidad Sergio Arboleda in Bogotá, Colombia. This university developed the first Colombian satellite: **Libertad-1**, a 1U CubeSat launched in 2007.

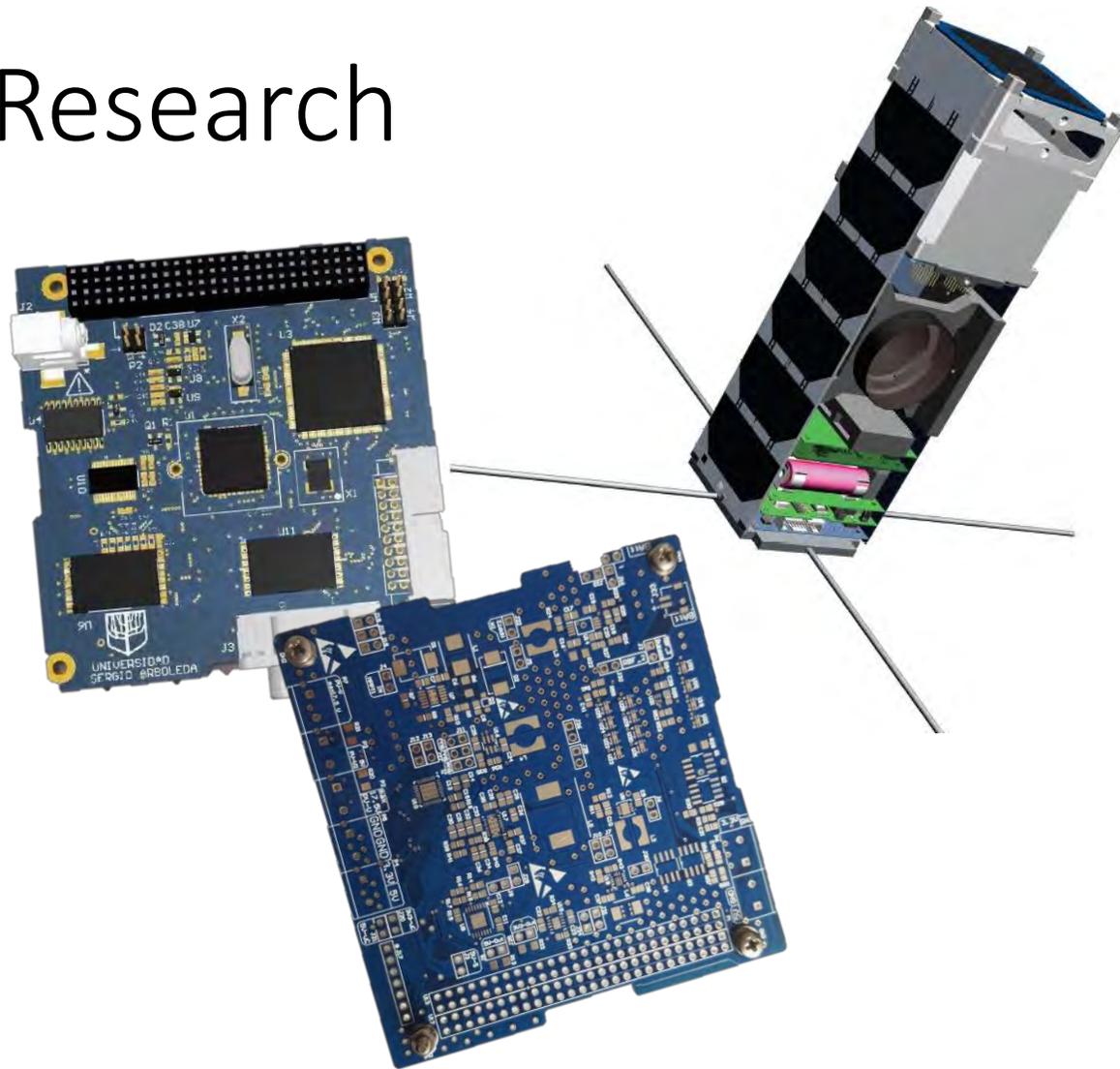
The university is divided into schools instead of departments. I belong to the **Exact Science and Engineering School** which consists of five programs (courses): Electronics Engineering, Computer Engineering, Industrial Engineering, Environmental Engineering and Mathematics.

I am a professor in the program of **Electronics Engineering**. My responsibilities are divided into teaching, research and administrative support.



Libertad-1, the first Colombian satellite.

Research



About research, I am part of the **research group in satellite technology**. Even though there is no a formal project because of the lack of resources, we continue working in the study and development of subsystems and satellite monitoring to create the conditions for growing the space sector.

The university is joining an initiative to work together with other two universities and the Colombia air force, who launched the second satellite in Colombia in 2018. **There is an interest in capacity building in the aerospace sector**; they invited universities to join their program.

At the beginning of the year the Colombian Government signed **a policy to define the strategy to for the development of the sector**.

Design of subsystems for CubeSats, 3D model and manufactured PCB.

Thesis direction

- Two undergraduate **students of electronics engineering are working under my supervision**. I am the advisor of their final degree project: One project is developing an educational electrical power system for CubeSat, and the other project is developing a device to improve waste collection in urban environment by using Internet of Things. The students develop their projects from need identification and requirements until the implementation and testing of their products.
- In addition, three 3rd-year students of electronics engineering are also part of my research group. They belong to the **program that encourages the participation of undergraduate students in research projects**. They are learning about electrical power systems, photovoltaic energy and hardware and software development.



Students working on electronic design of their projects

Teaching



Lecturing “Electrical Circuit Analysis” in Universidad Sergio Arboleda, Bogotá, Feb 2020.

About teaching, I have been **lecturing “Electrical Circuit Analysis”** to students of electronics engineering and computer and telecommunication engineering. The lecture was divided into two groups with two 2-hour weekly sessions each one. I give Eight hours of lecturing per week.

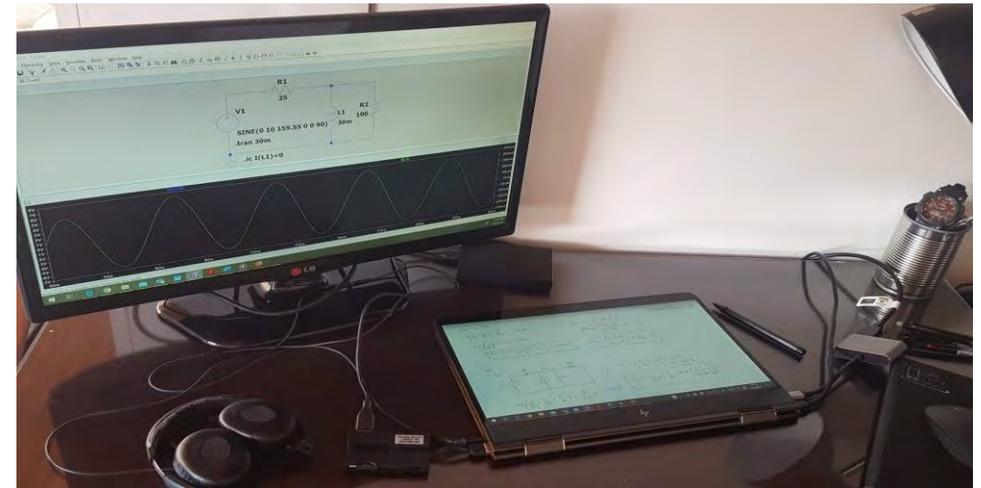
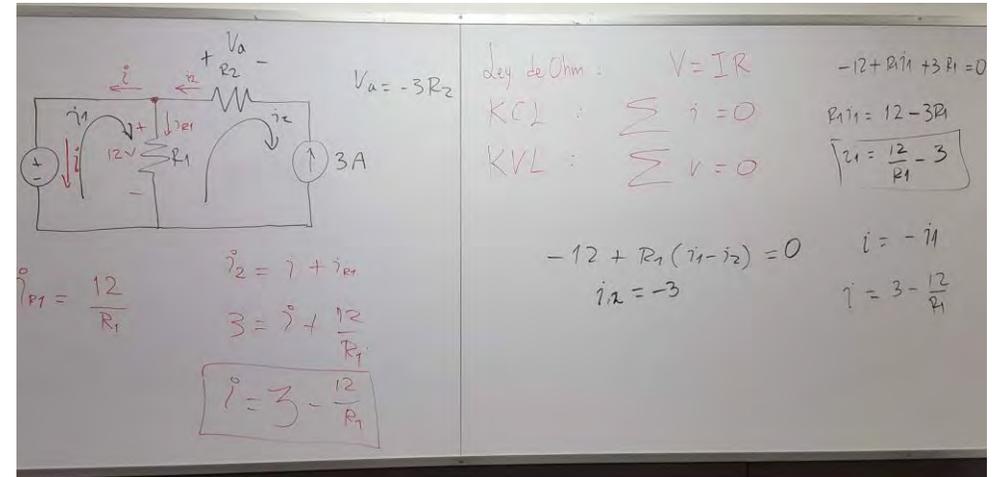
This lecture is key to the students because they **learn the fundamental knowledge for their career**. Therefore, I was motivating the students to achieve a real understanding of the subjects. I was using my experience in the **development of Ten-Koh satellite** to show them an exemplar case of application of the learning outcomes of this lecture.

Teaching during Covid-19

On March 6th the first covid-19 case was found in Colombia and the government established **quarantine since March 24th** when the number of cases was 47. However, the university had suspended lectures in the campus one week before the quarantine announcement to prepare remote lectures.

Since March 24th I started to lecture by using Zoom. The routine changed and I had **to adapt the lecture methodology to encourage student's participation** because it is easier to get distracted during remote lectures. I had to spend more time in class preparation, but I saved the commuting time.

During the lecture, the whiteboard in classroom was replaced by the touch screen of my laptop using the Zoom "annotation function". The students can also interact being able to write or to draw in the shared screen.



The whiteboard was replaced by shared screen in Zoom

Teaching during Covid-19

The image shows a circuit diagram with a current source of $1 \angle 0^\circ \text{ A}$ on the left. A 5Ω resistor is in parallel with the source. This is followed by a series combination of a $-j10 \Omega$ capacitor and a parallel combination of a $j10 \Omega$ inductor and a $j5 \Omega$ inductor. Finally, a 10Ω resistor is in parallel with the output terminals. The voltage across the 5Ω resistor is V_1 , and the voltage across the 10Ω resistor is V_2 . A current of $0.5 \angle -90^\circ \text{ A}$ is shown leaving the output terminals.

Handwritten equations and simplifications:

$$1) \frac{V_1}{4-2j} + \frac{V_1 - V_2}{-10j} = 1 \angle 0^\circ$$

$$2) \frac{V_2}{2+4j} + \frac{V_2 - V_1}{-10j} = -(0.5 \angle -90^\circ)$$

$$V_1 \left(\frac{1}{4-2j} - \frac{1}{10j} \right) + V_2 \left(\frac{1}{10j} \right) = 1$$

$$V_1 \left(\frac{1}{10j} \right) + V_2 \left(\frac{1}{2+4j} - \frac{1}{10j} \right) = 0.5j$$

$$\begin{bmatrix} \frac{1}{4-2j} - \frac{1}{10j} & \frac{1}{10j} \\ \frac{1}{10j} & \frac{1}{2+4j} - \frac{1}{10j} \end{bmatrix} \begin{bmatrix} V_1 \\ V_2 \end{bmatrix} = \begin{bmatrix} 1 \\ 0.5j \end{bmatrix}$$

Equivalent circuit parameters:

$$Z_1 = 5 \parallel -j10 = 4-2j$$

$$Z_2 = j10 \parallel j5 = j5$$

$$Z_3 = 10 \parallel j5 = 2+4j$$

$$Z_2 = -10j$$

Recording of the lecture was provided to the students after each session. **Editing the recording of each lecture and creating videos** required more effort for lecture preparation. However, these videos are very helpful for the students. In addition, I was using some videos provided by Juan J. Rojas who was teaching a similar lecture in Costa Rica.

There is a clear advantage of remote lecture due to the technology: **There are more resources available for the students** such as recording of the lectures and auto-evaluations. The students can review the videos. In the same way, using LMS as Moodle was essential for evaluations. I created in Moodle some evaluations without grading with unlimited number of intents. Thus, the students can try until they reach the learning outcome without worrying about the grade.

Percibiendo señales senoidales

Jesús D. González Llorente

The slide features a yellow sine wave on the left and a circular inset on the right showing a noisy signal with red and green components.

[Whiteboard in screen and videos were necessary during remote lectures \(https://youtu.be/NTb25-dA0mo\)](https://youtu.be/NTb25-dA0mo)

END OF REPORT FROM COLOMBIA

Nihongo Study: A personal experience

By Joseph Ampadu Ofosu

Kyushu Institute of Technology (九州工業大学)

June 15, 2020

**See his self-introduction:
Pages 120-123,
Issue No. 52
BIRDS Project Newsletter**

Introduction

- Language is one basic element of culture and human life, without which no society can function properly or meaningfully.
- Language usage is even more imperative for outsiders/ foreigners to transition and integrate effectively into a new community.
- Having lived in a multi-ethnic country with dozens of distinct and unique local languages, I appreciate the significance and worthiness of the intelligible usage of a foreign language, first to new members, and also to existing members interacting with the new members of a community.

Caveat

I would like to make a caveat before proceeding to share my experiences regarding the study of Japanese language (Nihongo:日本語).

- I am not a proficient user of Japanese as my level could be safely placed as ‘everyday conversation level’ (日常会話レベル).
- The methods I talk about have not been **faithfully** and **dutifully** observed by me, although I do try to be consistent. One could say that my experience with Nihongo study has been a topsy-turvy ride.
- Any advice or method given is not an expert’s advice. Rather it should be viewed as personal experiences of someone who came into Japan with literally zero Nihongo experience.

How you begin is vital

- The foundation of every endeavour is important; hence some form of consistency in learning attitude is required when studying Nihongo for the **first time**. An on-off study attitude could make the learning curve steeper.
- Most universities and city halls across Japan do have platforms for introductory Nihongo study which are free. Since these institutions are usually the first point of contact for foreign students, my advice is simply make good use of their Nihongo learning facilities.
- I do understand that sometimes course workload could be a hindrance, however, making time to take advantage of these ‘freebies’ in a **regular manner** from the very *onset* usually comes back later as a great reward.

Recommended online study tool and app

There are numerous online study tools and apps which I tried that are very good and interactive. The following however have been my favourite:

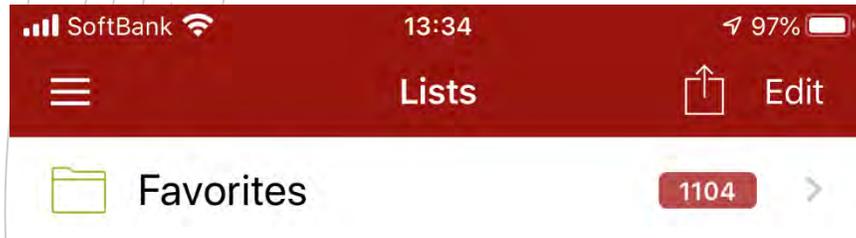
Marugoto Japanese Learning (<https://marugotoweb.jp/en/>)

- This free study tool has well-defined outline and goals as well as tasks and activities that enforces one's understanding of Nihongo as their content is primarily based on Japan culture.
- The detailed course levels and outlines are accessible via the Minato platform of the Japan Foundation (<https://minato-jf.jp/>).
- Their course structure covers all the forms of language study: listening, speaking, reading, and writing.

Recommended online study tool and app

'imiwa?' App (<http://www.imiwaapp.com/>)

- This is a free Japanese dictionary and unfortunately only for iOS platforms. 'imiwa?' has distinct kanji study features and the learner could use either the JLPT system or the Japan school grades system, or both.



**My favourite kanji list at the time of writing
(totalling 1104 words)**



A look inside my kanji list

Recommended online study tool and app

'imiwa?' App (<http://www.imiwaapp.com/>)

- Search can be done using kanji, kana, romaji or a word in one of their supported foreign languages.



The screenshot shows the app's interface for the word '資料' (shiryō). At the top, there is a red navigation bar with a back arrow, the word 'Favorites', and icons for share, star, and refresh. Below this, the word is displayed in kana (しりょう), kanji (資料), and romaji (shiryō). A 'MEANING' section follows, listing: 'noun (futsuumeishi)', 'noun may take genitive case particle `の`', 'materials, data, document' (with a UK flag), and 'matériaux, données, document' (with a French flag).

Words are given in kanji, kana and romaji

EXAMPLES

あたら しりょう おく
新 しい 資料 を お 送り
atarashii shiryō o ookuri

ください。
kudasai.

🇬🇧 Please send us more information.

🇫🇷 S'il vous plaît, envoyez-nous plus d'informations.

Show all examples... >

KANJI DECOMPOSITION

資 assets, resources, capital, funds, d... >
シ

料 fee, materials / redevance, recette,... >
リョウ

Example sentence and kanji decomposition

Personal Record Keeping of Kanji words

I keep record of new kanji characters I encounter i.e. on the train, via emails I receive or on advertisement billboards, etc. I must confess that I have not been consistent or 'religious' with its implementation.

Note from the BPN editor:
This kind of note-taking is essential for building up vocabulary – because if you do not make a note of a new word, you will forget it.

	A	B	C	D	E
1	#	漢字	よみかた	意味(いみ)・英訳	備考(びこう) Remarks
2	1	研究 / 職	けんきゅう / しょく	research, study / employment	
3	2	未 / 来	み / らい	yet / come = future	
4	3	抽象的	ちゅうしょうてき	abstract, generally	
5	4	具体的	ぐたいてき	specifically	
77	77	実施	じっし	execution, implementation	
79	78	自身	じしん	self, ego, oneself	自分自身 : myself, あなた自身 : yourself
80	79	不備	ふび	imperfect	
81	80	迅速	じんそく	quickly, readily, promptly	
82	81	対応	たいおう	correspondence	
83	82	改善	かいぜん	improvement, betterment	
84	83	若しくは	もしくは	or	
85	84	扱い	あつかい	handling, treatment, response, etc.	
86	85	悩み事	なやみごと	something causing worry, matter causing distress	

Personal record keeping of kanji words

Concluding remarks

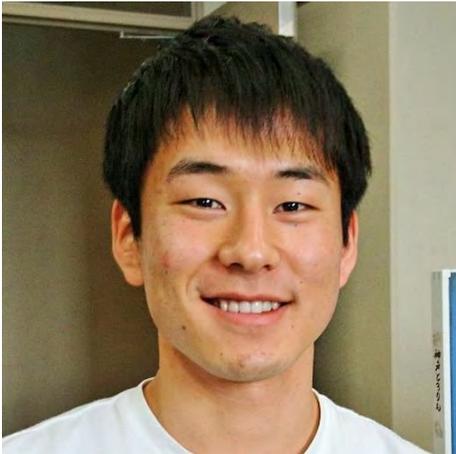
- **Although my kanji list has not been done consistently overtime, the list has always turned out to be a great resource over time.**
- **I sincerely hope this experience shared would encourage someone to identify personalised strategy in an effort to improve his/ her Nihongo proficiency.**

The End

**BIRDS-4 Reports
are on the following pages**



English Exams in Japan



Tomoaki MURASE
June 7, 2020



English Exams in Japan

Written By: Tomoaki Murase

In Japan, the importance of English is increasing year by year. Recently, we have been taking English classes from the 4th grade of elementary school, we have classes that speak English only in junior high school, and we have exams to evaluate the four skills of reading, writing, listening, and talking in college entrance examinations. The reasons for those are globalization and the development of Japanese human resources who can be active all over the world. By looking at a wider world than Japan, we can gain various experiences and benefits.

However, there are few opportunities to use English in Japan. Students lose sight of what they are studying English for, and it causes a loss in motivation to learn English.

Therefore, there are various English qualification exams in Japan as one of the methods to continue learning English. For example, there are TOEIC, TOEFL, which are international exams, and 英検 (Eiken) and TEAP, which are unique exams made in Japan. These exams help people to learn English. Through the visible evaluation of the qualification test, we are motivated to learn English.

I'm going to introduce Eiken in this article: Eiken is the English test sponsored by the Ministry of Education, Culture, Sports, Science and Technology and has a long history. There are classes tailored to various levels, and many people from children to adults take the test. In 2018, the number of applicants reached 3.86 million. 88% of them were students...

under high school. Since Eiken is used for various entrance examinations, there are a large number of student applicants.

The content of the exam is reading, writing and listening in the first exam, and speaking in the second exam. You have to pass the two processes.



Eiken's web page [\[link\]](#)

Anechoic Chamber



Marloun P. Sejera

June 9, 2020



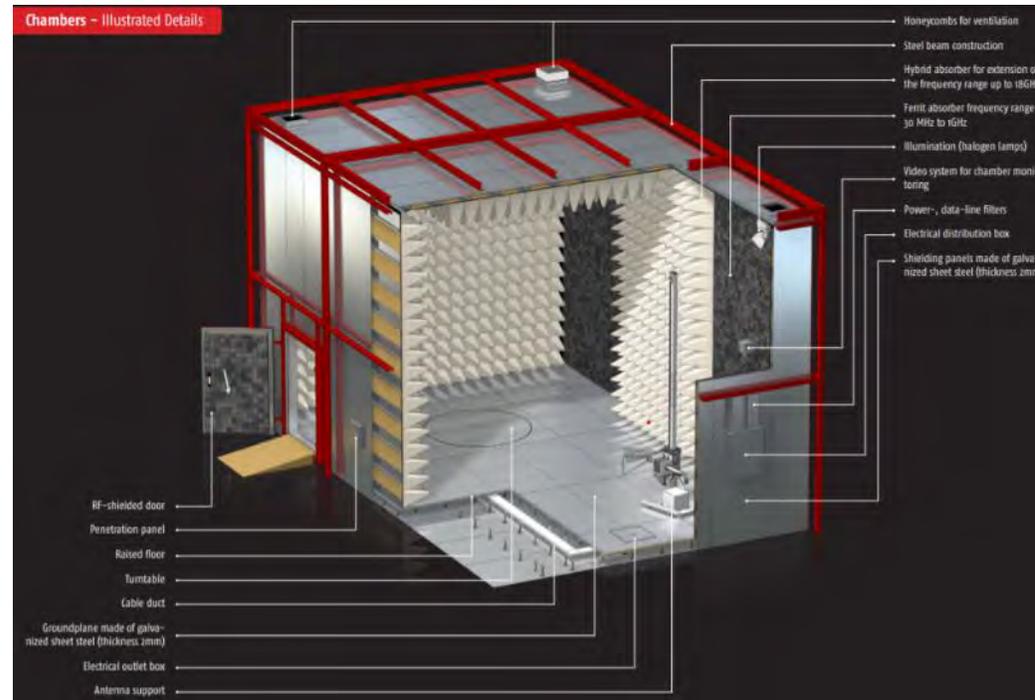
Anechoic Chamber

Written By: Marloun P. SEJERA

From the engineering model (EM) up to the flight model (FM) phase of the satellite, BIRDS-4 used Kyutech's anechoic chamber facility to conduct tests such as antenna radiation pattern and end-to-end connectivity. Such tests are very important to verify that the satellite's communication subsystem is working according to specifications. It also assures that the satellite can provide telemetry and mission data to the ground once it is released in space. So, what is an anechoic chamber and how does it work?

“Anechoic” basically means no...

... echo, and hence, an anechoic chamber is a room that is free from echo or sound. This is done by absorbing the reflected sound. In Kyutech's case, the chamber is designed to absorb reflections of radio waves making it an RF anechoic chamber.



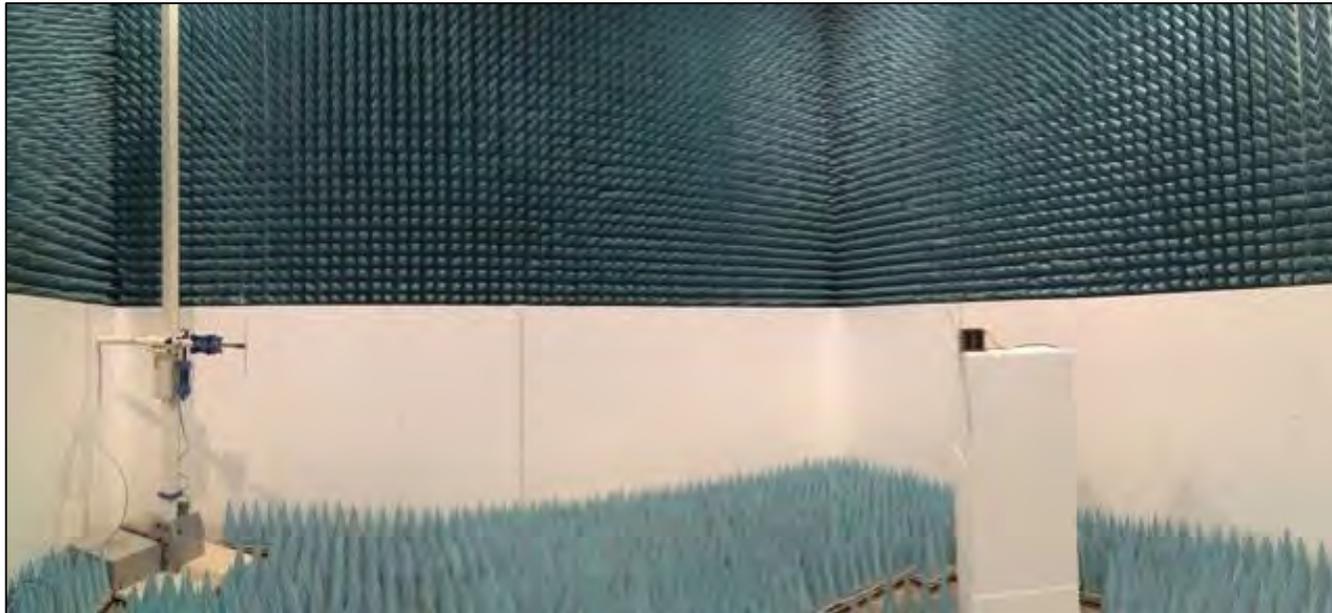
An illustration of an RF anechoic chamber [source]

Inside the chamber, radiation absorbent materials (RAM) are placed on its walls, floor, and ceiling. Typically pyramidal in shape, it efficiently absorbs RF radiation from different directions. The chamber must also be RF-shielded. This is to prevent unwanted radio waves to go inside the chamber.

Anechoic Chamber

Written By: Marloun P. SEJERA

Kyutech's anechoic chamber is at the 5th floor of the building where La SEINE (**L**aboratory of **S**pacecraft **E**nvironment **I**nteraction **E**ngineering) is located a floor below. Every time the facility is used, RF absorbers are placed on the floor. When the test is done, RF absorbers are then removed and the room is cleaned up. It is tiring but fun experience, especially when the team is helping to finish the job.



Left: BIRDS-4 FM satellite in radiation pattern test inside the chamber

Top & Right: BIRDS-4 members setting up the chamber for another test ©Dulani



BIRDS-4 Work During the State of Emergency



Izrael Zenar Bautista
June 7, 2020



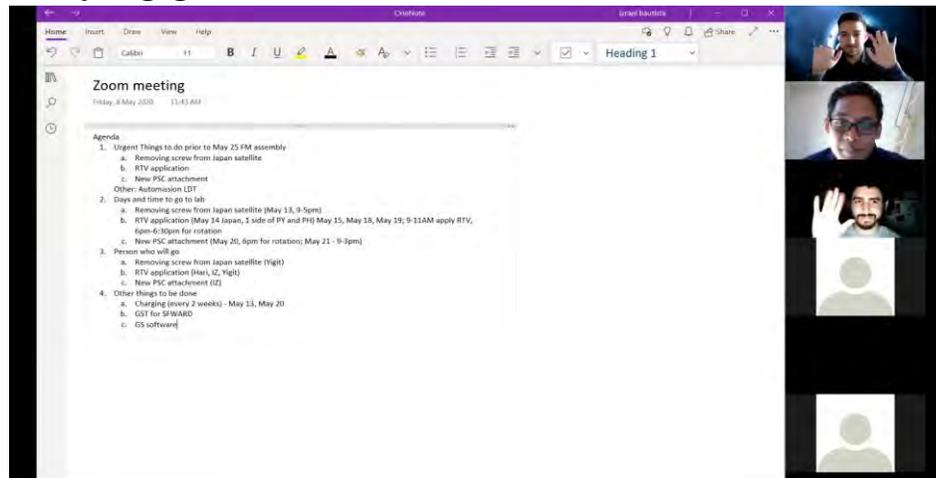
BIRDS-4 Work During the State of Emergency

Written By: Izrael Zenar Bautista

On April 7, Prime Minister Shinzo Abe announced that seven (7) prefectures in Japan would undergo State-of-emergency to protect its citizens and help with the fight against coronavirus pandemic. Among these seven prefectures is Fukuoka where Kyutech is located. Following this announcement, the Kyutech school administration instructed students to not come to school from April 9 to May 6. All work should be done at home and students are urged to stay at home as much as possible and only go outside for necessary things such as buying groceries.



*Japanese Prime Minister
Shinzo Abe
YOSHITAKA
SUGAWARA, KYODO
NEWS/AP*



BIRDS-4 members during the Zoom meeting

During this time, BIRDS-4 was about to finish the long duration test for the flight model satellites. We had to stop the test to follow the directive of the school. Fortunately, we had almost finished with the long duration test with only two days remaining and most of the satellite functionality was confirmed and tested.

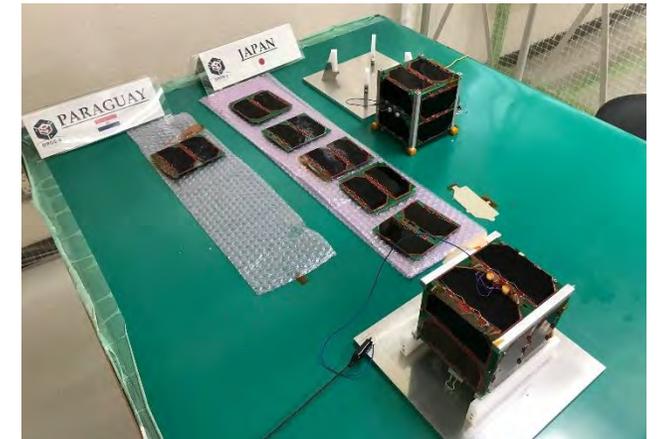
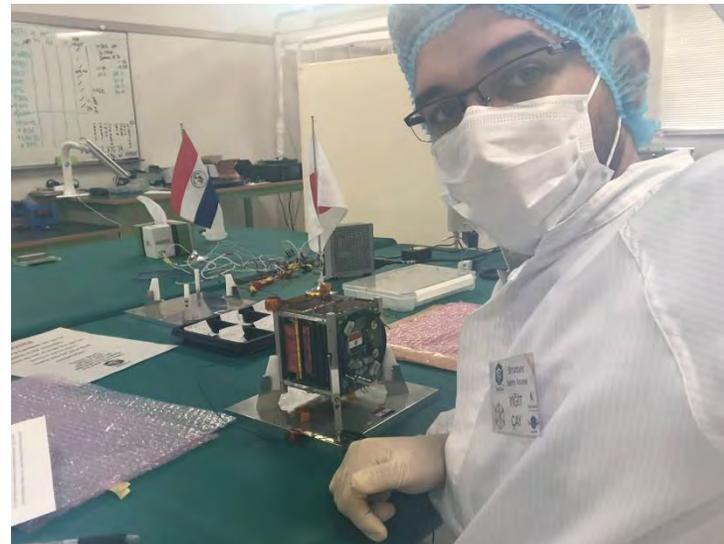
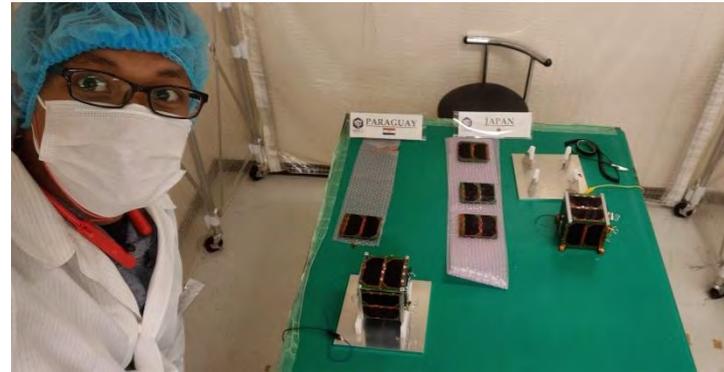
After a month of school closure, a new directive was given stating that we could work again in the laboratories provided that we get permission from our professor and school administration. With this, BIRDS-4 had a meeting through the video conferencing platform, Zoom as shown in the image on the right. BIRDS-4 members discussed our next steps and schedule during the state of emergency.

BIRDS-4 Work During the State of Emergency

Written By: Izrael Zenar Bautista

After deciding on the schedule and activities to be done, we sought Professor Cho's permission to allow the BIRDS-4 members Yigit, Hari, and I to work with our satellite. Hari went to apply RTV on the remaining edges of the solar cells to protect them during launch and cover sharp edges. Yigit finished the re-assembly of Japanese satellite Tsuru and I attached the final Perovskite solar cells and did functionality tests to all the satellites.

Work never stops for BIRDS-4 but of course, we prioritize the safety of members and follow necessary protocols and procedures such as social distancing, wearing masks and gloves, and regularly washing our hands. We hope everything soon returns to normal and everyone to remain healthy and safe as we go through this pandemic.



BIRDS-4 members working inside the clean room during the state-of-emergency

Writing About Space Science and Technology in a Turkish Website – *Evimuzay*



Yiğit Çay
June 2, 2020



Writing About Space Science and Technology in Evimuzay

Written By: Yiğit Çay

The quarantine period was quite challenging but it was also presenting some opportunities for us to make better of ourselves. I believe it's an important aspect to have fun when you try to achieve something in your life. This time, it was shaking up my memory in terms of what I'd learned before. I tried to open some old textbooks to study from the very beginning and used some software just to design and analyze things that wouldn't matter in real cases. It was more of a brain-muscle training, more than learning all over.

As I was jumping from one software to another book, then some articles, then little calculations about the things I wondered, I met my old friend Yağız during one of the regular meetings with my best friend. He was a common...

...friend of me and my best friend. He was in the aviation department of another university in Ankara and wanted to transfer to our school at that time; Istanbul Technical University's Aeronautical engineering department. He reached out to my friend through social media and my friend introduced him to me when he wanted to learn more about space engineering. After that, he got qualified to be transferred to Aerospace engineering at Middle East Technical University, which is another top-notch engineering school in Turkey.

We didn't just severe the conversations there and talked time to time over years and he even met one of our lab members in a Cansat training in China and they were surprised they had a common Turkish friend -who is me :-).



This is the medieval sword design I came up with when I was refreshing my memory in CAD design.

Yağız told me he graduated last summer and started to work in TÜBİTAK (Scientific and Technological Research Council of Turkey) SAGE (Defense Industries Research and Development Institute). He also mentioned he has a website called "evimuzay.com" (the translation from Turkish would be "space is my home") where amateur Turkish writers regularly dig into space science and technology news and write articles in Turkish from them.

Writing About Space Science and Technology in Evimuzay

Written By: Yiğit Çay

I always liked to follow up the websites with space-related articles and aware of how low quality they can have, especially in Turkish websites. When I read a couple of their articles, it looked like a young and ambitious team wanted to raise awareness all by themselves. I take writing as one of my relaxing activities and also like to inform Turkish people about the activities in space science and technology. Although there are many occasions are keep happening in Turkey, people are mostly unaware of the upcoming projects or the necessity of space systems and science, in general.

Thinking all these ideas and seeing how fruitful the information given by this website could be, I decided to become an author, too. Yağız was the most pleased to hear that I was interested in such a task.

I agreed to write every couple of months so that this idea doesn't become a burden to me and I could motivate myself over time. With this, I plan to keep the momentum slow but continuous. My first article was about solar sails. As being in the first project in Turkey to work on solar sails actively, I wanted to start increasing awareness from this point. The article is published on May 10, and I tried to spread around my family members and friends. As I focused on keeping it simple to understand, I received many positive comments and that made me feel like I didn't just pass my time during the quarantine time with only my studies and daily routines. If you'd read this far, I encourage you to try new things during these trying times.



Screenshot of my article in Evimuzay and the website's logo on its right side

BIRDS-4 ICU Team wins GRSS Grand Challenge

ICU=Image classification unit

GRSS= Geoscience and Remote Sensing Society



Mark Angelo C. Purio

June 7, 2020



BIRDS-4 ICU Team wins 2nd GRSS Grand Student Challenge

Written By: Mark Angelo C. Purio

Last year, the IEEE Geoscience and Remote Sensing Society (GRSS) launched the 2nd GRSS Student Grand Challenge. This aimed to allow student teams to develop Earth Observation payloads for a small satellite. The winning payloads will be considered for integration into a CubeSat that will be developed at the National Space Science and Technology Center (NSSTC), Al Ain, United Arab Emirates (UAE) in collaboration with the YahSat Space Lab at Khalifa University, Abu Dhabi, UAE.

In response to the call for the application, the BIRDS-4 ICU (Image Classification Unit) Team modified the mission employed in BIRDS-4 and submitted it to the 2nd GRSS Grand Student Challenge. [Source](#)

In brief, the submitted mission aims to classify the images taken by onboard camera into predefined categories, it shall - as well - help in validating the efficiency of the used algorithms for the benefit of the CubeSat imagery and images downlink efficiency.

The mission functions as follows:

- Receive and send data from/to the camera MCU.
- Classify images based on their properties.
- Send classification data to OBC or Camera MCU.

The team is composed of BIRDS-4 members namely: Yasir Abbas (Sudan), Timothy Leong (France), Hoda El-Megharbel (Egypt), and Mark Angelo Purio (Philippines).



BIRDS-4 team members who submitted the mission entry for 2nd GRSS Grand Student Challenge).

BIRDS-4 ICU Team wins 2nd GRSS Grand Student Challenge

Written By: Mark Angelo C. Purio

The official announcement of winners is published through the competition website while the winning teams are also notified through e-mail. [Source](#)

Details of the announcement are stated below taken from their website.

A jury composed of scientists from NASA, ESA, and UAE Space Agency has evaluated the proposals received to develop an Earth Observation Payload for a 3U CubeSat mission to be developed at the National Space Science and Technology Center, UAE. After the evaluation process, two proposals have been selected.

- 1. The student team from **Universitat Politècnica de Catalunya, Spain**, supervised by Prof. Juan Ramos Castro proposed developing a combination of payloads in small form factors for CubeSats. These include an L-band radiometer for monitoring ice thickness and soil moisture, a multispectral camera for monitoring vegetation, and a software-defined radio for monitoring Radio Frequency Interference along with a deployable antenna system.*
- 2. The student team from **Telkom University, Indonesia** supervised by Prof. Edwar proposed the development of a multispectral camera and a miniature spectrometer for atmospheric sensing.*

*In addition, the student team from **Kyushu Institute of Technology, Japan**, will be partially funded. The team proposed to develop smart cameras with onboard classification capability to automatically detect the best quality images for downlinking.*

BIRDS-4 ICU Team wins 2nd GRSS Grand Student Challenge

Written By: Mark Angelo C. Purio

The teams will receive financial support from the IEEE Geoscience and Remote Sensing Society to develop the payloads for integration into a CubeSat. All the student teams will closely interact with the engineers at the National Space Science and Technology Center during the development. The satellite is expected to be launched in 2021.

To date, the team is developing the hardware and software to implement the mission. Initial financial support has been provided also through the local IEEE Sections of the respective teams. They are in constant communication with the other teams and are reporting about the progress through video conferencing.

More information about the progress of the mission will be discussed in the future.

Paraguay Independence Commemoration



Adolfo Jara
June 7, 2020



Paraguay Independence Commemoration

Written By: Adolfo Jara

Every May 14 and 15, the historical feat that gave rise to independent Paraguay is remembered. This year due to the COVID-19 pandemic, the celebrations were not done as in the previous years because of the government-issued confinement.

This article shares several interesting information about the Independence of Paraguay that only a few people know.



Ceremony [[source](#)]



From [medium.com](#)

No blood was spilled

During the independence of Paraguay, there was no popular revolt, nor any acts of violence, since former Governor Bernardo de Velasco became part of the subsequent government.



From [historiaybiografias.com](#)

The permanence of the Guaraní

Despite the domination of Spain throughout South America, this was the only country where the conquistadors also adapted to the language of the conquered.

Paraguay Independence Commemoration

Written By: Adolfo Jara



From yluux.com

A peculiar flag

Paraguay is one of the few countries in the world that has a flag with two different coats of arms: the national seal on the front side and the Hacienda seal on the reverse side.



From radionacional.gov.py

Two national days

The peculiarity of the Paraguayan Independence is that it was conceived during the night of May 14, 1811 (when the revolutionaries took the Headquarters and released more than 30 political prisoners), and culminated on the morning of the 15th, when the Spanish Governor Bernardo de Velasco handed over the weapons.

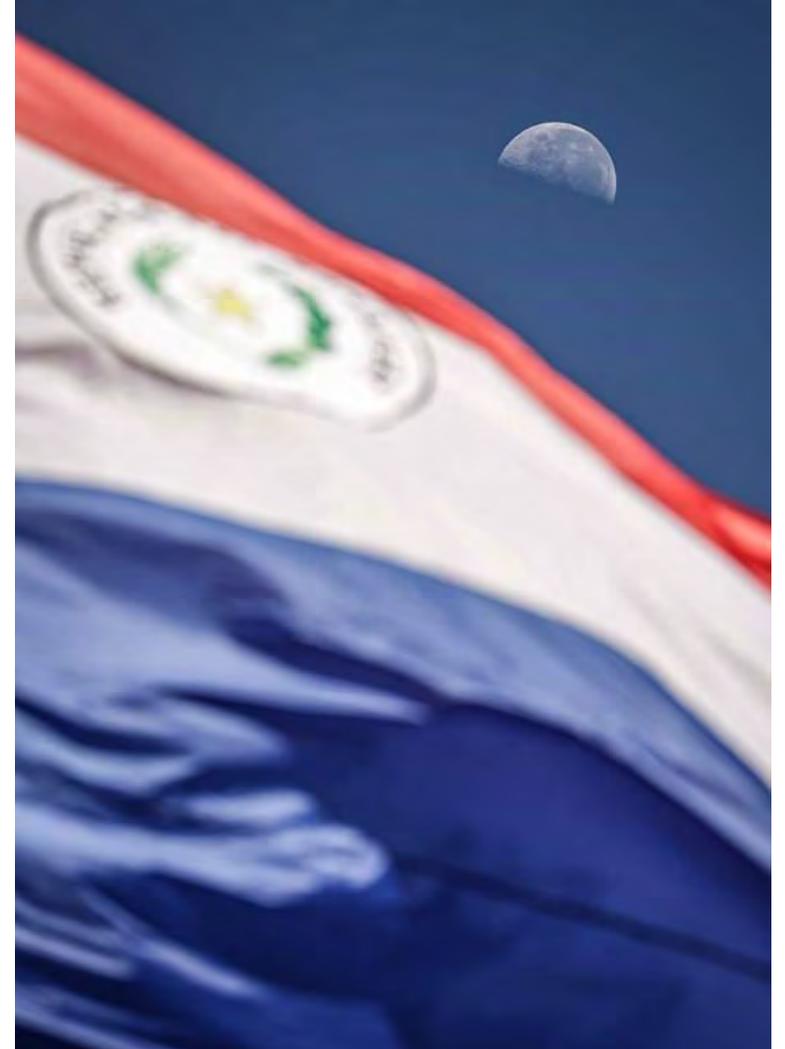


Motherland and Mother's Day [[source](#)]

In Paraguay, May 15 not only is remembered as this great historical feat; but Mother's Day is also commemorated, so it is traditionally a very popular date to share with the family.

Paraguay Independence Commemoration

Written By: Adolfo Jara



Coronavirus in Paraguay



Anibal MENDOZA
June 7, 2020



Background

The first suspected cases of coronavirus in Paraguay already dated from the end of January, however, during February, both suspected cases from the Asunción area - of people entering through the Silvio Pettirossi International Airport in Luque, as well as suspects from the Alto Paraná area, bordering Brazil, - a place with a large influx of people from Asia - since many of the Chinese residing in Alto Paraná, use the Brazilian airports and then move overland to Paraguay (and vice versa).

At the end of January, the Government of Paraguay takes the first preventive measures against the advance of the coronavirus, gathering data on passengers who have traveled to China and other nearby Asian countries or with confirmed cases of coronavirus.

It should be noted that, towards the beginning of the year 2020, Paraguay was facing one of the worst dengue epidemics in recent years, so it was imminent to take preventive measures as soon as possible to prevent the massive spread of the coronavirus and the collapse of the precarious health system, and in turn, prepare health institutions and others to house patients with coronavirus.



*Minister of Public Health and Social Welfare
Julio Mazzoleni*



Silvio Pettirossi International Airport in Luque

First Cases: Measures Applied

First cases: measures applied

The first case was only confirmed on March 7, 2020, in Asunción, by the Minister of Public Health and Social Welfare Julio Mazzoleni. The patient was a 32-year-old man from Guayaquil, Ecuador, but residing in the Central department.

Three days later, the second case was confirmed, which corresponded to a 61-year-old man from Argentina who came by land; and that same day three more cases are confirmed, all of these infected from the second case, so the National Government, assuming possible community circulation, announces the application of sanitary measures, what would later become known as a partial quarantine, which for the moment would run 15 days.

This first measure included the suspension of classes at all levels, suspension and restriction of all activities involving crowding, such as public and private events.

Other measures taken over the days were that flights from Europe were suspended, a night curfew was established (limitation of free movement between 8 PM to 4 AM), preventive controls by public forces (both police and military) through the streets and certain places for compliance with the measures, as well as temperature controls and limitation of movement in terminals and border posts (partial closure of borders).



*Empty classrooms due to the pandemic
(Illustrative photo)*

Community Outbreak: Total Quarantine

In the first days of quarantine, high compliance was reported, which faded slightly over the days, although compliance increased again as rigid measures and controls were established in the streets. Likewise, in the first weeks of quarantine an extra cost of certain sanitary products was reported, such as alcohol gel and face mask; Also in certain places in the capital, "panic purchases" occurred, due to the psychosis caused by the quarantine, although the authorities later stated that there would be no supply problems and that the supermarkets would work normally, taking certain preventive measures.

Paraguay entered total quarantine on March 20 when community transmission in the country was confirmed, completely restricting free movement, except in cases of need or urgency, and certain workers, especially basic services (supermarkets, pharmacies, convenience stores) were excepted, among others.



"Panic purchases" in supermarkets



Empty avenues during quarantine

Community Outbreak: Total Quarantine

This quarantine obliges all Paraguayans and foreign citizens or residents to remain locked up in their homes, except for various situations, such as acquiring food and medicine, going to work (if they are excepted), or attending emergencies. This measure initially went until April 12, although it was later extended on several occasions. The restrictions, in addition to the suspension of classes and events of different kinds, also included the closure of non-essential stores, including bars, restaurants, discos, cinemas, shopping malls, commercial, retail and informal businesses, etc.



Short, medium and long-distance public transport service is suspended from April 5 to 12.

On the other hand, the Government established the total closure of Borders - including air and land at the end of March, allowing only the passage of merchandise and cargo flights. Public transportation was also limited and even suspended in many areas of the country. From the beginning of April to almost the end of May, the medium and long-distance public transport service is suspended.



Controls carried out by police and military

For Easter 2020, the Governors of the 17 departments requested the total closure of borders between them. Likewise, travel from the Asunción and Central area to the interior and vice versa is totally restricted, as well as the Interior itself.

From April 12, the system of license plates for the movement of vehicles began to govern within the presidential decree. Vehicles with an even numerical termination sheet (0,2,4,6,8) can only depart Tuesday, Thursday, and Saturday; while vehicles with odd numerical termination sheets (1,3,5,7,9) can only leave Monday, Wednesday, Friday, and Sunday. This was mainly resolved to control the massive circulation of wheeled vehicles that occurred in previous days when a quarantine weakening was perceived.

Total Quarantine Extension

The total quarantine, resolved since March 20 by the National Government, was repeated four times (fifth counting from the partial quarantine already resolved on March 10). On April 8, the President of the Republic again extends the quarantine again (for the third time) until April 19. On April 17, the president extends the quarantine for the fourth time, extending until April 26.

On April 24, the quarantine is extended for the fifth time, extending until May 3. Since May 4, the Smart Quarantine has been in force, which corresponds to a de-escalation of the confinement or flexibility of measures, opening certain economic sectors in stages with strict sanitary measures.

Gradual Easing: Smart Quarantine

The 'Smart Quarantine' consists of the liberation of certain labor sectors (and in phases) for the gradual and monitored activation of the economy, under strict sanitary measures that was presented on April 24 and has been in force since May 4. It is made up of four phases, in which every 21 days the epidemiological situation and civic behavior will be analyzed to gradually release the other phases. In the first phase it is calculated to reactivate at least half of the economic sector.

FASES DE LA CUARENTENA INTELIGENTE

El plan de cuarentena inteligente presentado por el Gobierno Nacional luego de un trabajo articulado entre los distintos estamentos del Estado inicia mañana su fase 1. La misma iría hasta el 21 de mayo, fecha en la cual se hará un informe situacional del resultado obtenido. Si el mismo es favorable se avanzará a la siguiente fase hasta llegar a la última que se tiene prevista.

fase 1
4 al 21 de mayo incluye a:
Construcción: obras públicas; obras civiles en primera etapa de cimiento y estructura

Industrias: Fábricas en general
Talleres mecánicos
Masajistas
Servicio doméstico
Actividad física individual
Delivery y servicios de cobranza: Todo tipo de bienes y productos que puedan ser entregados al consumidor

Peluceros
Manicure
Pedicure
Electricista
Abogados
Contadores
Asesores
Plomero
Jardinero
Carpintero
Pintor

Prestadores de servicios en el local del cliente (hasta 3 personas):

fase 2
25 de mayo al 11 de junio incluye a:
Tiendas comerciales hasta 800 m².
Todo tipo de comercios, excepto aquellos que estén aglomerados en centros comerciales y compartan espacios comunes. Es importante aclarar que en esta fase, no podrán abrir los pasajes comerciales, centros comerciales tipo shopping o galería.
Deportes profesionales: Dentro de este grupo están excluidos los espectadores.
Oficinas corporativas
Construcción: Obras civiles en general
Eventos culturales: Sin espectadores

fase 3
15 de junio al 2 de julio incluye a:
Tiendas comerciales con más de 800m².
Las mismas deben estar sin patio de comidas, sin salas de juegos u otras áreas de espaciamiento, habilitadas al público solo con la modalidad delivery.
Complejos deportivos sin espectadores:
Gimnasios, academias, polideportivos

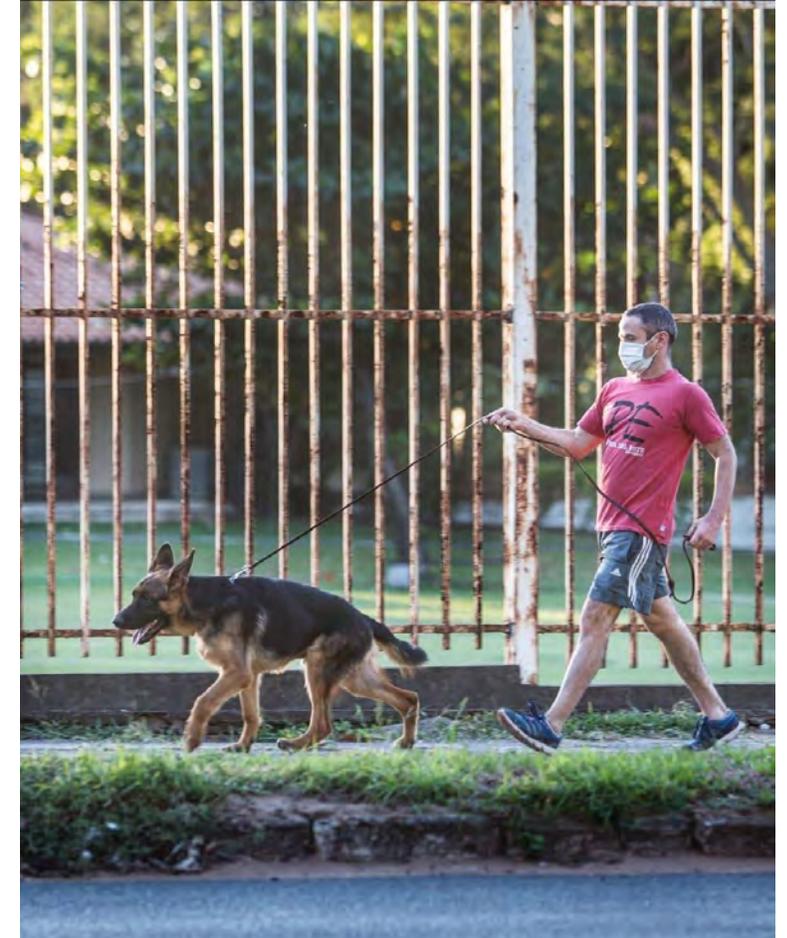
fase 4
Incluye a:
Bares
Restaurantes
Eventos
Hospedaje en general
Otros eventos.
Dis: Mayores detalles se irán dando próxima a la fase a ser aplicada y acorde a la observación que tengan los planificadores de esta cuarentena inteligente.

Explanatory poster for the 4 phases of the smart quarantine

Smart Quarantine

Health Minister Julio Mazzoleni reiterated that these new provisions will be verified and evaluated every 21 days, with the possibility of reverting to the restrictions of the previous phase or of total quarantine if necessary. Prevention measures will continue to be in force in work and daily life, and their control will be strict, such as providing a mechanism for hand sanitation upon entering or leaving the premises, the mandatory use of a face mask, physical distance and with the recommendation of temperature control.

Likewise, he also reiterated the need not to share the “tereré”, mate or other drink, which is a deeply traditional habit of the Paraguayan, as well as not leaving the houses if it were not necessary. The elderly and people with some underlying disease should remain in 'voluntary' quarantine. In relation to public officials, each state institution will define its work system (rotating hours and personnel).



Walking/jogging during this phase is permitted.



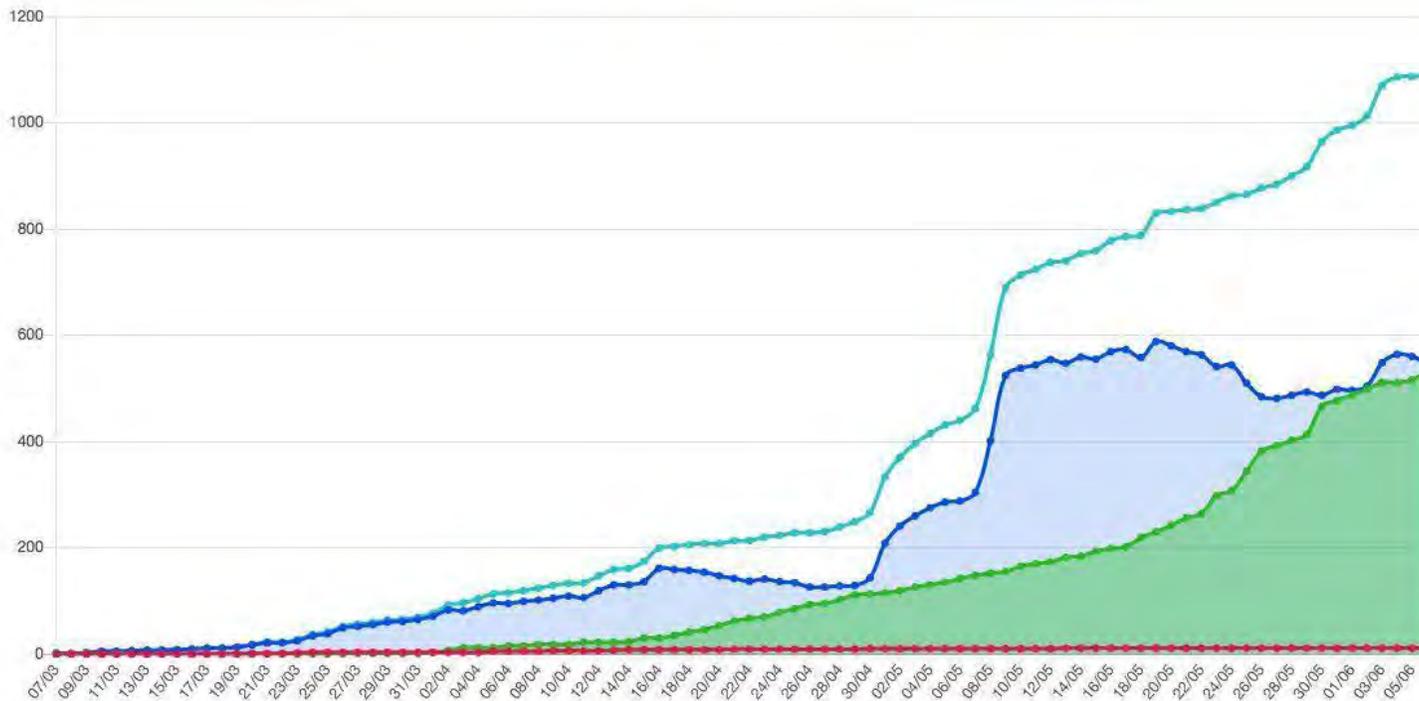
COVID-19 data of Paraguay from The New York Times – 14 June 2020

Current status

Coronavirus in Paraguay

1090 Total
547 Actives
532 Recovered
11 Deceased

There are currently 10 people hospitalized, 2 of them in intensive care.



Updated to the date June 6, 2020

92 days from the 1st confirmed case

Sources:

- 1- <https://cnnespanol.cnn.com/2020/01/29/alerta-autoridades-de-salud-de-paraguay-evaluan-caso-sospechoso-de-coronavirus/>
- 2- <https://www.rockandpop.cl/2020/03/en-paraguay-suspenden-clases-y-prohiben-aglomeracion-de-personas-por-15-dias/>
- 3- <https://www.abc.com.py/nacionales/2020/05/08/crisis-por-covid-19-se-inicia-el-cierre-de-instituciones-educativas-privadas/>
- 4- <https://www.abc.com.py/nacionales/2020/04/24/presidente-adelante-que-cuarentena-estricta-seguira-por-una-semana-mas/>
- 5- <https://www.abc.com.py/nacionales/2020/03/31/en-semana-santa-no-habra-transporte-de-pasajeros/>
- 6- <https://www.abc.com.py/nacionales/2020/04/10/control-de-vehiculos-por-chapa-un-ensayo-de-como-se-actuara-en-el-futuro/>
- 7- <https://www.abc.com.py/nacionales/2020/04/08/abdo-anuncia-extension-de-la-cuarentena-por-una-semana-mas/>
- 8- <https://www.abc.com.py/nacionales/2020/04/24/cuarentena-inteligente-se-pondra-en-marcha-desde-el-4-de-mayo/>
- 9- <https://www.abc.com.py/nacionales/2020/03/11/supermercados-piden-calma-y-ruegan-que-clientes-no-toquen-los-panes-con-sus-manos/>
- 10- <https://www.hoy.com.py/nacionales/salud-brinda-detalles-sobre-la-cuarentena-inteligente-ira-por-fases-y-se-hara-evaluacion-cada-3-semanas>
- 11- <https://www.mspbs.gov.py/reporte-covid19.html>
- 12- <https://www.nytimes.com/interactive/2020/world/coronavirus-maps.html#countries>



For an update about the BIRDS-4 team assisting "Maya-3 (BIRDS-2S) Project" in the Philippines, see *Report from the Philippines* later in this issue of the [BIRDS Project Newsletter](#).

END OF BIRDS-4 REPORTS for this month





UiTMSAT COLUMN

Column No. 6

24. Column #6 from Malaysia



UNIVERSITI
TEKNOLOGI
MARA

UiTM Sentiasa Di Hatiku
"UiTM Always in My Heart"

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

SPACE PURSUITS BY UiTMSAT DURING MCO

Movement Control Order (MCO) that has been implemented in Malaysia since 18th March 2020 did not impede our Centre for Satellite Communication (UiTMSAT) in Faculty of Electrical Engineering, University Teknologi MARA (UiTM) from conducting activities related to space that are beneficial not only to us and parties of interest, but also to the public.

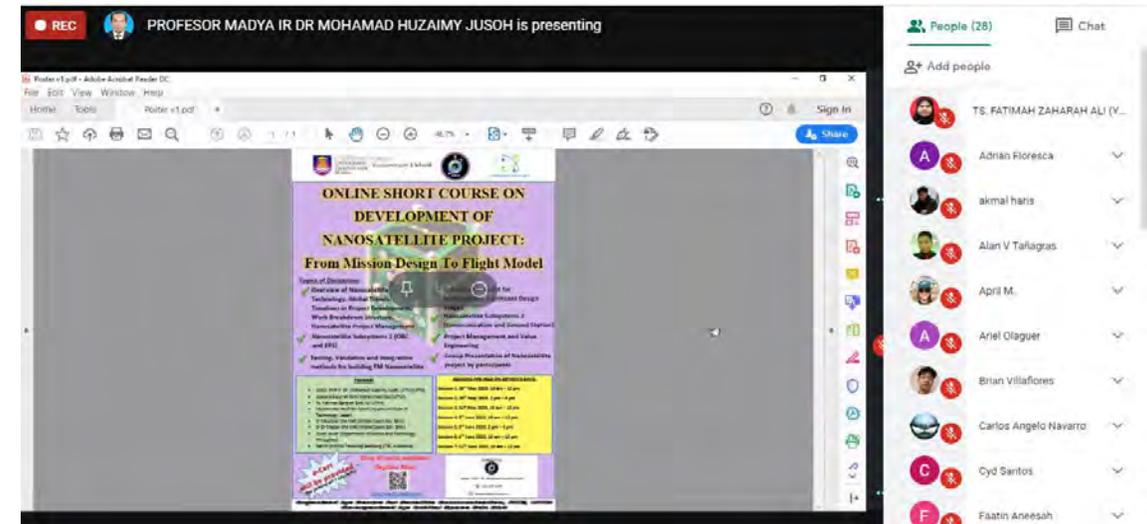


Fig. 1: The activities were done through online platform in line with government's directive to stay home and to avoid mass gathering.

Online Short Course on Development of Nanosatellite Project

Commenced in the last weekend of May 2020 (particularly on 30th and 31st May 2020), our centre has conducted an Online Short Course on Development of Nanosatellite Project for three (3) consecutive weekends. This was the very first online short course organized by the centre through Google Meet application. Orbital Space Sdn Bhd, which is the start-up space company, was also involved in organizing the course and providing the topic on Project Management and Value Engineering in the view of satellite project.

As the main purpose of organizing the course was to promote and encouraging the concept of project collaboration among BIRDS countries, the participants of the course were initially the students of SiswaSAT (the undergraduate students who participate in Malaysia SiswaSAT Competition 2020 – reader may refer to my column in May 2020 issue of newsletter), and participation from University of Perpetual Help System DALTA

ONLINE SHORT COURSE ON DEVELOPMENT OF NANOSATELLITE PROJECT: From Mission Design To Flight Model

Topics of Discussion:

- ✓ Overview of Nanosatellite Technology, Global Trends, Timelines in Project Development, Work Breakdown Structure, Nanosatellite Project Management
- ✓ Nanosatellite Subsystems 1 (OBC and EPS)
- ✓ Testing, Validation and Integration methods for building FM Nanosatellite
- ✓ Space Environment for Nanosatellite, Significant Design Stages
- ✓ Nanosatellite Subsystems 2 (Communication and Ground Station)
- ✓ Project Management and Value Engineering
- ✓ Group Presentation of Nanosatellite project by participants

TRAINERS

- Assoc. Prof Ir. Dr. Mohamad Huzaimy Jusoh, UITM (UITM)
- Syazana Basyirah Binti Mohammad Zaki (UITM)
- Ts. Fatimah Zaharah Binti Ali (UITM)
- Muhammad Hasif Bin Azami (Kyushu Institute of Technology, Japan)
- Sr Masnizan Che Mat (Orbital Space Sdn. Bhd.)
- Sr Dr Mazlan Che Mat (Orbital Space Sdn. Bhd.)
- Joven Javier (Department of Science and Technology, Philippines)
- Rahmi (Institut Teknologi Bandung (ITB), Indonesia)

SESSIONS ARE HELD ON SEPARATE DAYS:

- Session 1: 30th May 2020, 10 am – 12 pm
- Session 2: 30th May 2020, 2 pm – 4 pm
- Session 3: 31st May 2020, 10 am – 12 pm
- Session 4: 5th June 2020, 10 am – 12 pm
- Session 5: 5th June 2020, 2 pm – 4 pm
- Session 6: 6th June 2020, 10 am – 12 pm
- Session 7: 13th June 2020, 10 am – 12 pm

Register Now to Get Access to the Sessions!

e-Cert will be provided (for joining all 7 sessions)

CONTACT US:
Assoc. Prof Ir. Dr. Mohamad Huzaimy Jusoh
019-275 3109
huzaimv@uitm.edu.my

Online Short Course on Development of Nanosatellite Project

(UPHSD), Philippines, which consisted of undergraduate students, academicians, engineers, and managements. However, there was unexpected high requests from outside participants to join the course after the first session was conducted. This was due to the topics offered (as listed below) in the fee-free course that were related to overview of development of Nanosatellite from scratch to Flight Model (FM).

1. Overview of Nanosatellite Technolog and Global Trends
2. Timelines in Project Development and Work Breakdown Structure
3. Nanosatellite Project Management
4. Space Environment for Nanosatellite
5. Significant Design Stages (MDR, PDR, CDR, FM)
6. Nanosatellite Subsystem (OBC, EPS, Communication Subsystems
7. Ground Station
8. Testing, Validation and Integration methods for building FM Nanosatellite
9. Project Management and Value Engineering

These topics were arranged into six (6) sessions and each session was ran for 2 hours. There was session 7 which required the participated students to do presentation on mission idea based on what they have learned and gathered in the previous six sessions.

Online Short Course on Development of Nanosatellite Project

Below is the list of speakers of the online short course:

- Assoc. Prof Ir. Dr. Mohamad Huzaimy Jusoh from Centre for Satellite Communication , UiTM
- Syazana Basyirah Binti Mohammad Zaki from Centre for Satellite Communication , UiTM
- Ts. Fatimah Zaharah Binti Ali from Centre for Satellite Communication, UiTM
- Muhammad Hasif Bin Azami from Kyushu Institute of Technology, Japan
- Sr Masnizan Che Mat from Orbital Space Sdn. Bhd.
- Sr Dr Mazlan Che Mat from Orbital Space Sdn. Bhd.
- Joven Javier fro Department of Science and Technology, Philippines
- Rahmi from Institut Teknologi Sumatera, Indonesia

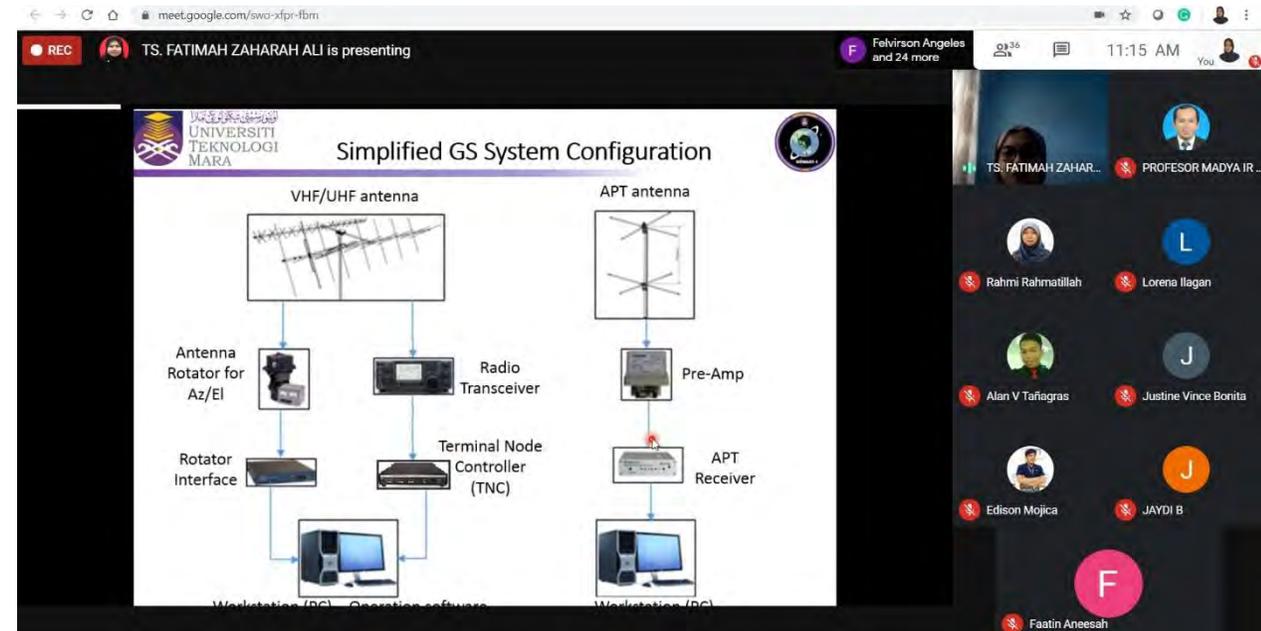


Fig. 3: A snapshot of session in progress where the speaker was giving a lecture to the participants through online platform (Google Meet application).

Online Short Course on Development of Nanosatellite Project

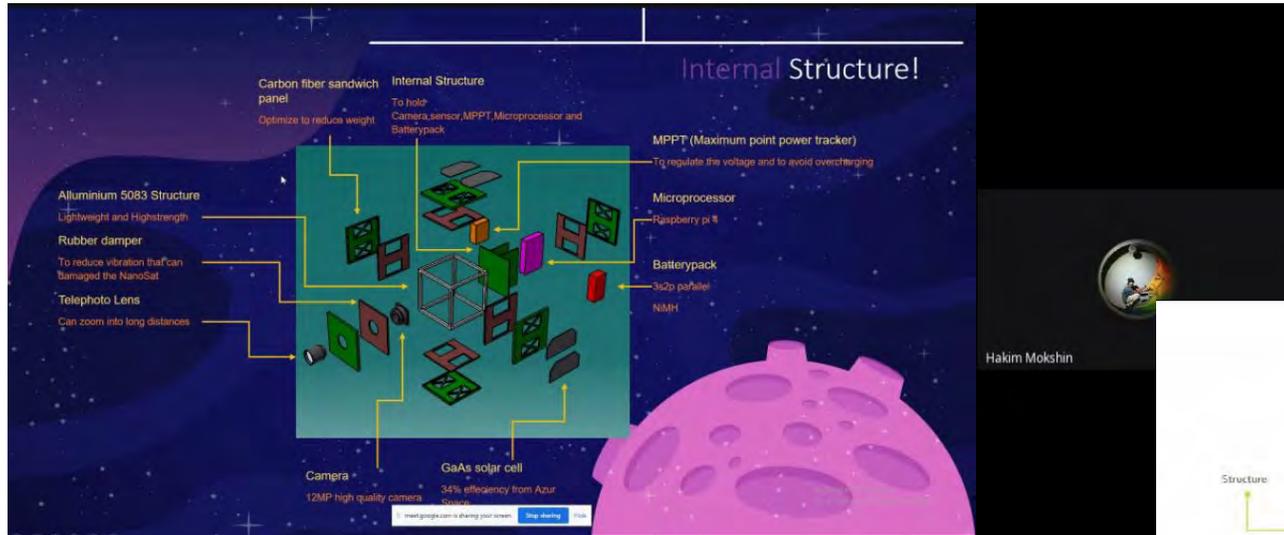
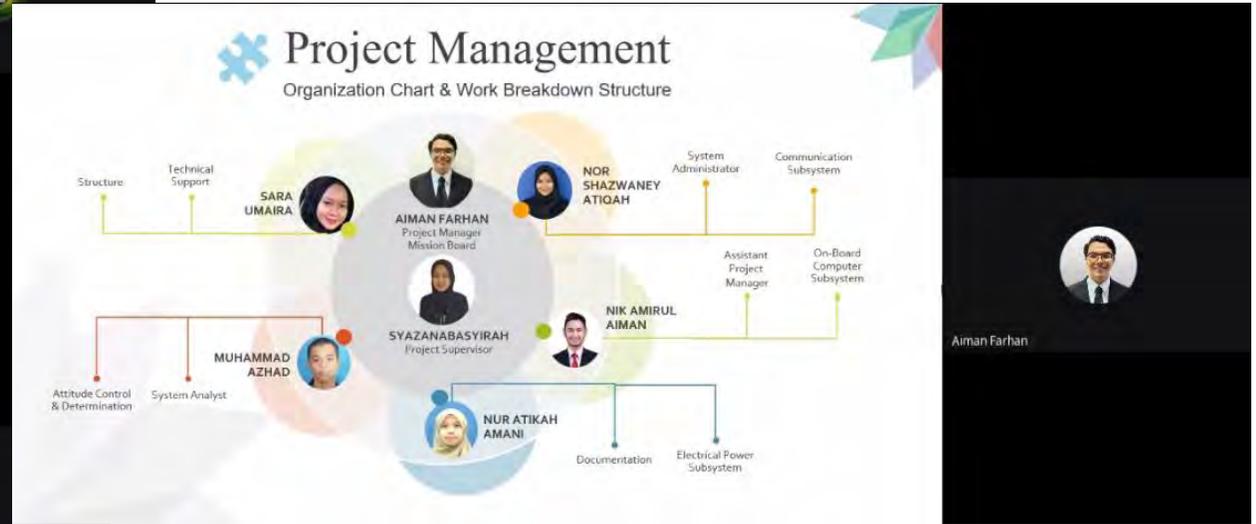
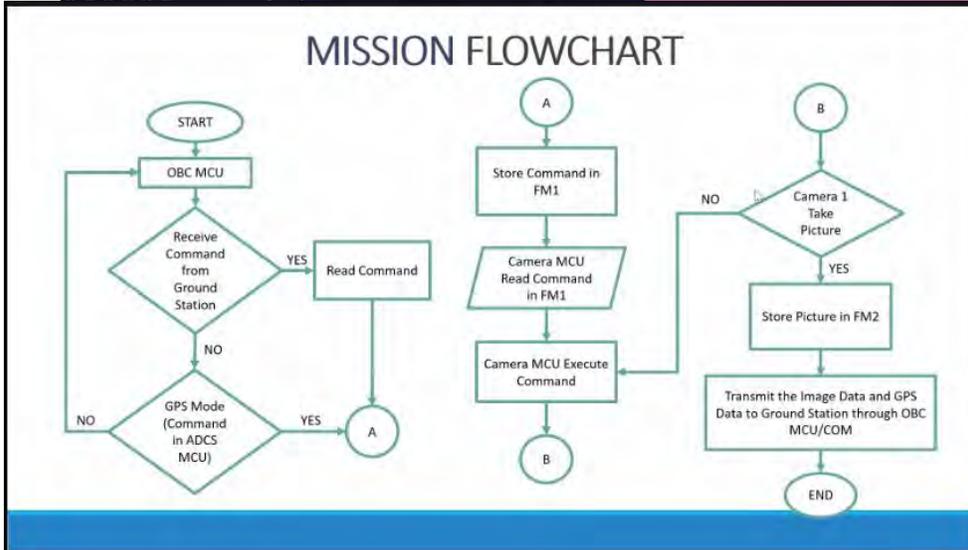


Fig. 4: The snapshots of students' presentation during session 7. In this session students were required to present their mission idea in the format of MDR.



Students were required to form a team of 5 or 6 and proposed their Nanosatellite project including the project management, process, and timeline.

On 13th June 2020, the course was successfully ended with the student groups' presentations. During the presentations, speakers from the centre have given comments and suggestions for the improvement of the presented projects. The presentations were evaluated accordingly to choose best project presentation for certification award. All attendees were also provided with certification of participation. Based on the success of the course, our centre is looking forward to hold the next online short course in near future.

And due to our optimism in conducting the online activities, our centre is planning to provide the following virtual learning and sharing platform:

- (a) **UiTM Space Technical Webinar Series**
- (b) **UiTM Space Student Webinar Series**

These webinar series are opened to all for participation and speaker application, who are interested to learn and share their research and findings in space science and technologies.

END OF THIS COLUMN

Organizer: **UNIVERSITI TEKNOLOGI MARA** | **Fakulti Kejuruteraan Elektrik**

Co-organizer: **IEM**

Opportunity to learn, share, and exchange information globally on Space Engineering

UiTM Space Student Webinar Series | **UiTM Space Technical Webinar Series**

- Weekly event start on **25th June 2020**
- Biweekly event start on **30th June 2020**

Topics includes but not limited to:

- Small-scale Space Technology
- Satellite Engineering/Exploration
- Operation and Management
- Space Industry

BENEFITS OF JOINING:

- ✔ Publication
- 📖 Materials accessibility
- 🌐 International Webinar
- 🤝 Collaboration Opportunity

CALL FOR SPEAKER
Token of appreciation is provided!

Click the [Registration Link](#) and send your CV to:
uitmsatproject@gmail.com

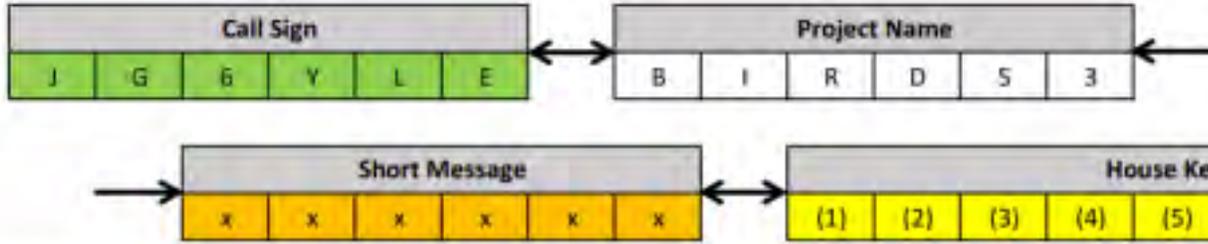
Join us!
[CLICK HERE](#)

Contact Info:
AP Ir. Dr. Mohamad Huzaimy
huzaimy@uitm.edu.my +60192753109



BIRDS-3 Reset Data Collection

by Abhas Maskey (BIRDS-3, Nepal)
15 June 2020

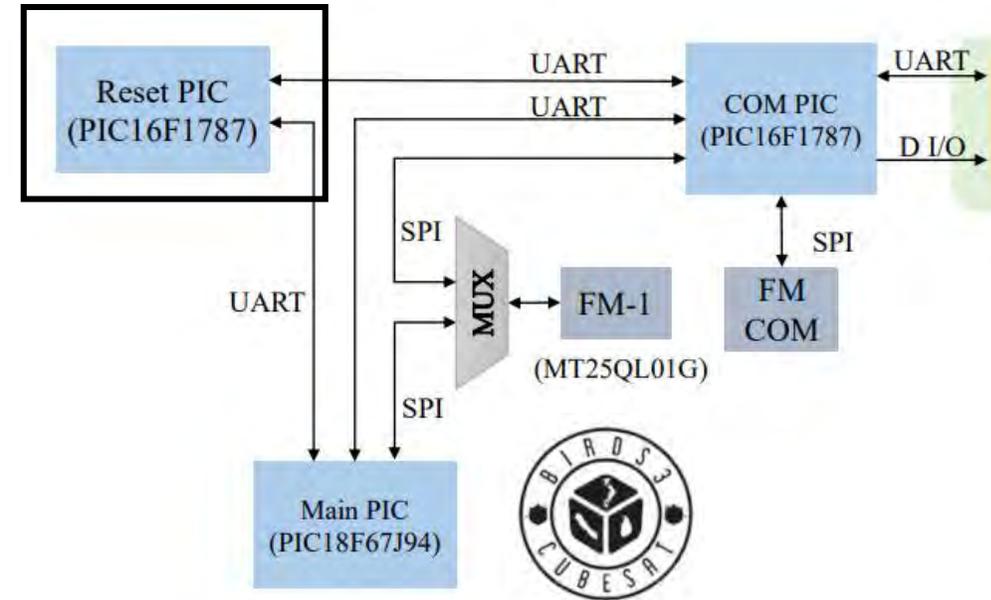


BIRDS-3 Reset Data Collection

BIRDS-3 CW-1 has **reset** information which allows the team to understand whether any abnormal system resets have taken place due to radiation effects.

Type1			Type2			
Cell Number	Data	bit	Cell Number	Data	bit	
(1)	Battery Voltage (mV)	8bit	(1)	Gyro X axis (deg/s)	8bit	
(2)						
(3)	Battery Current (mA)	8bit	(3)	Gyro Y axis (deg/s)	8bit	
(4)						
(5)	Battery Temperature (°C)	8bit	(5)	Gyro Z axis (deg/s)	8bit	
(6)						
(7)	Format identifier "0" (Data Type 1)	1bit	(7)	Format identifier "1" (data type 2)	1bit	
	Operation Modes --> 11: Normal 10: Low power 01	2bit		HSSC Automatical Trial ----> 1: 0: x	1bit	
(8)	Kill Switch Main ----> Nomal:0 Kill:1	1bit	(8)	CAM Automatical Trial ----> 1: 0: x	1bit	
	Kill Switch FAB ----> Nomal:0 Kill:1	1bit		ADCS Automatical Trial ----> 1: 0: x	1bit	
	Antenna deploy status----> Success:1 Unsuccess:0	1bit		LDM Automatical Trial ----> 1: 0: x	1bit	
	Solar cell +X-----> Sunshine:1 Shadow:0	1bit		Battery Heater -----> ON:1 OFF:0	1bit	
(9)	Solar cell -Y-----> Sunshine:1 Shadow:0	1bit	(9)	Reservation command ----> Reserve:1 Nothing:0	1bit	
	Solar cell -Z-----> Sunshine:1 Shadow:0	1bit		Uplink Success ----> Success:1 Not Success:0	1bit	
	Solar cell +Y-----> Sunshine:1 Shadow:0	1bit		(10)	CPLD Temperature (°C)	8bit
	Solar cell +Z-----> Sunshine:1 Shadow:0	1bit				
(10)	Time after last reset (number of hours)	5bit				

BIRDS-3 satellites were deployed in June 17, 2019



BIRDS-3 satellites have now been in orbit for a year. Radiation effects like Single Event Latch-up (SEL) can cause system to fail. The On-board Computer (OBC)'s Main PIC MCU is connected to **Reset PIC** MCU. As the name suggests, Reset PIC is responsible to listen to the “heartbeat” of Main PIC. If it stops for a designated period of time, the Reset PIC resets the Main PIC. Systems have seen to recover by resetting.

(10)	Time after last reset (number of hours)	5bit
------	---	------

Analysing a year worth of operation data, there is recorded evidence to show that the satellites have undergone resets. NepaliSat-1, Raavana-1 and UGUISU have undergone 0,3 and 1 abnormal resets respectively. Both Raavana-1 and UGUISU has recovered after the reset took place. Besides this, by design, the Reset PIC resets the entire system every 24 hours to ensure that system remains fresh. The reset happens between 10:15-10:16 UTC at the ground everyday.

Why Study Abnormal Resets?

BIRDS-3 is currently working on a paper to document the data that has been collected throughout the year of operation. Abnormal resets are analysed in the paper as well. This helps the team to verify that the system can automatically reset and reverse single event radiation effects like SEL in space. This means that the system is functioning as designed. **END**



https://iss.jaxa.jp/kiboexp/news/images/190222_2_1.jpg

Places to Visit in Sri Lanka

By Dulani Chamika (BIRDS-3, Sri Lanka)
15 June 2020

Beautiful places to visit in Sri Lanka

Sri Lanka is a beautiful island. The hill country is located in the middle of Sri Lanka where we can see misty mountains and enjoy nice weather. I will focus on main attractions in Sri Lanka in this article.



Colombo, The Capital of Sri Lanka. Colombo is situated in the Western Province of Sri Lanka.



This picture shows the Mirissa Coconut Tree Hill. It is located in the down south of Sri Lanka

Temple of Sacred Tooth Relic



The Temple of Tooth at Kandy is the final location of the sacred tooth of the lord Buddha. We call it as “ Dalada Maligawa”. In July normally the annual pageant (Dalada Perahara) is usually held. The picture in the bottom shows the Kandyan Dances in the Dalada Perahara.

Sri Pada



© google



© google



© google

Sri Pada is a 2,243 m tall mountain located in Central Sri Lanka. This is a sacred holy mountain. There are six possible trails to access this mountain.

Anuradhapura



© google



© google



© google

Anuradhapura is one of the ancient capitals of Sri Lanka. This city is now a World Heritage Site. The first picture shows Mihintale. King Devanampiyatissa met the first Buddhist monk in this place. There are eight main places called Atamasthana to worship in this city. There are many ancient ruins in this city.

Ella



The picture in the top shows the famous nine arch bridge. You must have this train ride in case if you visit Sri Lanka one day. This train journey is said to be one of the most scenic train journeys. I have taken this train ride from Colombo to Badulla. And the view was really beautiful. The other picture shows the famous Ella mountain .



© google

Sigiriya and Ambuluwawa



© google

This picture shows “Sigiriya” which is located in the Matale District. King Kashyapa (477 – 495 AD) new built his palace on the top of this rock. This is also known as the Lion Rock.



© ravisha_99

Climbing to the top of this tower is bit tough. But hardest climbs always gives us best views. This is located in Gampola. This area is close Kandy City.

END OF REPORT FROM SRI LANKA

STAMINA4SPACE

PHL
MICROSAT

UPDATES FROM THE PHILIPPINES

June 15, 2020

University of the Philippines-Diliman
Quezon City, Philippines

PREPARED BY:

Mae Ericka Jean C. Picar

STAMINA4Space Communications Officer, STeP-UP Project
Graphic Artist and Contributing Writer

Nicole V. Ignacio

STAMINA4Space Information Officer, PHL-50 Project
Contributing Writer and Editor

F. Mara M. Mendoza

STAMINA4Space Project Manager, STeP-UP Project
Contributing Writer and Editor



Astro Space Camp goes online

May 25-29, 2020

Dr. Atchong Hilario and Engr. Jeric Brioso joined this year's Astro Space Camp to talk about satellites for kids and high school students.

More details here: <https://ph.sserd.org/>

“ I ALWAYS WANTED TO BE AN ASTRONAUT SINCE I STARTED SCHOOL. SADLY, DURING THOSE TIMES, THIS WAS CLOSER TO A DREAM THAN A GOAL. THE STAMINA4SPACE, ITS PREDECESSOR, THE PHL-MICROSAT, AND ALL OTHER SCIENCE AND ENGINEERING RESEARCHES IN THE PHILIPPINES TAUGHT US, THAT WITH HARDWORK, GOVERNMENT SUPPORT, AND OUR GOOD OLD INGENUITY, THE FILIPINOS CAN. ”

Dr. Paul Leonard Atchong Hilario

CHIEF SCIENCE RESEARCH SPECIALIST
STAMINA4SPACE PROGRAM'S OPTIKAL PROJECT



ONLINE ASC 3.0 • MAY 25-29 • REGISTER AT: [HTTPS://PH.SSERD.ORG/](https://ph.sserd.org/)

Dr. Hilario's presentation, titled "Packing for Space: An Introduction to Satellite Mission Planning" was presented to elementary school students.

“ WITH PROPER KNOWLEDGE ON TECHNOLOGIES NOT ONLY ON THE GROUND BUT ALSO ABOVE, WE CAN ALWAYS MOVE FORWARD. ”

Engr. Jeric Brioso

RESEARCH ENGINEER
STAMINA4SPACE PROGRAM'S STEP-UP PROJECT



ONLINE ASC 3.0 • MAY 25-29 • REGISTER AT: [HTTPS://PH.SSERD.ORG/](https://ph.sserd.org/)

Engr. Brioso's presentation, titled "Philippine Satellites: Our Eyes in the Sky", was presented to high school students.

Photos courtesy of Society for Space Research and Development

NASA Space Apps Virtual Bootcamp

May 27, 2020

The STAMINA4Space Program was invited by the NASA Space Apps to be part of its Virtual Bootcamp. On May 23-29, the global organizing team of NASA Space Apps premiered videos as part of its Virtual Bootcamp, which aimed to help prepare participants for NASA's Space Apps COVID-19 Challenge.

The representatives were:

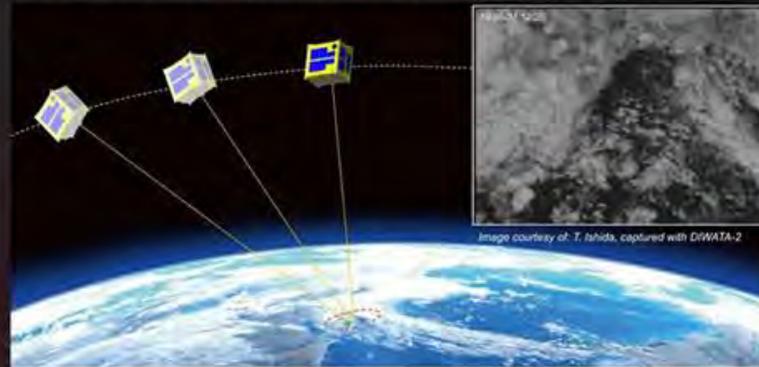
1. Ellison Castro, with his video titled "Determining Height of the Clouds from Satellite Data"; and
2. Cara Canlas and Arlo Sabuito, with their video titled "Forest Fire Mapping Using Support Vector Machines"

Here's the link to their videos:

1. <https://www.youtube.com/watch?v=uy7Q-VYcTZA>

2.. <https://www.youtube.com/watch?v=ISMNYSQ2CGo>

Target-pointing mode of DIWATA1



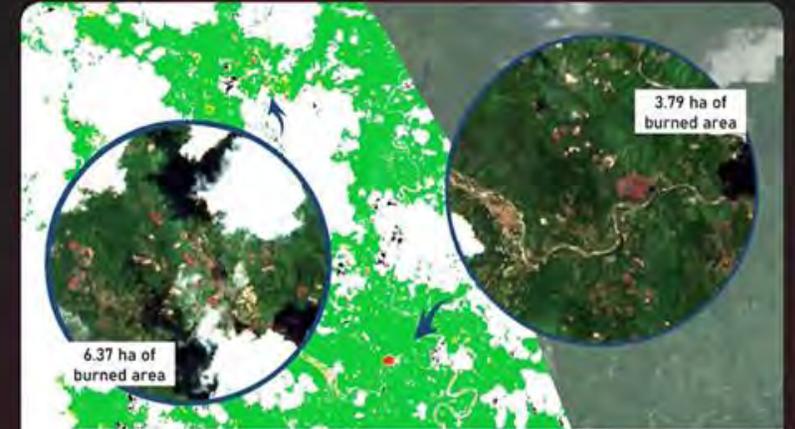
Determining height of the clouds from satellite data

STAMINA4SPACE

Ellison Castro



University researcher from Ground Receiving, Archiving, Science Product Development and Distribution (GRASPED Project) under the Space Technology and Applications Mastery, Innovation and Advancement (STAMINA4Space) program in the Philippines



Forest fire mapping using support vector machines

STAMINA4SPACE

Cara Patricia Canlas
Arlo Jayson Sabuito



University researchers from Ground Receiving, Archiving, Science Product Development and Distribution (GRASPED Project) under the Space Technology and Applications Mastery, Innovation and Advancement (STAMINA4Space) program in the Philippines



Photos courtesy of NASA Space Apps Philippines

Diwata-2 Tracker

See where Diwata-2 is RIGHT NOW using our new real-time tracker!

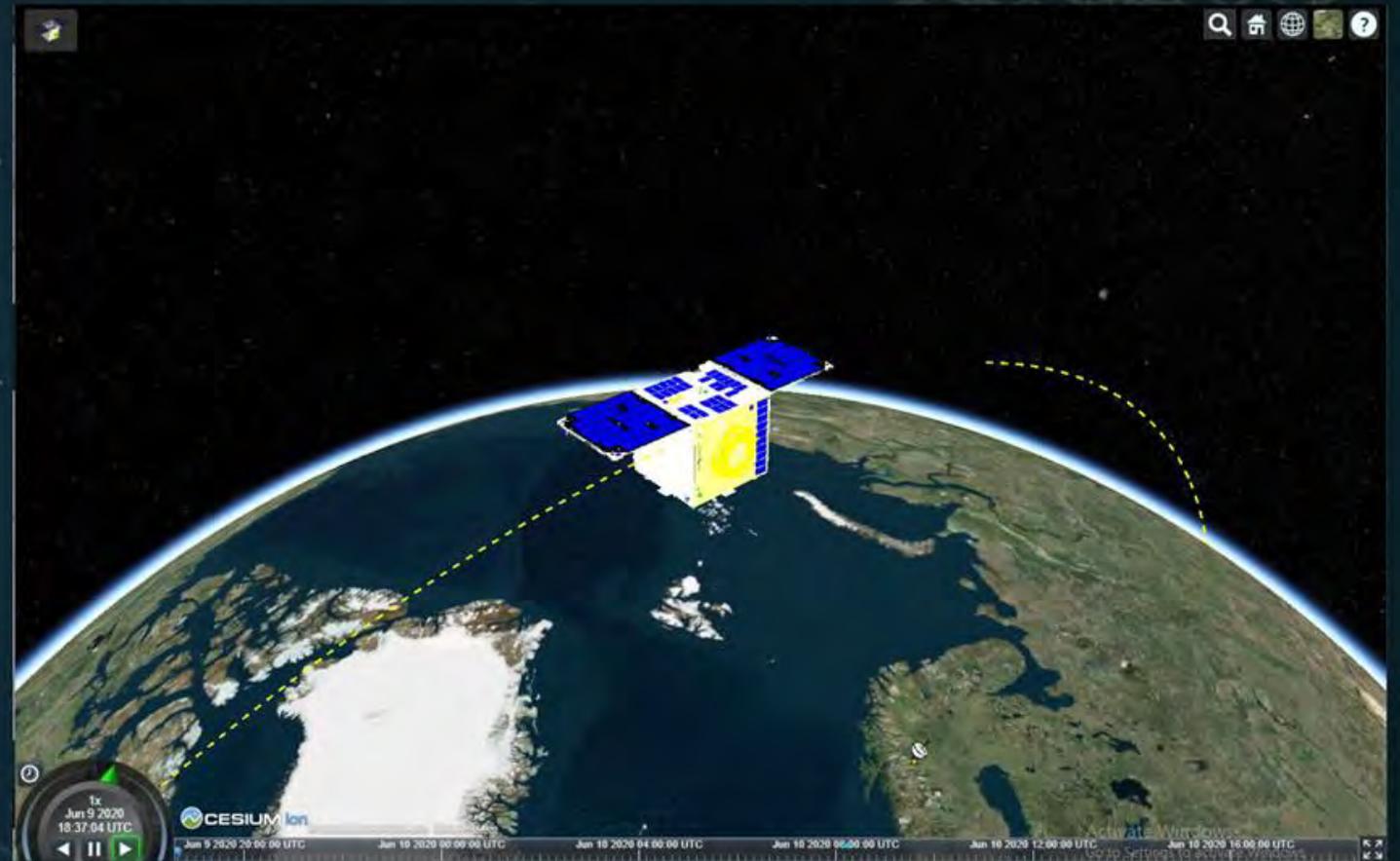
Check it out: <https://tracker.stamina4space.upd.edu.ph/>

This is useful for amateur radio users who have been accessing Diwata-2's Amateur Radio Unit (PO-101) or anyone who just wants to know where on Earth Diwata-2 is currently hovering over.

Read about Diwata-2: <https://bit.ly/3cMzRhJ>

How to use the ARU: <https://bit.ly/3f2ole7>

ARU "on" times: <https://twitter.com/Diwata2PH>



Maya-3 EM Testing

June 6, 2020

The Maya-3 Engineering Model (EM) of the scholars under the STeP-UP Project has been received by the BIRDS-4 Satellite Project - KyuTech team in Japan. It will now undergo the post-shipment functionality test.

The Maya-3 EM will also be tested in a simulated space environment at the Kyushu Institute of Technology, Japan, with support from the BIRDS-4 Team..



Photos courtesy of the BIRDS-4 Satellite Project

Diwata-2 sent back detailed images of the Moon

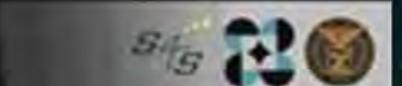
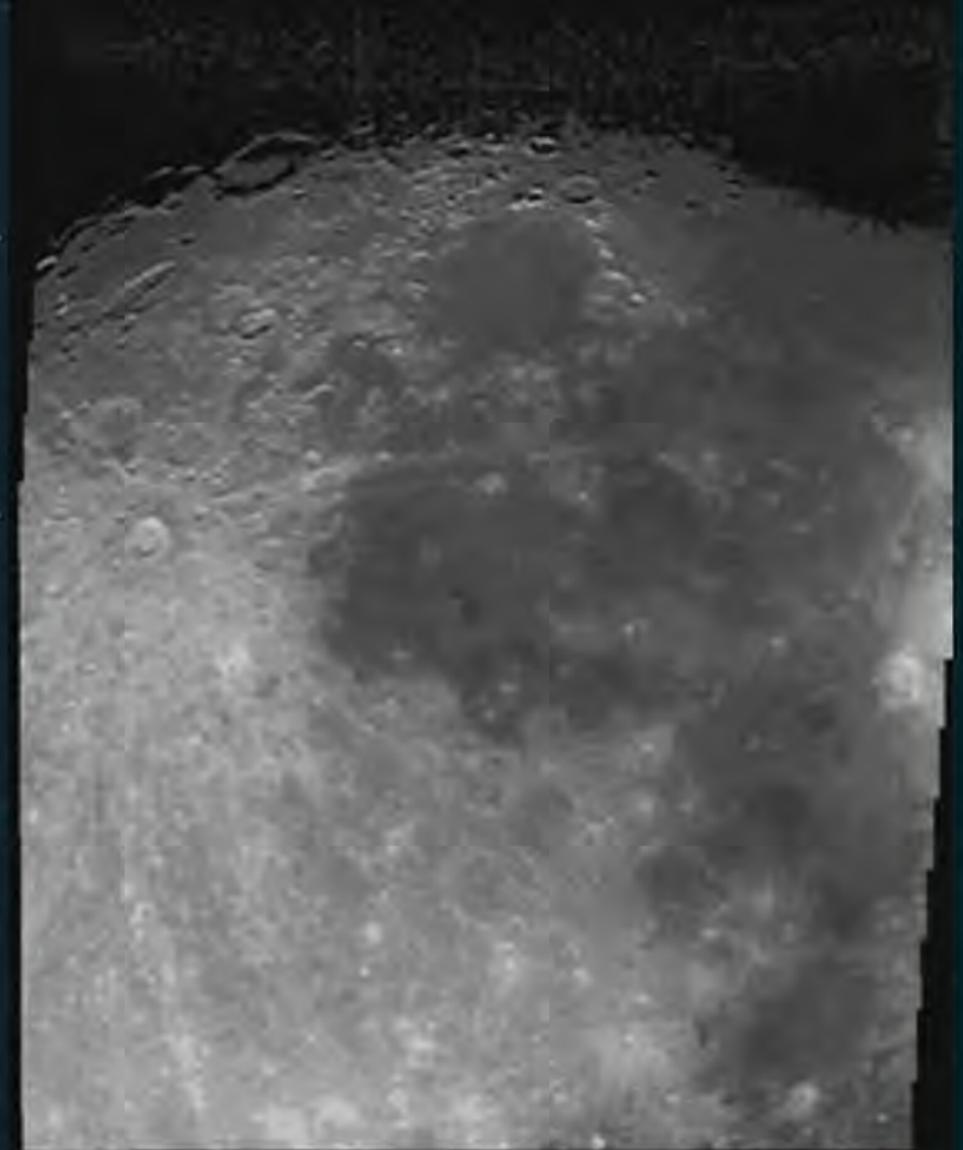
June 4, 2020

In an experiment done by Tohoku University and STAMINA4Space, Diwata-2 was tasked to capture images of the moon to test the microsatellite's target pointing capability, calibrate its sensors, and monitor its health and status. Much like how the Moon helps set the rhythm for life on Earth, it also helps test Diwata-2's target pointing accuracy—a crucial measure in effectively capturing images of parts of the Earth that are identified during mission planning.

Aside from the advances in research that capturing moon images can yield, STAMINA4Space Program Leader Dr. Gay Jane Perez also hopes that images like these will have a profound effect on Filipino youth.

"Seeing our Moon up close with our very own satellite is another milestone for our space program. Hopefully this image will be imprinted on the memories of our youth, to inspire them to dream big, pursue careers in STEM, and—literally and figuratively—'reach for the Moon'," she says.

Read on to see which famous Moon craters and Moon mission landing sites are visible, and an in-depth look at the acquisition (made possible by PEDRO Center at DOST-Advanced Science and Technology Institute, Tohoku University Ground Station (CRESST), and Sweden's Kiruna Station): <https://bit.ly/2zXleKQ>



Updates from STEP-UP scholars

June 15, 2020
University of the Philippines- Diliman
Quezon City, Philippines

Renzo S. Wee
Layout Designer

Bryan R. Custodio
Project Manager
Contributing Writer

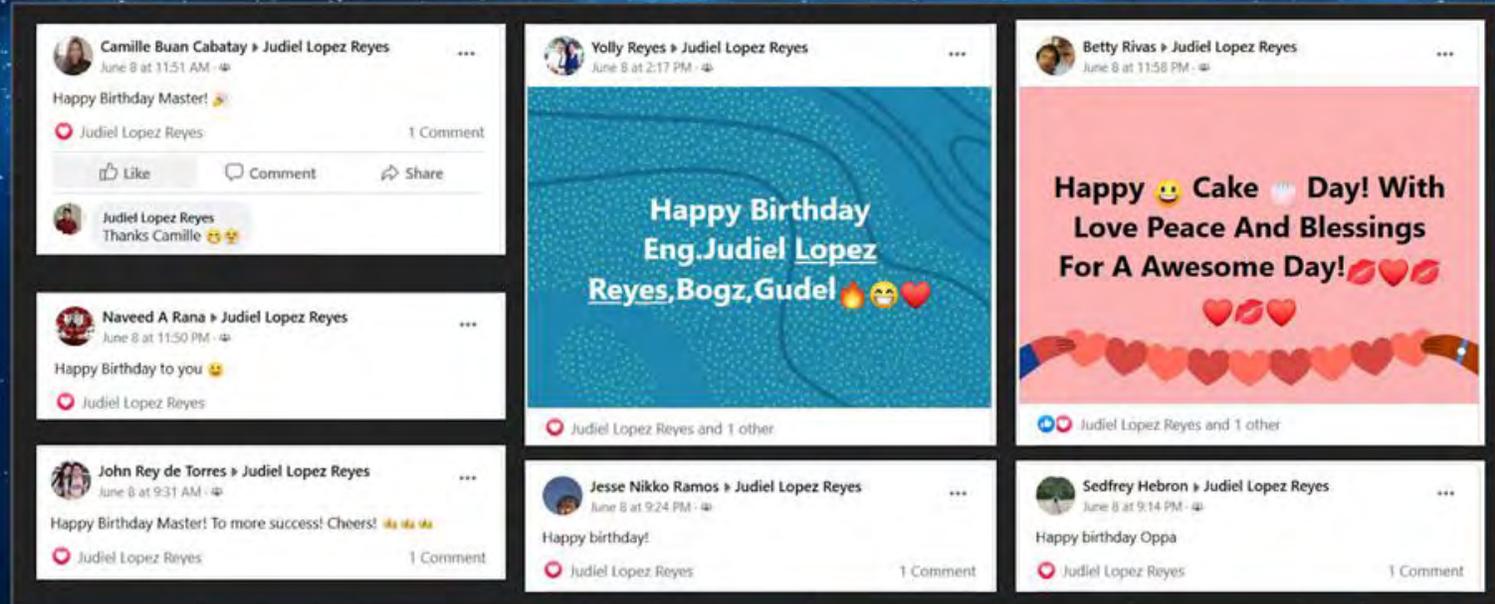
Derick B Canceran
Christy A Raterta
Contributing Writer



Hey Jude, Happy Birthday!

“As you celebrate your 18th birthday today, we wish you good health, forever happy home, and more success in life.”

-Your STeP-UP Brothers and Sisters



Maya-3 EM meets BIRDS-4

- Derick Canceran & Christy Raterta



With the help of the Filipino BIRDS-4 members, the Maya-3 Engineering Model (EM) was inspected and tested for Space Environment Testing at Kyutech, Japan. On June 8, 2020, the EM was unboxed and meticulously inspected. Through an online meeting, the STeP-UP Scholars were able to assist the BIRDS-4 team with their post-shipment functionality test, which runs from June 8 to June 12, 2020. The Space Environment Testing will follow on June 15 to June 21, 2020.

Thank you, BIRDS-4 Team!

END OF REPORT FROM THE PHILIPPINES

28. BIRDS-5: Establishing its missions

The First Few Weeks of BIRDS-5: Establishing The Missions

Zimbabwe Team



1. **Victor** Mukungunugwa
2. **Timothy** Kuhamba
3. **Ramson** Munyaradzi

Uganda Team



1. **Bonny** Omara
2. **Derrick** Tebusweke
3. **Edgar** Mujuni

The two African stakeholders of BIRDS-5 are:

- Zimbabwe National Geospatial and Space Agency (**ZINGSA**)
- Ministry of Science, Technology & Innovation – Uganda (**MoSTI**)

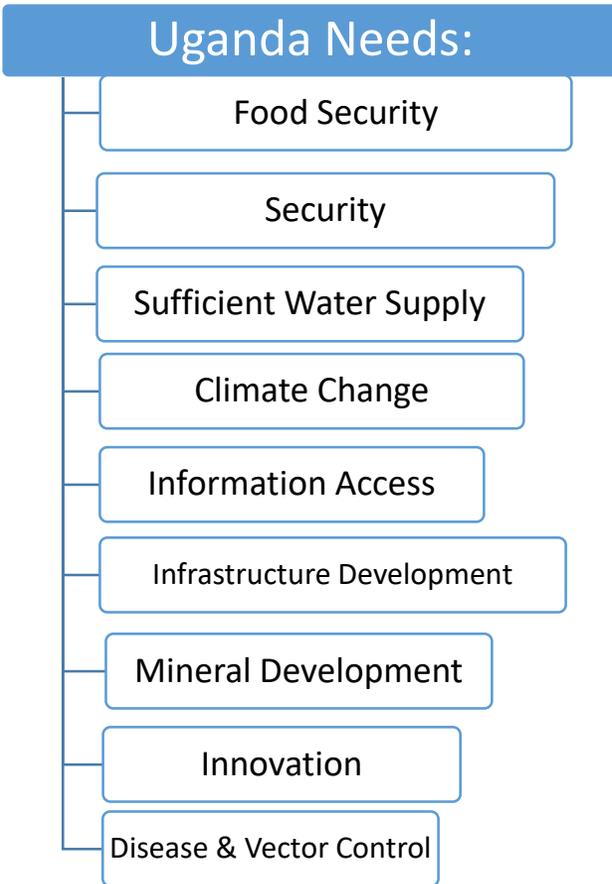
Teaching staff of Kyutech are:

- **Prof. Mengu** Cho
- **Assistant Prof. Kim** Sangkyun
- **Assistant Prof. Maeda** George

This report covers: From 01/04/2020 to 23/06/2020; written by the Uganda team.

Completion date of this report: 16/06/2020

- **Stage 1.** Brainstorming on the Countries' key socio-economic needs. On April 14th, We were given study materials about remote sensing and Satellite mission establishment. Ugandan students, unlike the Zimbabwean counterparts, did not take their flight which was scheduled for March 23, 2020, because of the lockdown the government imposed on march 18, 2020. Nonetheless, the course commenced online with a series of activities including self-studies, in-country and joint discussions.



Number	Technology	2012 Technology Review	2017 Technology Review	Justification
1	Earth Radiation budget radiometers	Feasible	Feasible	SERB, RAVAN
2	Hi-res optical imagers	Infeasible	Feasible	Planet Labs
3	Imaging multispectral radiometers (Vis/IR)	Problematic	Feasible	AstroDigital
4	LIDARs	Infeasible	Problematic	DIAL laser occultation
5	Magnetic field	Feasible	Feasible	InSPIRE
6	Precision orbit	Feasible	Feasible	CanX-4 and CanX-5
7	Radar altimeters	Infeasible	Feasible	Bistatic LEO/GEO/MEO
8	Scatterometers	Infeasible	Feasible	CYGSS (GNSS-R)

Table 1: EO technologies for CubeSat-based missions
Source: <https://www.intechopen.com/online-first/nanosatellites-and-applications-to-commercial-and-scientific-missions>

Fig. 1:
On Left: Ranking of both countries' needs based on priority.
On Right: A Zoom class meeting in session.

- **Stage 2.** On June 4th, We created a common list of 4 major needs that could be examined for technical feasibility of improving each using space technology (satellites, constellations, ground sensors, etc.) by the 6 students. Dropping was based on lack of priority and practicality.

Agriculture (by Victor Mukungunugwa, Timothy Kuhamba, and Bonny Omara.)

Water Resources (by Ramson Munyaradzi.)

Border Control (By Derrick Tebusweke.)

Solar Mapping by Edgar Mujuni

Stage 3; Establishing feasibility of using 3U CubeSat and whether we can conduct any pilot project by 1U CubeSat. This is to demonstrate some key technologies like imagery resolution which is needed by 3U CubeSat and later to be used for practical purposes.

Stage 4; Researching about 1U Cubesat to investigate Temporal Resolution, Spatial Resolution, Spectral Resolution and the density of ground sensors for a particular mission need.

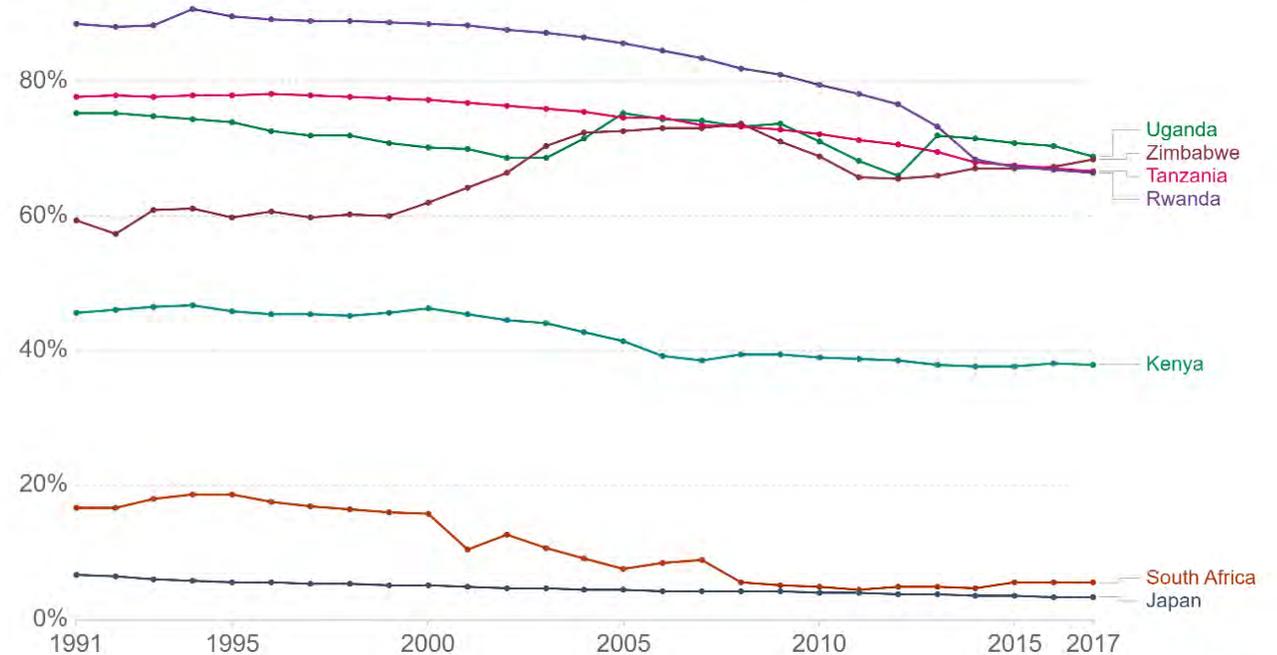
Special Thanks to the President of Uganda for directing **MoSTI of Uganda to explore the Outer Space**. Thanks to the Honourable Minister and Permanent Secretary and all the technical team of MoSTI for sanctioning the President’s directive, and **ZINGSA of Zimbabwe**, as they are paying all of the bills for BIRDS-5 project.

Fig. 2: Final 4 major Needs for both countries in order of priority.



Employment in agriculture (% of total employment), 1991 to 2017

Employment is defined as persons of working age who were engaged in any activity to produce goods or provide services for pay or profit, whether at work during the reference period or not at work due to temporary absence from a job, or to working-time arrangement. The agriculture sector consists of activities in agriculture, hunting, forestry and fishing



Source: World Bank

CC BY

Fig. 3: Left; Uganda Government’s commitment to use space technology to solve some national problems, Like Agricultural needs on **Right**.

- Satellites are not toys for engineers. They are serious tools for helping countries with real issues.
- A 1U CubeSat is a 10 cm × 10 cm × 10 cm satellite that is used in experiments that can be miniaturized or serve purposes such as Earth observation or amateur radio. **CubeSats** are employed to demonstrate spacecraft technologies intended for small satellites.

Communication Tools Used

- ZOOM (see the next page)
- Email
- Whatsapp
- Internet

ZOOM meeting of 20 June 2020 between Uganda and Zimbabwe students

Bonnie

SCOPE

- Spectral and temporal resolution
- What can be done with 1U
- Headwall camera
- How many fly past are needed to cover Zimbabwe

Victor

Grid comparison

The transect each 36.5m wide selected:

- Transect 1 = no applied nitrogen (rate of Nitrogen = 0 L ha-1) and served as the control.
- Transect 2 = under applied nitrogen (rate = 150 L ha-1).
- Transect 3 = over applied nitrogen (rate = 450 L ha-1).
- Transect 4 = "normal" application (rate = 495 L ha-1).

The grid required is 36.5*36.5m

Ramson

Timothy

4. Border Control (People and Animals)

Derrick

ACCESS TO CLEAN WATER

1 U CubeSat

Key Point: Satellite Images to be used for WQ.

Ramson

Solar Mapping

Determination of Optimal Solar Power Plant Locations

Edgar

Kyutech
Kisumu Institute of Technology

Precision Agriculture
(Soil Moisture Monitoring)

Timothy

Solar Mapping

**END OF
THIS
BIRDS-5
REPORT**

29. BIRDS-3: "CW-SMS"ing service - a novel public service initiative

by Pooja Lepcha (BIRDS-3, Bhutan), 16 June 2020

The world has been in chaos since the pandemic hit from late 2019. Front line workers in all service providing sectors have played an important role in providing relentless support for day to day living to the general public.

BIRDS-3 team initiated a Novel **CW-SMSing Service** to acknowledge and thank all the COVID-19 frontline workers who have been working selflessly to ensure hospital, service sectors and supply chains function in these difficult times. BIRDS-3 CW-SMSing Service was launched on May 25th 2020.

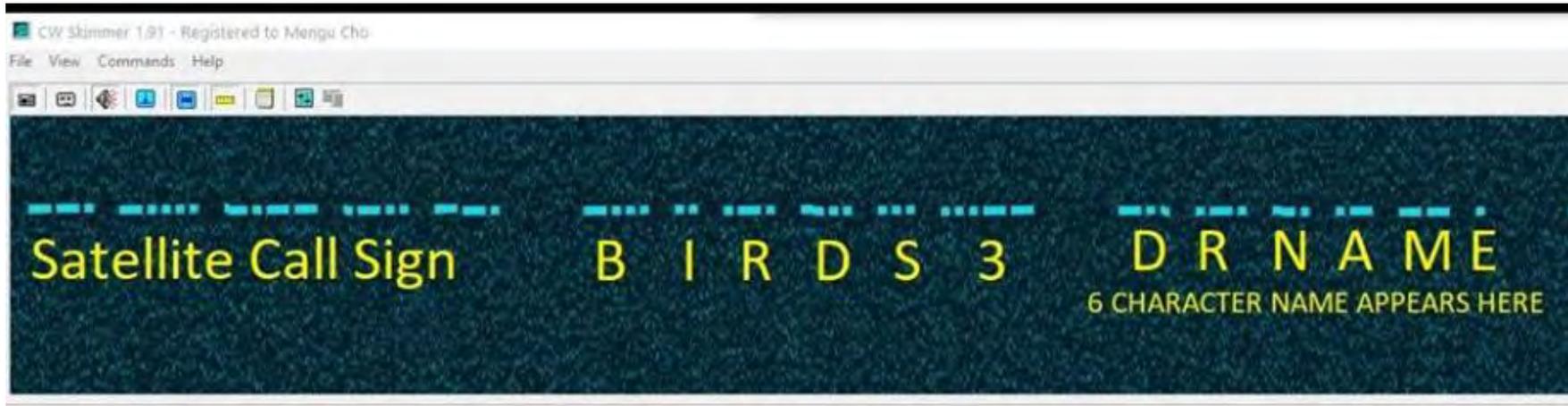
BIRDS-3 satellites' beacons have a 6-letter slot for messages to be beacons from space. The initial idea before launch was to beacon messages requested by amateur radio operators around the world.

Anyone can send a request via BIRDS-3 website mentioning the "6-letter name" of the frontline worker in the following link:

<https://birds3.birds-project.com/2020/05/23/thanking-covid-19-fighters/>

CW-SMSing Service- A Novel initiative from BIRDS-3 Team

A sample CW-SMS looks like the figure below:

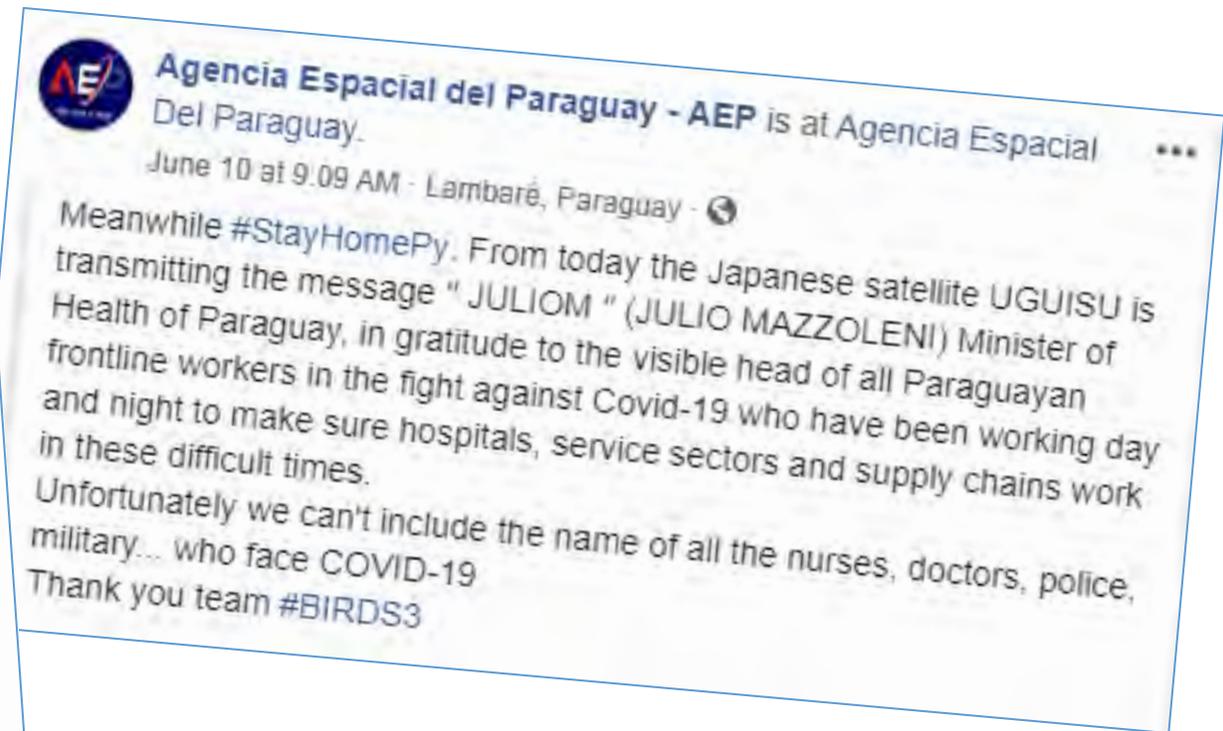
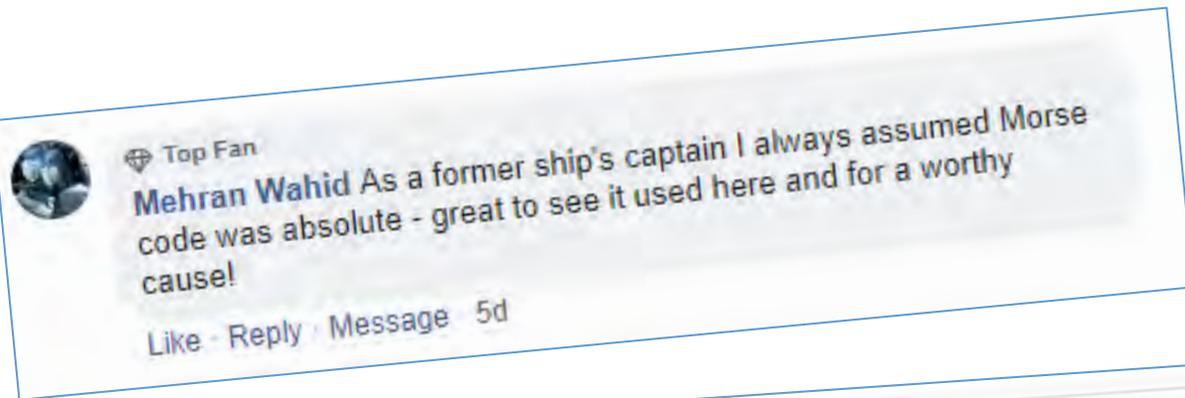


The CW-SMS is beamed from space for one day. Each beacon is at an interval of 2 minutes. Individuals who requested the names are intimated through email and a screenshot of beacon recorded at Kyutech GS is shared on the BIRDS-3 Facebook page at <https://facebook.com/BIRDS3satellite/>

CW-SMSing Service- A Novel initiative from BIRDS-3 Team

As of 16th June 2020, **102** requests have been made by individuals from **19** countries, mostly from BIRDS Network countries out of which *65 requests have been already beaconsed.*

Many beautiful messages have been left by users for this novel initiative . . .



More messages on the next page

CW-SMSing Service- A Novel initiative from BIRDS-3 Team



Apiwat Jira

June 8 at 6:45 PM · 🌐

ข้อความสั้นจากดาวเทียม BIRDS-3 ที่อยู่บนวงโคจร 380 กิโลเมตรเหนือพื้นดิน เพื่อให้กำลังใจผู้ปฏิบัติงานทางการแพทย์ในโรงพยาบาลรอบนี้มีชื่อของ รพ. ในไทยอยู่ด้วยคือ รพ. รามา และ รพ. วชิระ

RAMAHS (Ramathibodi Hospital) ส่งจาก Ravaana-1
VAJIRA (Vajira Hospital) ส่งจาก Uguisu

CW Beacon นี้จะถูกส่งเป็นรหัสมอร์สไปจนถึงวันพรุ่งนี้
ขอบคุณบุคลากรทุกท่านที่ทำงานอย่างหนักเพื่อดูแลประชาชน

Short message from BIRDS-3 satellite on orbit 380 kilometers above ground to support medical practitioners in hospital.
This time, there is a name of the hospital. In Thailand, it's the hospital Come and hospital. Wachira

RAMAHS (Ramathibodi Hospital) sent from Ravaana-1
VAJIRA (Vajira Hospital) sent from Uguisu

This CW Beacon will be sent as morro code until tomorrow
Thank you to all the staff who work so hard to take care of

⚙️ Rate this translation



Rabindra Dhakal

June 1 at 2:09 PM · 🌐

The Nepal satellite along with other BIRDS3, disseminating the name of front line health workers from the height of now 380km above to appreciate their service!



สมเด็จพระราชาธิบดี

May 30 at 4:28 PM · 🌐

Thank you your Majesty for your selfless leadership.
I dedicate this name to our beloved king.
Thank you Birds-3 for accepting it.



Epan Faisal

May 26 at 10:10 PM · 🌐

TQ Tun Mohd Hilmi for sending my name to space.
My name is now beacon-ing 380km above earth on space 🙏🙏
#BIRDS3satellite #fightcovid



Mohd Izzaddin Abu Nawawi Thank you very much all over the team, great friends all over the world, great friends in Malaysia, may God bless you. 73 de 9w2EJT. #anticovid19malaysia

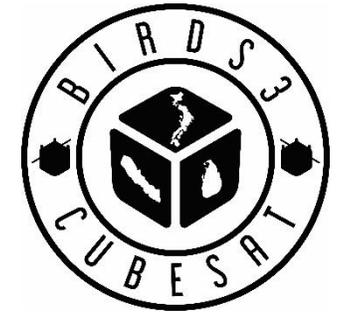
Like · Reply · Message · 1w



Dibodh Lamichhane

May 28 at 10:49 PM · 🌐

Today BIRDS 3 satellites including NepalSAT1 is Transmitting name of 3 Doctors of Nepal from Dhulikhel hospital, om Hospital and civil hospital. Those are the covid 19 front line workers for the whom the messages is dedicated to from space of 380 Km from 🌍 Earth. 🙏🙏



Most of these requests were for health workers. Many individuals for whom the message was dedicated expressed their happiness and the will to do more after seeing the CW beacon with their name.

CW-SMSing Service- A Novel initiative from BIRDS-3 Team

The full list of names requested and the country it is from is as follows:

Country	6 letter message
Nepal	Bishal
Nepal	Biplav
Nepal	Dr pun
India	Nithya
Philippines	Janmig
Malaysia	JACpan
Malaysia	DrNHsm
Bhutan	HMJKNW
Nepal	DIVYA
Nepal	SujuB
Nepal	KajalP
Japan	SELIN
MALAYSIS	9W2IYN
Sudan	ZEIDAN
Bhutan	KHESAR
Bhutan	Durga
India	Chere
Nepal	Namrai
Mongolia	NYMHUU

Country	6 letter message
Mongolia	CHINBA
Nepal	DRRUNA
Colombia	JairoL
Philippines	GOAMOR
Philippines	MBZ&RB
Philippines	DrVega
Philippines	DrBen
Philippines	DrDebz
Philippines	DrPaul
Philippines	ERNA
Philippines	Eurick
Philippines	Karina
Philippines	Pejeey
West Malaysia	Kamal
Uzbekistan	Dr.UZB
Nepal	Rachna
Nepal	RACHNA
Nepal	Suraj
Sudan	Yousif

Country	6 letter message
Nepal	Ritesh
Sudan	TASNIM
MALAYSIA	9W2EJT
India	Balaks
Bhutan	MOHBTN
Thailand	RAMAHS
Thailand	VAJIRA
Thailand	RATCHA
Sri Lanka	AJITH
Paraguay	JulioM
Paraguay	Guille
Turkey	Tugrul
Turkey	DenizA
Turkey	SelinG
USA	JuanNK
Malaysia	AINAIM
Malaysia	9W2VGV
Sudan	DrAkrm
CHILE	DIEGO

Country	6 letter message
CHILE	LORENA
Nepal	B safe
Nepal	B safe
Sudan	Roua
Malaysia	TSMY
Nepal	Sedhai
Nepal	Garima
Nepal	Kabita
Nepal	Srikki
Sri Lanka	Hasini
Sri Lanka	DRHPW
Japan	PETERC
Philippines	Reysan
Philippines	PeterJ
Uganda	R Acen
Philippines	HANNAH
Sudan	DRAYA
Nepal	RcDASO
Nepal	Amisha

List cont'd next page

CW-SMSing Service- A Novel initiative from BIRDS-3 Team

Continued from the previous page:

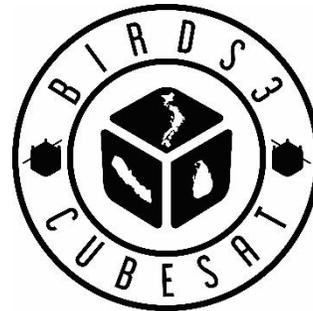
Country	6 letter message
Nepal	Rabina
Nepal	Bijeta
Nepal	Sabina
Nepal	Pasang
Nepal	Sabita
Nepal	Asmita
Nepal	JKS
Nepal	BHARAT
Nepal	NurseX
Paraguay	DiegoS
Nepal	P.Sah
Nepal	Amrit
Nepal	Prbhav
Bangladesh	IEDCR
Bangladesh	BRAC
Nepal	Needa
Nepal	Cil
Sri Lanka	Hasini
Malaysia	TQMYFL

Malaysia	DRSHAM
Malaysia	SIRYAM
Bhutan	HMJKNW
Bhutan	MOHBHU
Malaysia	SIRYAM
Sri Lanka	SLMEDI

Department of IT and Telecom of Bhutan made a special request to beacon “HMJKNW”, acronym for His Majesty King Jigme Khesar Namgyal Wangchuck and MOBHU for Ministry of Health, Bhutan to express solidarity in battling the pandemic.

BIRDS-3 team would like to thank all individuals who took time to fill the message request and also to the frontline worker for whom the message is dedicated.

#togetherinthis



**END OF THIS
ARTICLE**

The following presentation was given by Dr. Sangkyun Kim at a LaSEINE meeting on 3 June 2020.



BIRDS

Platform of CubeSat Program

革新的宇宙利用実証ラボトリー
Laboratory of Lean Satellite Enterprises and In-Orbit Experiments

3 June 2020

Sangkyun Kim



BIRDS Projects



- BIRDS – Joint Global Multi Nation Birds
 - Started for capacity building project of educational purpose from 2015
 - Multi national joint project, Each country sends students to Kyutech for education and training
 - 2 years CubeSat project from mission design to actual operation by project members
 - Annually new project is started, and we have five generations of BIRDS
 - **13 Countries, 51 students** have been joined to BIRDS project
 - Strong community for satellite development, Wide ground station network for efficient operation
 - Year of 2020, BIRDS-5 of the last generation of BIRDS starts its development work

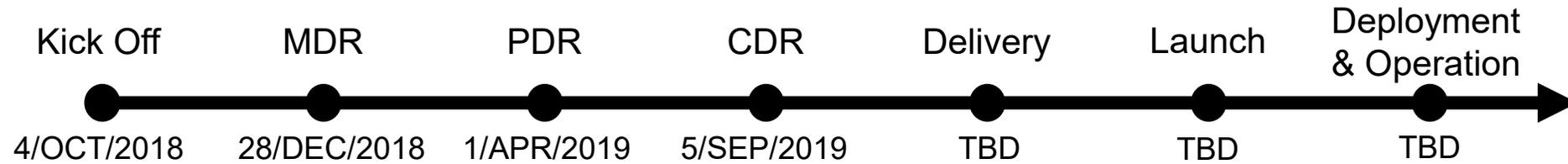


<https://www.birds-project.com/>





BIRDS-IV



Stakeholders

- AEP, Space agency of Paraguay
- UPD(University of Philippines Diliman), Philippine
- Kyutech(Kyushu Institute of Technology), Japan



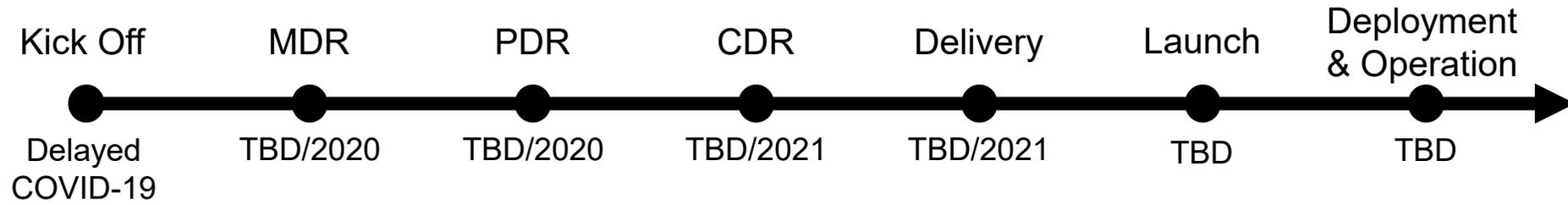
Mission overview

- Develop the first satellite for Paraguay
- Continuous developments for Camera and S/F missions
- Support Amateur radio community by APRS-DP mission
- Demonstrate attitude stabilization by ADCS
- Evaluate Perovskite solar cell on orbit
- Demonstrate structure antenna(Hentenna)
- Radiation hardness test against TID
- Evaluate SEL protection device on orbit with NTU
- Demonstrate onboard image classification
- Evaluate commercial glue for solar cell installment work





BIRDS-V



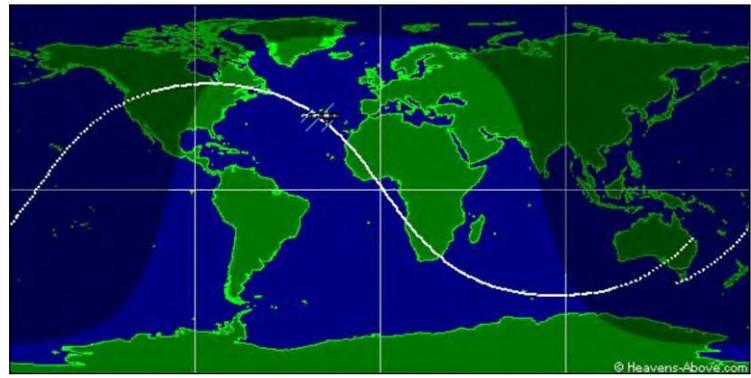
Stakeholders

- Zimbabwe
- Uganda
- ISAS(Institute of Space and Astronautical Science), Japan
- Kyutech(Kyushu Institute of Technology), Japan



Mission overview, Under mission idea definition

- Remote sensing
- Border line monitoring, Smuggling issue is critical
- Resource monitoring, Especially water monitoring
- S/F (Store and Forward) mission of messaging service
- Remote data(water level and other data) collecting
- Plasma environment monitoring



BIRDS use ISS depolyment

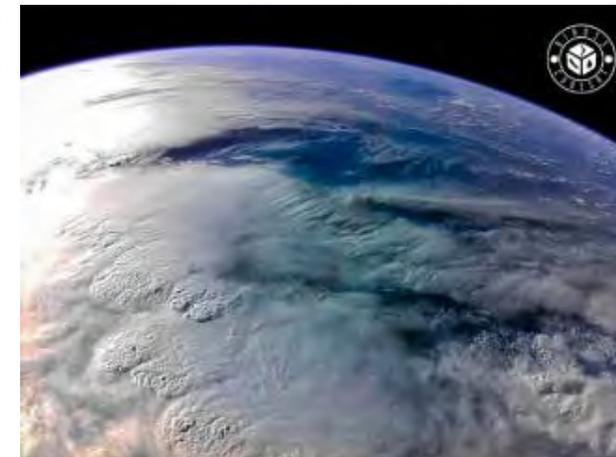
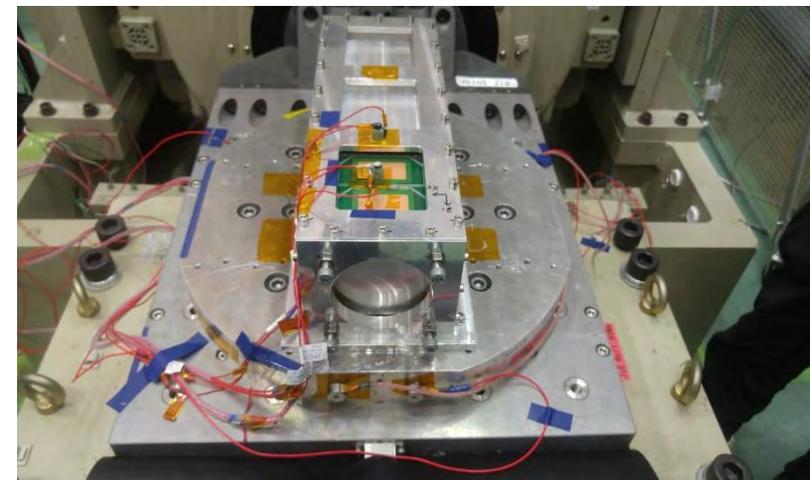
- Altitude : around 400 [km]
- Inclination : 51.64 [deg]
- Orbit speed : 7.66 [km/sec]
- Orbits per day : 15.54



BIRDS Projects



- Experience more than 5 years for capacity building program
- Space proven CubeSat system

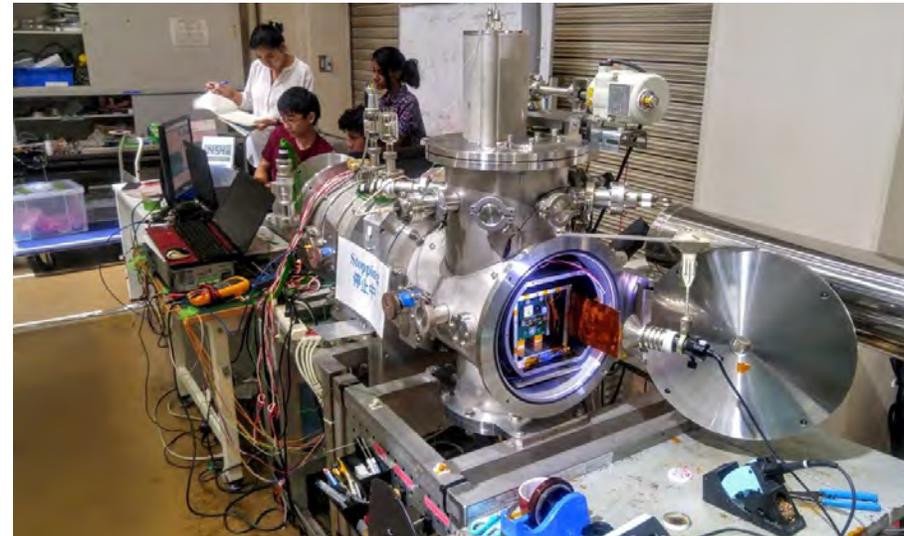




BIRDS Platform



- Reliable CubeSat platform from accumulated experience
 - Heritage with multiple CubeSats on orbit
 - Abundant reference data of functional test and environmental test
 - Strong background for critical safety regulation
 - Standard BUS and Easy design for first comers to space engineering

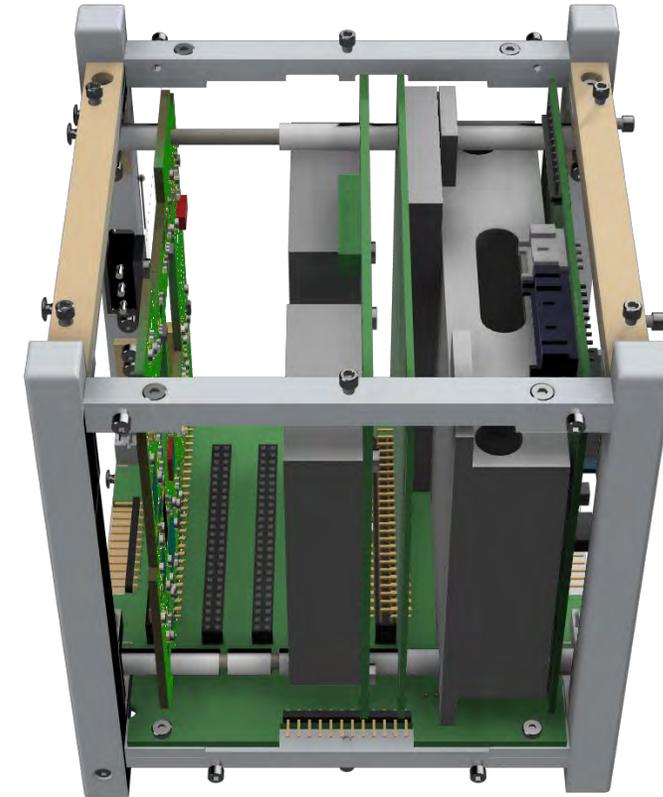




BIRDS Platform



- BIRDS 1U CubeSat Platform
 - Heritage since BIRDS-3
 - Use the standard BUS of BIRDS BUS
 - Simple mission with 1U CubeSat
 - Mission system space : 0.2U (Two boards)
 - Mission system mass : 0.5 [kg]
 - Continuous power for mission : 0.4[W]
 - Power : 3.3[V], 5[V], Unregulated battery Power
 - Available Interface : UART, SPI, Shared memory
 - Data downlink(UHF) speed to ground station : 4800[bps]

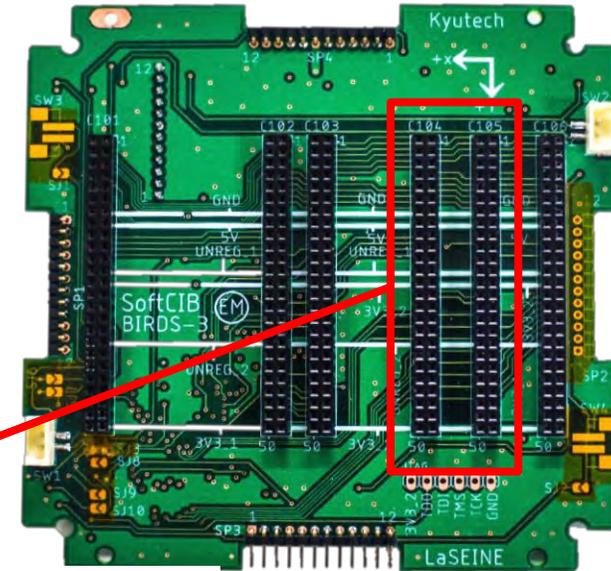




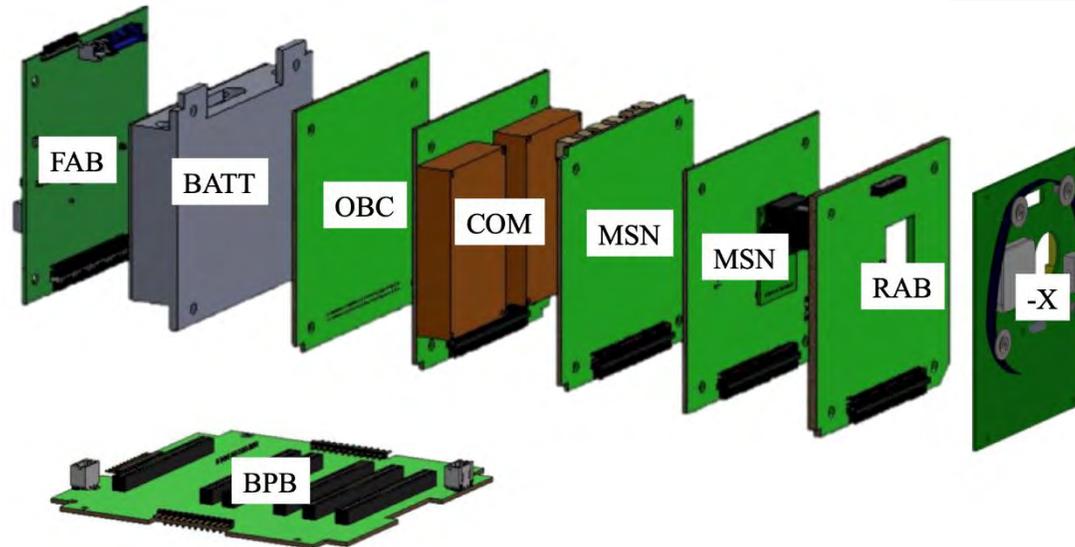
BIRDS Platform



- Backplane board(BPB) style integration
 - Connect sub boards without harness
 - 50 pin connector is used
 - Two 50 pin connectors for Mission boards(MSN)

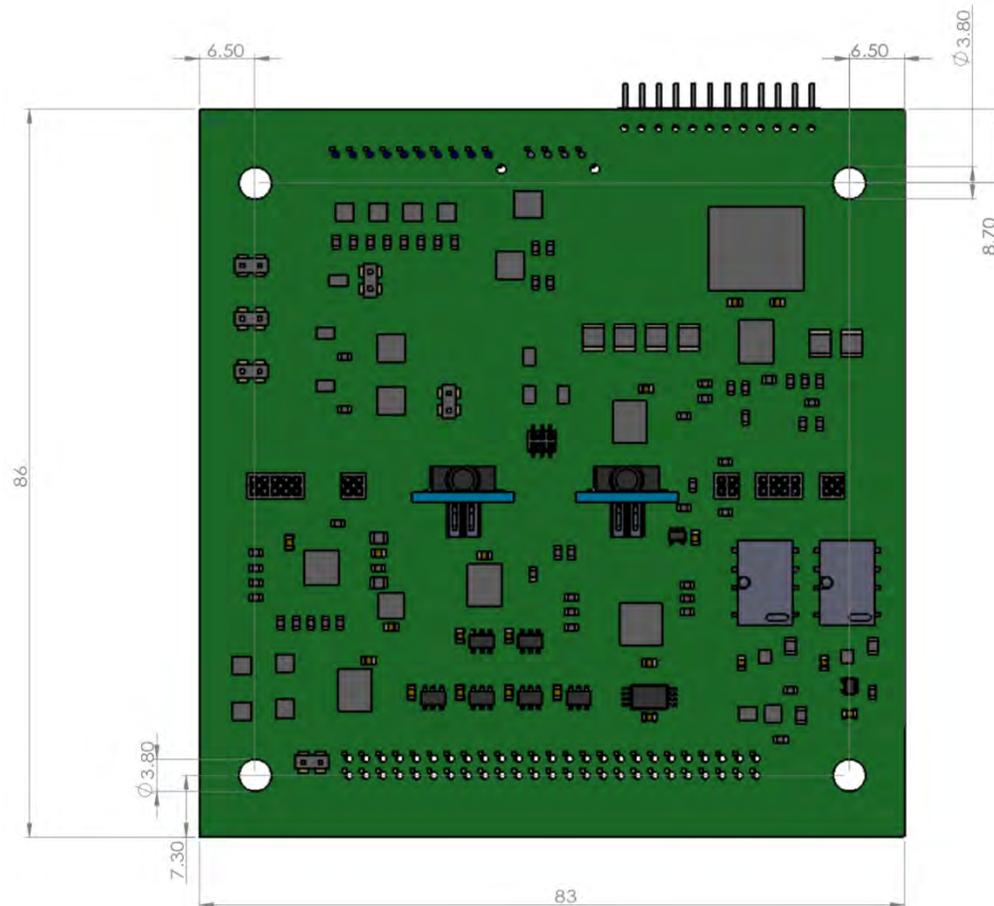


Connectors for mission system





BIRDS Platform



■ Board sample

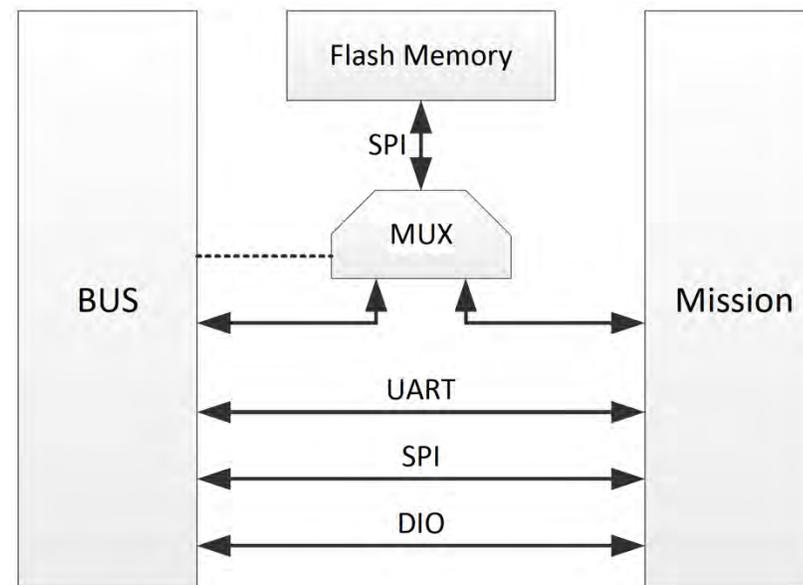
- Need to fit 1U CubeSat
- 50 pin connector at bottom side
- Four holes for mechanical assembly



BIRDS Platform



- Simple Interface, BUS and Mission
 - Use serial communication of UART/SPI
 - General DIO(Digital Input Output) available
 - Shared memory(Flash + MUX) for large data





BIRDS Platform



- Extended to bigger one
 - Support bigger size CubeSat up to 6U
 - Minor modification is required
 - Big + Little Concept
 - 1U CubeSat platform acts Little part of basic function
 - Mission system acts Big part with more resource

End of this **BIRDS Project Newsletter**

(ISSN 2433-8818)

Issue Number Fifty-Three

This newsletter is archived at the BIRDS Project website:

<http://birds1.birds-project.com/newsletter.html>

You may freely use any material from this newsletter so long as you give proper source credit (“BIRDS Project Newsletter”, Issue No., and pertinent page numbers).

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.