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

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

Archive website: http://birds1.birds-project.com/newsletter.html
All back issues are archived at this website.
Acknowledgment of support: This newsletter is supported, in part, by *JSPS Core-to-Core Program, B. Asia-Africa Science Platforms.*

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BIRDS Project Newsletter

Issue No. 40
(23 May 2019)

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

La SEINE

SEIC Space Engineering International Course

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

Table of Sections

Continued on the next page

From Japan **The Guest Box**

Explanation on the next page

Table of Sections [continued]

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.

Explanation for the Guest Box

In Hiroshima, there is a place famous for its cherry blossoms. Shidare cherry: a variety of cherry tree with drooping branches, is very beautiful. The meaning of a shidare cherry is a beautiful woman. I feel it is exactly like a beautiful woman. You can enjoy seeing cherry blossoms and relax there. If you visit Hiroshima in spring vacation, I recommend you to go to Kanbara in Hiroshima city to see these beautiful cherry blossoms.

--Yuma Nozaki, BIRDS-4 Member

01. BIRDS-3 member (Dulani) is highlighted in AIT Newsletter (May 2019 issue)

Dulani Chamika Withanage is an alumna of the Mechatronics program at the Asian Institute of Technology (AIT).

This university is based in Bangkok: https://www.ait.ac.th/

At the left is the cover of the May issue of AIT's newsletter. The cover is continued on the next slide.

AIT ALUMNA STARS IN SRI LANKA'S FIRST SATELLITE LAUNCH

Ms. Dulani Chamika Withanage, an alumna of the Mechatronics program at the Asian Institute of Technology (AIT), is a key person associated with the development of Sri Lanka's first satellite known as Raavana 1. Weighing 1.1 kilograms, the cube-sized satellite was launched into space from the mid-Atlantic space station in Virginia on 18 April 2019.

Ms. Dulani Chamika paid tribute to both AIT and her faculty advisor Prof. Manukid Parnichkun. "AIT is my second home," says Dulani, "and it is there that I grew up as an independent person," she adds. She credits AIT for laying the foundations for her research, particularly through the time she spent working in the Mechatronics laboratory after completing her studies.

"It was a student project, and I became associated with the project during my further studies at the Kyushu Institute of Technology," says Dulani. She joined the BIRDS-3 project, which seeks to take the first step toward creating a home-grown space program by designing, building, testing, launching, and operating the first satellites for participating nations. Led by Japan's Kyushu Institute of Technology, it involves students from Sri Lanka, Bhutan, Nepal, and Japan.

"My specific role in the project concerned the Attitude Determination and Control System (ADCS)," reveals Dulani. "After deployment, the angular velocity of the satellite can be very high. This implies that we need to stabilize the satellite so that it can perform its mission properly and communicate with the ground station," she explains.

See the full article: https://www.ait.ac.th/2019/04/ait-alumna-stars-in-sri-lankas-first-satellite-launch/

AIT Asian Institute of Technology

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AIT Alumna Stars in Sri Lanka's First Satellite Launch

April 20th, 2019 | Asian Institute of Technology | News

Ms. Dulani Chamika Withanage, an alumna of the Mechatronics program at the Asian Institute of Technology (AIT), is a key person associated with the development of Sri Lanka's first satellite known as Raavana 1. Weighing 1.1 kilograms, the cube-sized satellite was launched into space from the mid-Atlantic space station in Virginia on 18 April 2019.

Ms. Dulani Chamika paid tribute to both AIT and her faculty

Continued on the next slide

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Congratulating his student, an elated Prof. Manukid added: "I congratulate Miss Dulani Chamika on the success of Sri Lanka's first CubeSat development and launch. I am so proud of her! The continuous successes of AIT alumni make everyone happy; they are our best ambassadors."

Following the launch, the next step is to place the satellite into orbit with the robot arm attached to the Japanese ISS Kibo module in May-June.

Dulani worked with her compatriot Tharindu Dayaratne at the Arthur C. Clarke Institute, Moratuwa, Sri Lanka. The mission is being described as the first step in the acquisition of space technology by Sri Lanka. A low-orbit satellite, it will orbit at an altitude of 400 kilometers, and it is expected to complete five missions to enable Sri Lanka to obtain imagery of Sri Lanka itself as well as the neighboring region.

While this is a first step, it could be the beginning of a long journey in the realm of satellites for Sri Lanka. Nanosatellites are constrained by their size and functions, and Dulani hopes to follow this up with work on more challenging satellite projects for Sri Lanka.

Ms. Dulani Chamika Withanage (second from right) with her family at the AIT graduation (May 2014).

02. Enter the 6th Mission Idea Contest of UNISEC-Global

The template for the abstract is now available at this site.

Announced by **UNISEC-Global** on 28 April 2019.

CONTINUED ON THE NEXT PAGE

Link: http://www.spacemic.net/application6.html

THIS IS ADVICE [from UNISEC-Global] FOR PUBLICIZING MIC6 CONTEST IN YOUR REGION

The MIC6 abstract submission deadline is August 8, 2019.
It would be good timing to start encouraging potential applicants to think about good mission ideas using ISS platform.

Please download the PPT and modify page 1, 6 and 23 and put in your logo.
(You can translate or modify as you like.)

https://drive.google.com/file/d/1LgBl6NO5TL_-wwmkkE0dzW_aqLMsaFSt/view?usp=sharing

You can organize a regional seminar, put it on your website and/or send PDF to potential applicants.

Please feel free to contact us if you have any questions and suggestions.

With warm regards,
Rei, UNISEC-Global, 10 May 2019

03. Tobata Gion Yamagasa festival (戸畑祇園山笠)

MARK YOUR CALENDAR:
THIS YEAR THIS FESTIVAL OCCURS

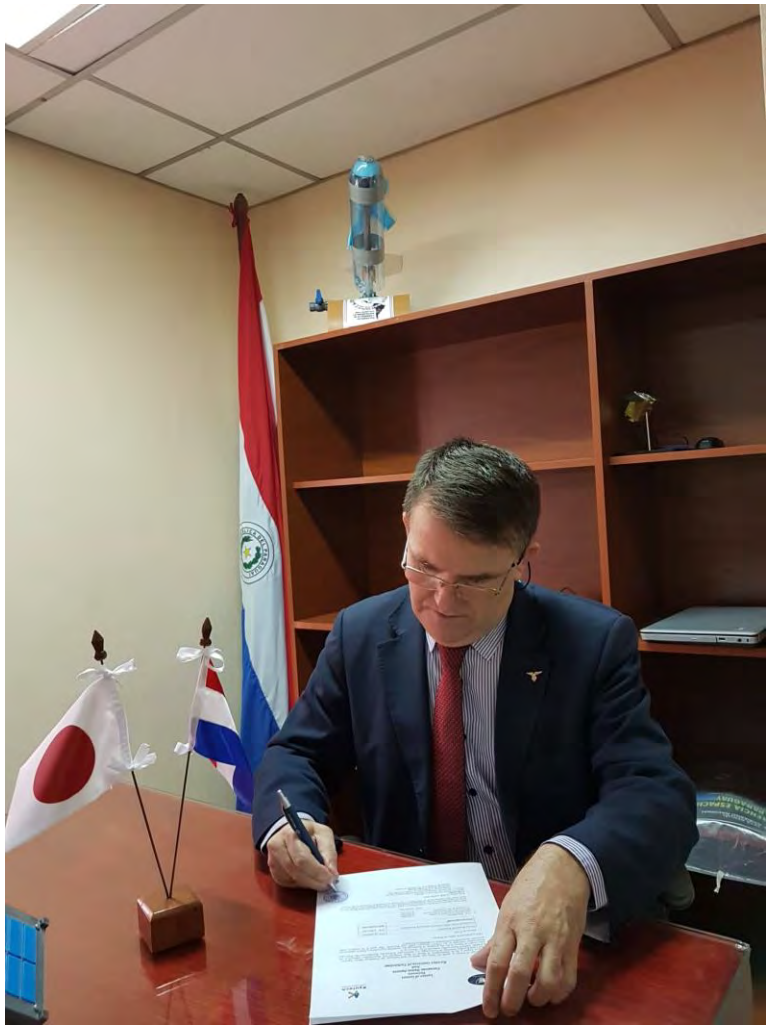
26-28 JULY

The Tobata Gion Yamagasa festival (戸畑祇園山笠) is a popular local Japanese festival (matsuri) which takes place annually in Tobata, a ward of Kitakyushu in Fukuoka prefecture, Kyūshū, Japan. It is held for three days (Friday–Sunday) before and after the fourth Saturday of July. The festival is a national cultural asset of Japan, and is centered on the parading of the "Yamagasa" (山笠).

For more details see:
https://en.wikipedia.org/wiki/Tobata_Gion_Yamagasa_festival

Antara (BIRDS-1, Bangladesh) wrote a report about this festival back in issue No. 7 of this newsletter.
See pages 13-18 of that issue.

04. President of the Paraguay Space Agency (AEP) signs Letter of Intent



Each BIRDS partner signs a contract with Kyutech to do a BIRDS Project. This contract is called "Cooperative Research Agreement", or **CRA** for short.

Shown at the left is Colonel Vielman signing a Letter of Intent. In the case of Paraguay, this is a precursor to signing the final CRA for BIRDS-4 Project. Money for the satellite hardware and launch has been paid by AEP.

NOTE: The annual space conference hosted by AEP will take place this year on 4th October.

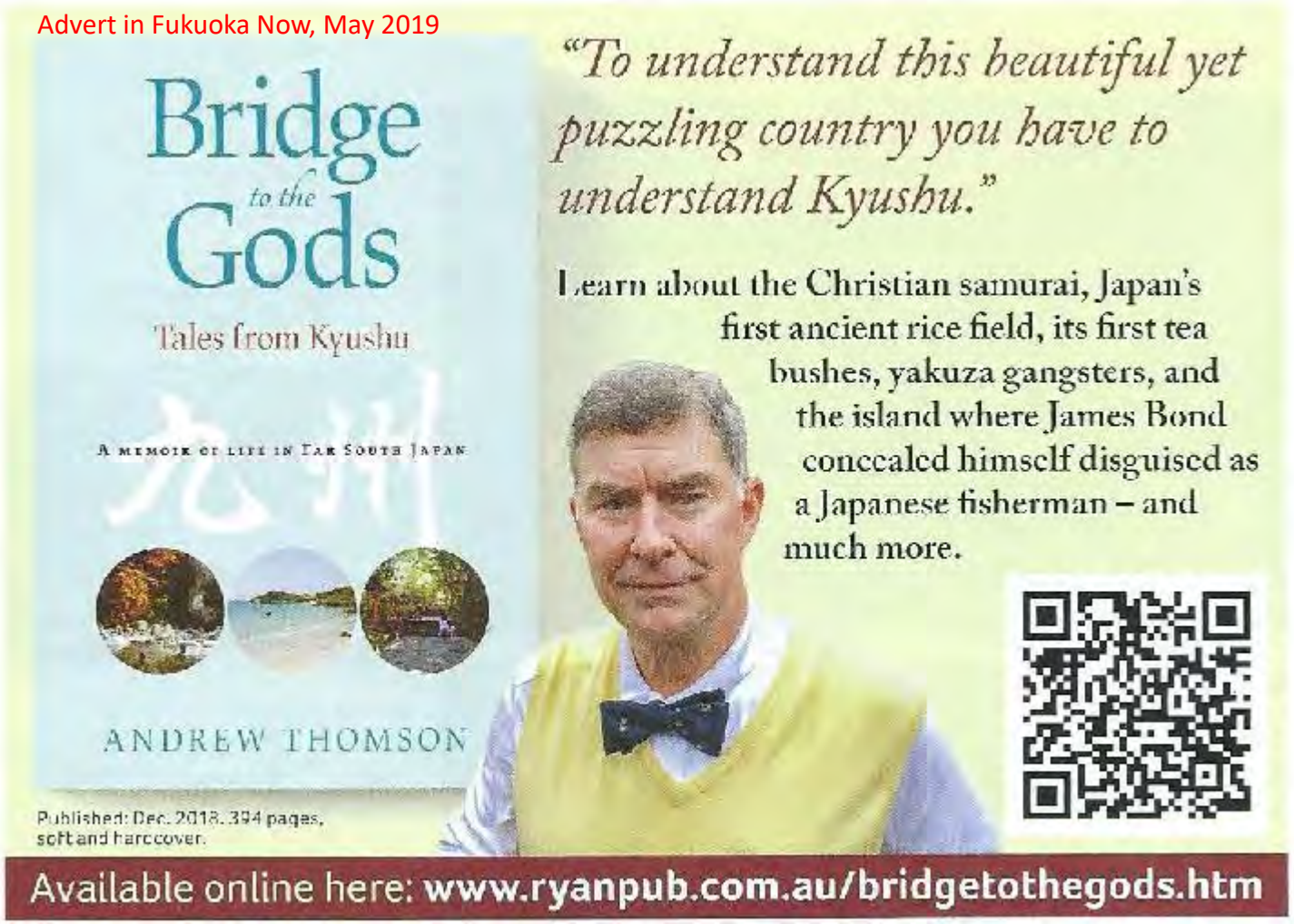
05. Japan celebrated Kids' Day on 5th May

Above: Main entrance of Kyutech on Children's Day

Children's Day (こどもの日 Kodomo no Hi) is a Japanese national holiday which takes place annually on May 5 and is the final celebration in Golden Week. It is a day set aside to respect children's personalities and to celebrate their happiness. It was designated a national holiday by the Japanese government in 1948. It has been a day of celebration in Japan since ancient times. ***For the rest of this text see:***
https://en.wikipedia.org/wiki/Children%27s_Day_(Japan)

06. New book about Kyushu by Andrew Thomson

Advert in Fukuoka Now, May 2019



Andrew Thomson's new book, Bridge to the Gods: Tales from Kyushu, is a wonderful dive into Kyushu's history, food, and community. Andrew's father, Peter Thomson, was a professional golfer who won the prestigious Open Championship five times. It was this that led to Thomson's interest in Japan. His father was invited to go to Japan in 1955, and his visit "began his lifelong affection for Japan and its people." Growing up in Australia, Andrew's father encouraged his study of Japanese at school, and as a teenager, he visited the country for the first time.

Andrew went to university in Australia and Japan and met his wife – who is from Hita, Kyushu – when he returned to Tokyo in the late 1980s. It was this meeting which eventually led him to move to Kyushu in 2012. In the time in between living in Japan, Mr. Thomson became a lawyer, mastered Chinese, served as a government minister in Australia for six years, and practiced law in the USA, Saudi Arabia, and China . . .

…. See the rest of this book review below

BOOK REVIEW HERE: https://www.fukuoka-now.com/en/bridge-to-the-gods-tales-from-kyushu-book-review/

07. 2nd IAA Latin American Symposium on Small Satellites, 11-15 November 2019, Buenos Aires, Argentina

UNIVERSIDAD NACIONAL DE SAN MARTÍN

CONAE

COLOMB
Instituto Colomb

CALL FOR PAPERS

2nd INTERNATIONAL ACADEMY OF ASTRONAUTICS
Latin American Symposium on Small Satellites:
Advanced Technologies and Distributed Systems

November 2019
11th to 15th

Hosted by the Colomb Institute
Auditorio del Centro Cultural de la Ciencia (C3) - Buenos Aires
INVAP - Bariloche, Argentina

You are invited to contribute a paper for presentation at the Symposium.

A one-page, single-spaced abstract of no less than 350 and no more than 600 words is needed. The abstract must be in English. Student papers are encouraged.

Advanced Technologies and Distributed Platforms and/or Payloads themes are recommended, but all topic related to Small Satellite Missions will be considered. The symposium will have a worldwide vision, with some focus on the needs and developments of Latin America.

Presentations during the Symposium will preferably be in English, however, presentations in Spanish will be considered.

SCIENTIFIC COMMITTEE

Honorary Chairman
C. F. Varotto; CONAE, Argentina

Chairmen
R. Sandau; IAA, Germany
L. R. Gratton; Colomb Institute, Argentina

Members
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I. Belokonov; Samara University, Russia
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S. Camacho; CRECTEALC, Mexico
C. Cappelletti; UnB, Brazil
M. Cho; Kyushu Institute of Technology, Japan
J. M. Contant; IAA, France
A. da Silva Curiel; SSTL, UK
J. S. de Almeida; INPE, Brazil
F. Graziani; IAA, Italy
A. Guerman; UBI, Portugal
M. Hetscher; DLR, Germany
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R. Laufer; Baylor Univ., USA
G. Loureiro; INPE, Brazil
F. J. Mendieta; AEM, Mexico
S. Mostert; SCS, South Africa
R. Nader; EXA, Ecuador
S. Nakasuka; UoT, Japan
S. Neeck; NASA, USA
F. Ongaro; ESA, Italy
M. Ovchinnikov; KIAM, Russia
M. Saandar; MSPRS, Mongolia
R. Sanchez Peña; ITBA, Argentina
A Valenzuela; IAA, Argentina
G. Wiman; INVAP, Argentina

Please ask for registration for the Symposium and for payment instructions by sending an e-mail to icolomb@unsam.edu.ar, or by calling +54-11-4724-1500 ext. 1389.

Abstracts due: **September 16th 2019**
Papers due: **November 15th 2019**
www.unsam.edu.ar/institutos/colomb
2iaalasss@unsam.edu.ar

Website and the call for papers: http://iaaweb.org/content/view/760/999/

OLAYINKA'S WORLD

COLUMN NO 10

OLAYINKA FAGBEMIRO
NATIONAL SPACE RESEARCH & DEVELOPMENT AGENCY(NASRDA), ABUJA. NIGERIA
PRINCIPAL SCIENTIFIC OFFICER, HEAD, SPACE EDUCATION UNIT

2019 *ASTRONOMY IN AFRICA* BUSINESS MEETING

The Astronomy in Africa Business Meeting held on the 25 -26 March, 2019 at the South African Astronomical Observatory (SAAO), Cape Town, South Africa. The meeting had in attendance various stakeholders in Astronomy from across the continent of Africa. The meeting started by getting an overview of the astronomy landscape in Africa, with around 30 short presentations describing activities on the continent. There was then a discussion of expectations of an African Astronomical Society.

There was also a session to discuss the African Astronomical Society (AfAS) constitution. The constitution was then debated and adopted through by consensus on a clear majority from show-of-hands voting. The meeting also discussed the legal standing of the organisation and the future location of a Secretariat.
The was an offer from the South African government to host and fund the AfAS Secretariat for the first 3 years, which was accepted by the organization.
There was also an election of the new Executive Committee of AfAS, the columnist was elected as the Public Relations and Education Officer.

Group Photo of all the participants at the Astronomy in Africa Business meeting

Heads of Astronomical Organizations in Africa

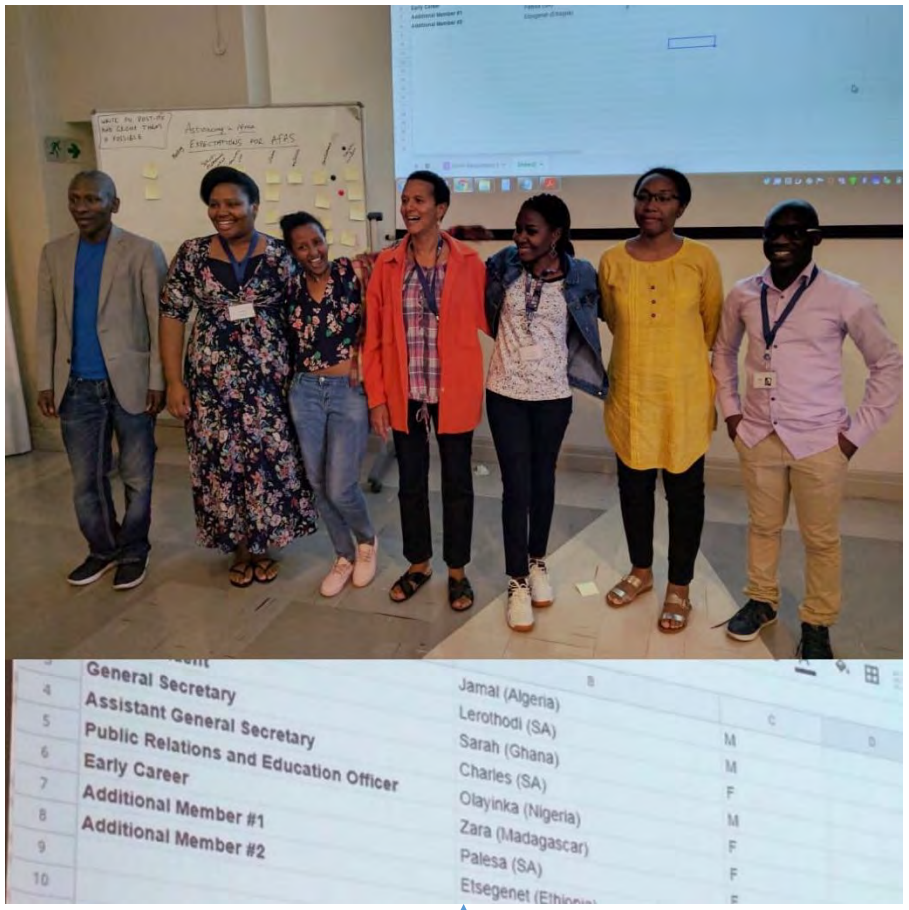
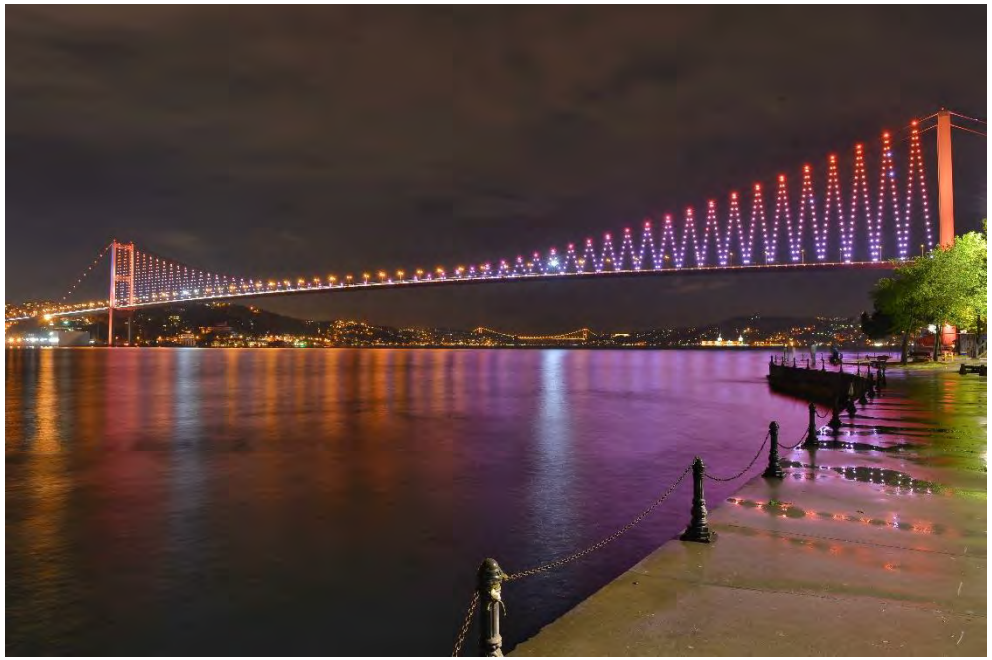


Photo of the newly elected African Astronomical Society (AfAS) Excos

09. United Nations/Turkey/APSCO Conference on Space Law and Policy



DEADLINE FOR SUBMISSION OF APPLICATIONS

Applications for participating in the Conference have to be submitted online through this webpage : http://www.unoosa.org/oosa/en/ourwork/spacelaw/un-turkey-apsco-conference-on-space-law-and-policy.html

The completed application form together with the presentation abstract should be submitted on-line to the Office for Outer Space Affairs, no later than 7 JUNE 2019 from applicants seeking funding support and no later than 30 July 2019 from self-funded applicants. Only complete applications received before these deadlines will be considered.

United Nations/ Turkey/ APSCO Conference on Space Law and Policy

UNITED NATIONS
Office for Outer Space Affairs

HOSTED BY THE GOVERNMENT OF TURKEY

CO-ORGANIZED BY THE TUBITAK SPACE TECHNOLOGIES RESEARCH INSTITUTE, THE TURKISH SPACE AGENCY AND ASIA PACIFIC SPACE COOPERATION ORGANIZATION

ISTANBUL, TURKEY, 23 - 26 SEPTEMBER 2019

To all students:
You have a chance to get a UN travel grant if you apply before 7 June. Editor.

10. BIRDS-4 Project Manager spends his Golden Week in his home country

Golden Week in Philippines

A report by Izrael Zenar Bautista (BIRDS-4 Project Manager)

May 8, 2019

A.R.U. Ready? Event

A.R.U. Ready? Event

Written By: Izrael Zenar Bautista

During Japan's long Golden week this year, people made plans where and how they would spend it. Mine was to go back to my country, the Philippines.

Coincidentally, our project, Stamina4Space planned for an event for the public announcement of the amateur radio service of Diwata-2 or PO-101. As one of the engineers who designed the Amateur radio unit (ARU) of Diwata-2, I was glad to be able to attend this momentous event to introduce to the public what the ARU can do and how the amateur radio community can use it.

I gave a talk with my fellow colleagues and distinguished guests about the importance of amateur radio in disaster and rescue and also as a contribution to the amateur radio community.

Images courtesy of Stamina4Space Program

That was me discussing about the Amateur radio Unit fo Diwata-2

My colleague Engr. Lorenzo Sabug explaining how to use the ARU and Atty. Eddie Valdez, AMSAT President

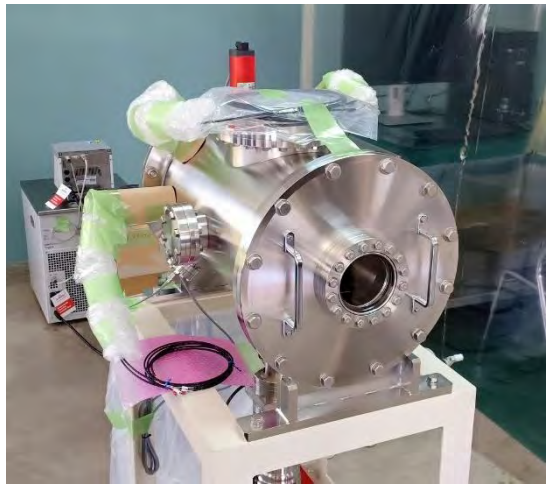
A.R.U. Ready? Event

Written By: Izrael Zenar Bautista

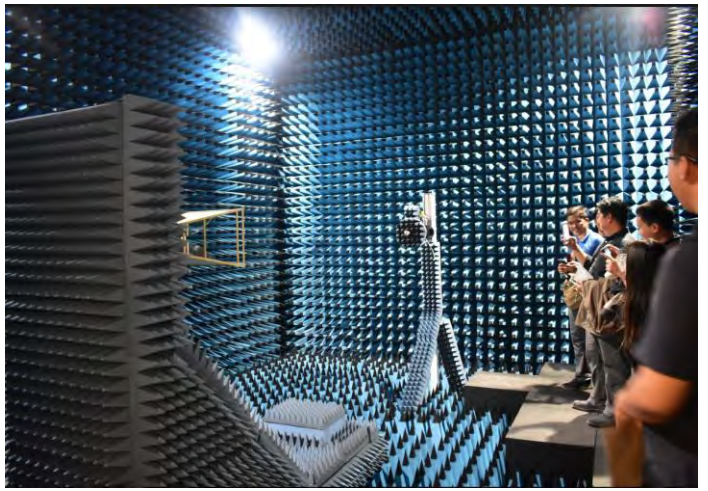
After the event, the attendees were toured around the new university laboratory for small satellite and full anechoic chamber.

Attendees of the A.R.U. Ready? Event

Outside the University Laboratory for Small satellite and Space Engineering System (ULySSSES)



Thermal vacuum chamber for unit testing



Inside the Full anechoic chamber facility

Vacation in the Philippines

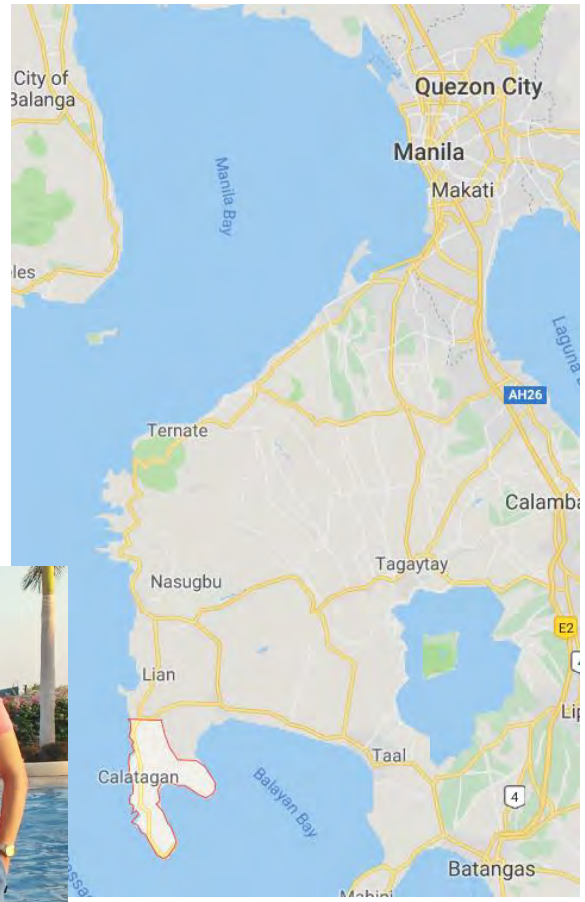
Written By: Izrael Zenar Bautista

Aside from attending events related to our project, I went to various places to enjoy my vacation in the Philippines.

The first location my family and I went to is in Calatagan, Batangas. This place is famous for its beach and its short distance from Manila.

Philippines is famous for each beautiful beaches and hospitable locals.

The nice beach of the resort



Calatagan is 93km from Manila

We took a picture in front of these giant letters saying 'I love Calatagan'

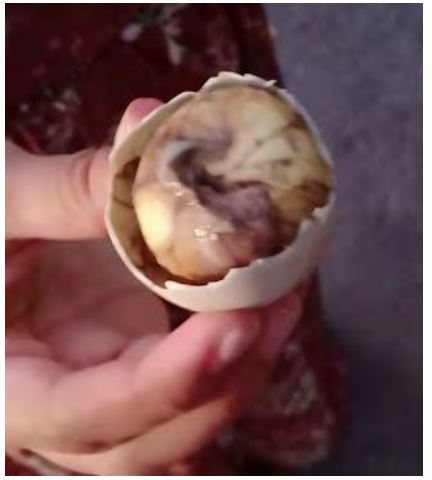
My family and I in the resort's pool

Vacation in the Philippines

Written By: Izrael Zenar Bautista

Selfie with my family while swimming in the sea

View from our AirBnB unit where we spent our weekend



Eating our infamous 'Balot' which is a boiled duck embryo

Catching up with family and friends

Vacation in the Philippines

Written By: Izrael Zenar Bautista

ABOVE: *There's a mall called Venice grand canal which is similar to Venice, Italy's canals*

Celebrated my parents' 30th anniversary too

We also went to Philippine Arena, the worlds largest indoor arena

Beside the arena is 'The Garden' with many beautiful attractions and zoo

11. Several BIRDS students ventured to Oita Prefecture during Golden Week

The following two-page photo report was furnished by Anibal of Paraguay. He is a member of the BIRDS-4 Project, which runs from Oct 2018 through Sept 2020. The students hiked up Mount Yufu.

Details of Mt. Yufu are here:
https://en.wikipedia.org/wiki/Mount_Yufu

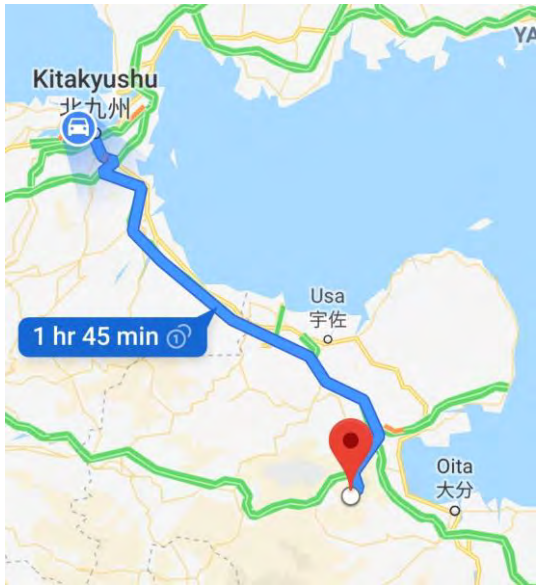
Golden week trip

Date and location:

08:30 – 18:00,

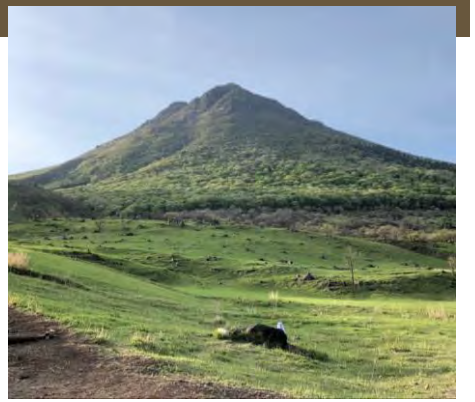
May 4th, 2019.

Mount Yufu, Oita, Japan



Route to the start point from Campus

Golden week trip



12. BRAC Univ. in Bangladesh will host the next BIRDS workshop

The following 9 pages are provided by Kafi of BRAC University in Bangladesh. This university will host the **4th BIRDS International Workshop (4BIW)** during 25-28 November 2019. Previous workshops occurred in these places:

1BIW Kyutech, Kyushu Institute of Technology, Japan
See pages 4-18, Issue No. 6, BIRDS Project Newsletter.

2BIW ANUC, All Nations Univ. College, Ghana
See pages 58-99, Issue No. 23, BIRDS Project Newsletter.

3BIW NUM, National Univ. of Mongolia, Mongolia
See pages 104-149, Issue No. 31, BIRDS Project Newsletter.

All issues can be accessed from this website:
http://birds1.birds-project.com/newsletter.html

BRAC UNIVERSITY

BIRDS Project Partner,
Stakeholder of BRAC Onnesha,
HOST, 4th BIRDS International Workshop (4BIW)
Abdulla Hil Kafi
14 May 2019

Established	2001
Location	Mohakhali, Dhaka, Bangladesh
Medium of instruction and examination	English
Founder & Chairperson	Sir Fazle Hasan Abed, KCMG
Vice Chancellor	Professor Vincent Chang, PhD
Number of students (At present)	Around 9,000
Website	www.bracu.ac.bd

BRAC UNIVERSITY

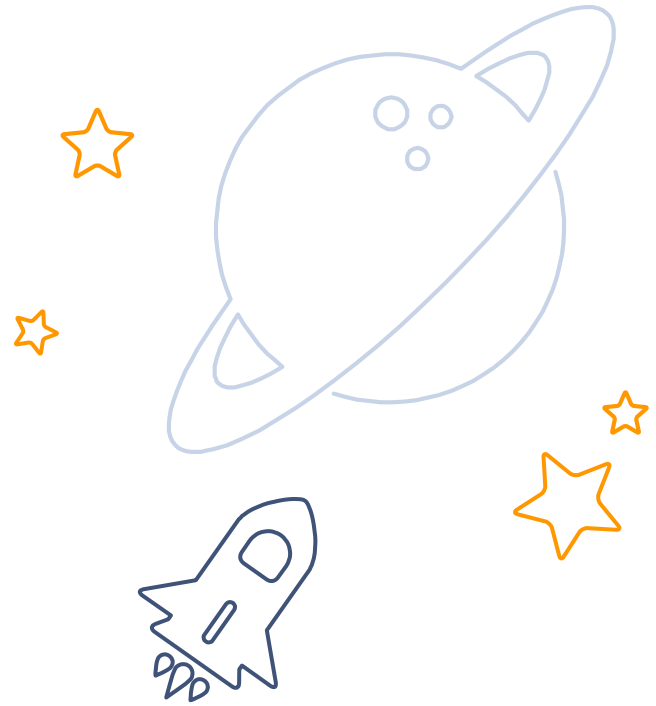
Founder & Chairperson
Sir Fazle Hasan Abed, KCMG

Vice Chancellor
Professor Vincent Chang, PhD

BRAC University has become one of the most reputed educational institutions in Bangladesh. Within a short span of its existence, the university has achieved remarkable success and continues to forge its future with new program initiatives: a modern curriculum, research endeavors, student engagement, professional training, faculty development, international collaborations, progress towards a state-of-the-art campus building, industry partnerships and much more.

Some outstanding achievements of BRAC University

BRAC ONNESA



BRAC Onnesha, The First satellite from Bangladesh, was launched on 3 June 2017 at 21:07 UTC (4 June at 03:07 BST) aboard a SpaceX Falcon 9 rocket as part of the CRS-11 mission to the International Space Station. The launch took place from Kennedy Space Center, Florida.

BRACU Chondrobot-2

- BRAC University had sent a robot named Chondrobot-2 to NASA for competing NASA Lunabotics Mining Competition on May 2012. ″ChondroBot-2″ a robotics team from the School of Engineering and Computer Science of BRAC University received the Asia's Best title in the recently held NASA's third ″Annual Lunabotics Mining Competition (LMC)″ in USA.
- Chondrobot-2 team from BRAC University was the only university from Bangladesh which was successful to collect samples by their lunar excavation device in mining stage and also discharge those in the designated place. The team also received best position in ″Joe Kosmo Award of Excellence″ segment which eventually helped Chondrobot -2 to secure 12th among all the teams around the world. Mobile Phone operator Robi Axiata Limited was the co-sponsor of Chondrobot lunar excavation device of this tour to NASA Kennedy Space Center, Florida, USA.

Hult Prize at BRAC University

- BRAC University's Synergy Global team won the regional round of the HULT Prize in Shanghai, China held on 12 March 2016. The team competed against other teams of 40 countries and is the first ever team from other Bangladeshi universities to win the regional round. The members of the winning team from BRAC University were: Mirza Tanzim Sami, Tasneem Omar Ava, Arafat Ahmed, and Mohammad Saad.

- Team 'Resurgence' presented their social business idea in the regional finals of the Hult Prize 2017 held at Shanghai.The team was among top 6 in the finals

3D MODEL of Future BRACU campus

13. First Announcement of APRSAF-26 Released

APRSAF
ASIA-PACIFIC REGIONAL SPACE AGENCY FORUM

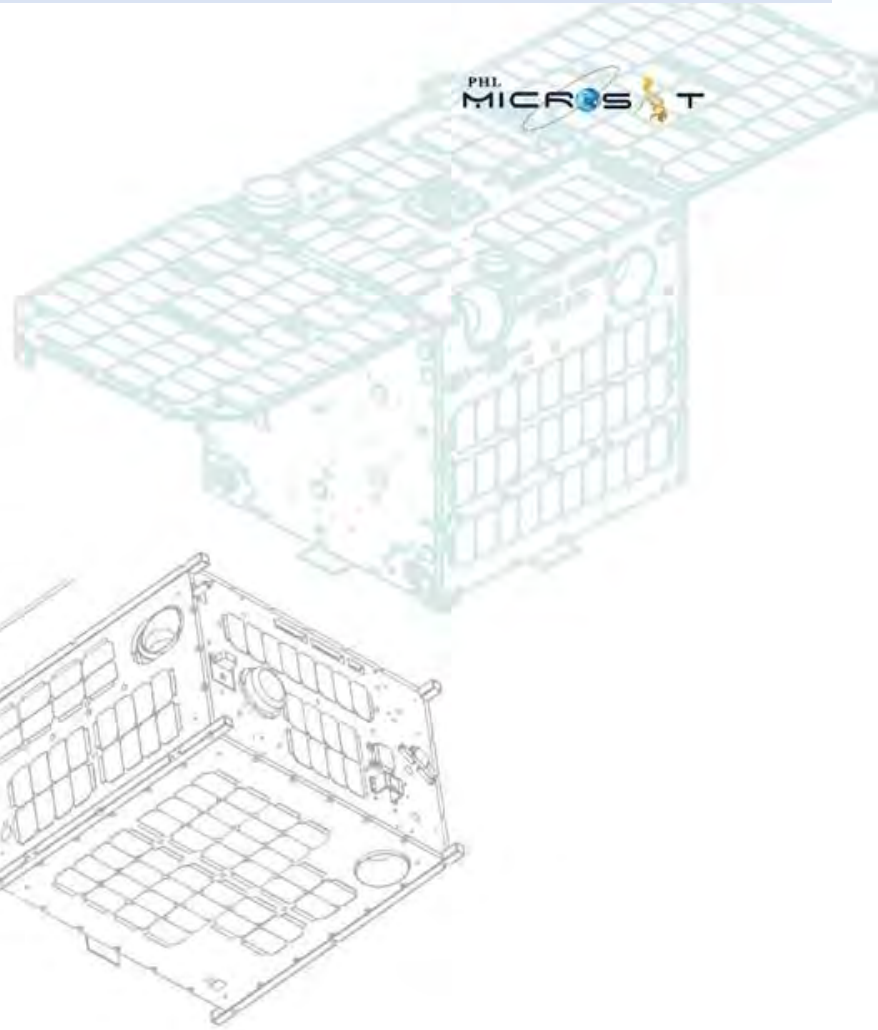
The first announcement of the 26th session of the Asia-Pacific Regional Space Agency Forum (APRSAF-26) has been released. APRSAF-26 will be held from November 26-29, 2019, in Nagoya, Japan, under the theme "Advancing Diverse Links Toward a New Space Era." The meeting will be organized jointly by the Ministry of Education, Culture, Sports, Science and Technology of Japan (MEXT), and the Japan Aerospace Exploration Agency (JAXA).
Based on the main theme, new panel sessions are to be held to stimulate cooperation and links among diverse players such as “space agencies × space industries” and “space agencies × young generations.”
For further information about APRSAF-26, and to download the PDF file of the first announcement, please visit the APRSAF website at:
http://www.aprsaf.org/annual_meetings/aprsaf26/meeting_details.php?nm166

Please note that the APRSAF will be collecting registration fees from participants attending APRSAF-26 to make the APRSAF a sustainable forum. More information on registration fees will be released in the second announcement.

--- from APRSAF Newsletter of 15 May 2019

STAMINA4SPACE

UPDATES FROM THE PHILIPPINES



May 15, 2019
University of the Philippines-Diliman
Quezon City, Philippines

PREPARED BY:

Mae Ericka Jean C. Picar
STAMINA4Space Communications Officer, STeP-UP Project
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Contributing Writer and Editor

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

BIRDS-4 Project Manager

CONGRATULATIONS, IZ !

Meet the new BIRDS-4 Project Manager:

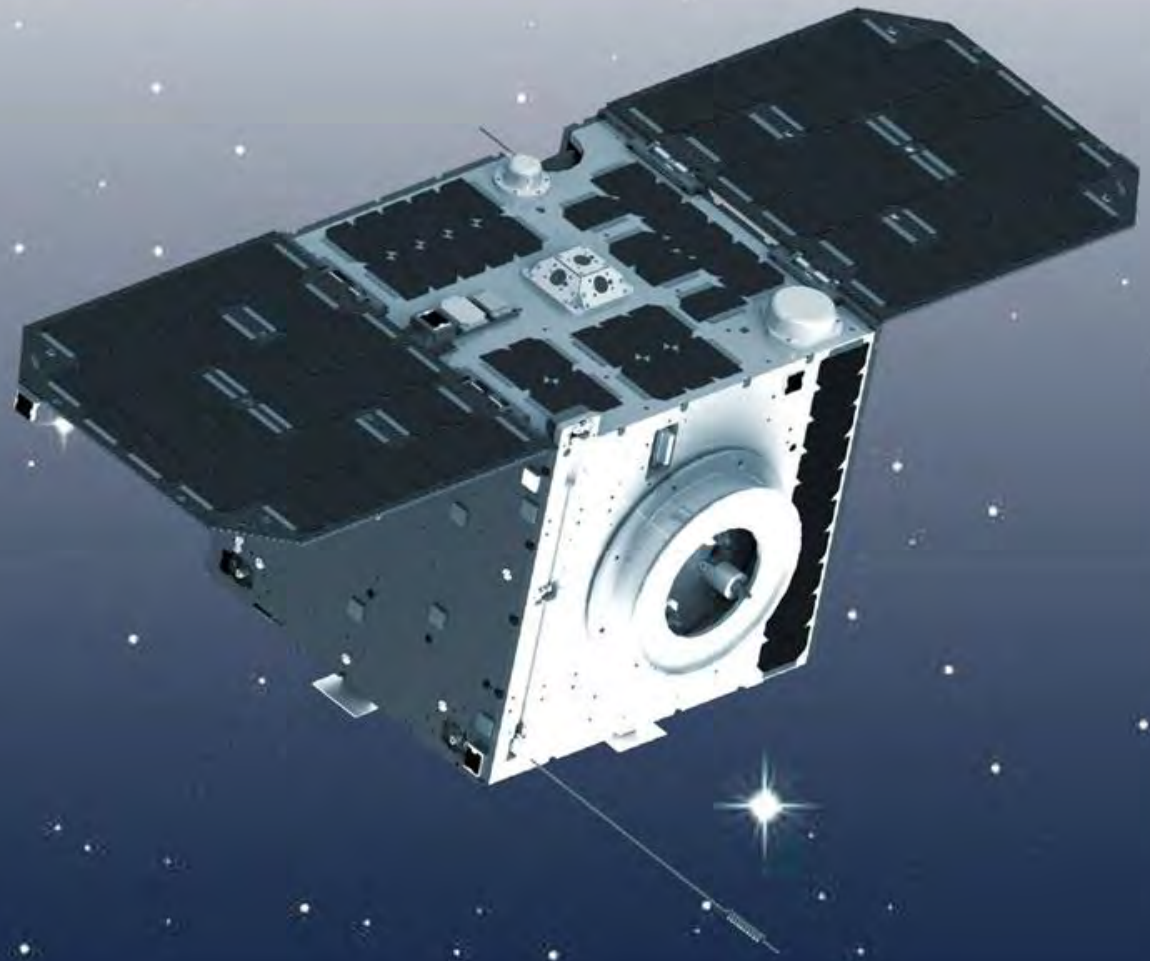
Izrael Zenar Bautista

28 March 2019

Izrael Zenar Bautista (or "IZ") is the second Filipino to be chosen as a BIRDS Project Manager. The first was BIRDS-2 Project Manager Joven Javier, who is now working under the Department of Science and Technology - Advanced Science and Technology Institute (DOST-ASTI) and a close collaborator of the STeP-UP Project Scholars under the nanosatellite engineering track.

IZ is currently a PhD student under the BIRDS-4 Project in Kyushu Institute of Technology in Japan.

Diwata-2 is PO-101



Diwata-2 is PO-101

11 April 2019

On April 11, 2019, the Radio Amateur Satellite Corporation (AMSAT) designated Diwata-2 as Philippines-Oscar 101 or PO-101, with the help of AMSAT Philippines and Philippine Amateur Radio Association (PARA) President, Atty. Eddie Valdez.

FUN FACT:
'**OSCAR**' stands for **O**rbiting **S**atellite **C**arrying **A**mateur **R**adio.

A.R.U. Ready?

Diwata-2 Amateur Radio Unit Service Announcement

26 April 2019

The STAMINA4Space Program with various representatives from government, academe, stakeholders, media members and partner hams. Among the institutions represented include the Department of Science and Technology (DOST), Department of Information and Communications Technology (DICT), National Telecommunication Commission (NTC), National Disaster Risk Reduction and Management Council (NDRRMC), members of the Armed Forces of the Philippines, the Institute of Integrated Electrical Engineers of the Philippines (IIEE), University of the Philippines Integrated School (UPIS), and University of the Philippines Diliman (UPD).

Museo Pambata

R U D-1: Inspiring the next generation of Diwata Engineers *26 April 2019*

On April 26, 2019 DOST PCIEERD (STAMINA4Space/PHL-Microsat's monitoring agency), in partnership with Museo Pambata, marked this milestone with an event titled "R U D-1: Inspiring the next generation of Diwata Engineers."

Benjamin Magallon, one of the Diwata engineers who was sent to Hokkaido University to obtain an MS Cosmoscience degree, was invited to share his knowledge and experiences to the invited students. He is currently a University Researcher IV at the STAMINA4Space Program's Ground Receiving, Archiving, Science Product Development and Distribution (GRASPED) Project, where he leads the satellite calibration and assessment.

Through events like these, the organizations mentioned hope to inspire more students to nurture their interest in the STEM field.

Photos courtesy of: Museo Pambata

Visit Museo Pambata's website here: https://www.museopambata.org/about.html

Diwata-1 turns 3!

Diwata-1

marks 3rd year in orbit

Diwata-1 has two "birthdays": its launch to space on March 23, 2016 via Atlas V rocket from the Kennedy Space Center in Cape Canaveral, Florida, and its release into orbit from the Kibo module on board the International Space Station on this day in 2016. The Philippine's first 50kg microsatellite has now gone well beyond its expected 18-month lifespan, as it continues to orbit the Earth and keep watch over it, like the type of Filipino deity it was named after. It has since captured over 36,000 images around the world and over 21,000 images of the Philippines that may be used for further research and environmental assessment.

Cansat Testing

CanSat is a small satellite analog. All of the components, such as sensors, actuators, and GPS, are housed inside a 350-mL can. CanSat provides an affordable opportunity for educators and students to acquire basic knowledge of space engineering and to experience engineering challenges in building a satellite.

Source: Cansat Leader Training Program(CLTP) - http://cltp.info/

06 May 2019

In photo (left): Engineering students from University of the Philippines Diliman under the course subject: ***ECE 197-S : Introduction to Satellite Systems*** *during their Cansat Testing activity in Forest Hills Golf and Country Club, Antipolo, Rizal, Philippines.(right): the drone used to drop the cansats*

Cansat Testing Activity

Drone used for cansat drop

Before cansat drop

Last check before drone flight

First group to test their cansat

Attaching a cansat to the drone

Checking the cansat's parachute

Close-up of one of the cansats

Before drone flight and cansat drop

Updates from BIRDS-2S

"The first step..."

May 15, 2019
University of the Philippines- Diliman
Quezon City, Philippines

Prepared by STeP-UP scholars

Renzo S. Wee
Contributing Writer and Designer

Judiel l. Reyes
Contributing Writer

Bryan R. Custodio
Project Manager
Contributing Writer

Derick B. Canceran
Contributing Writer

Christy A. Raterta
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Marielle M. Gregorio
Contributing Writer

Lorilyn P. Daquioag
Contributing Writer

Gladys A. Bajaro
Contributing Writer

A Closer Look at the STeP UP Scholars: STeP UP Scholars gets featured at UP Campus Journal

-Bryan Custodio

HOME ABOUT UP ADMINISTRATION RESEARCH & ACADEMICS ADMISSIONS ALUMNI PUBLIC SERVICE

The team discussing the project !

Photo Source: UP-MPRO

It was on January 18, 2019 when the STAMINA4Space Program introduced the eight STeP – UP project scholars through the kick-off meeting at the Meralco Hall, UP Electrical and Electronics Engineering Institute (UP EEEI). This is to show to the general public that there is a continuous effort to develop the space program in the country. The University of the Philippines Media and Public Relations Office (UP MPRO) took the initiative to get to know some of the scholars.

Two of the STeP – UP scholars, Gladys Bajaro and Bryan Custodio shared their experiences and motivations in joining the pioneering team that will develop the cube satellite designed and developed here in the Philippines.

For the full article, go to
https://www.up.edu.ph/index.php/meet-ups-next-satellite-builders/

STeP-UP Internal Engagements

- Judiel Reyes

Subsystem Presentation

By STeP - UP scholars
April 4 & 8, 2019
UP Diliman Electrical and Electronics Engineering Institute

Structure
Electrical Power Subsystem
ADCS
COMS
Antenna Design
Mission Payload
OBC
Ground Station

Last April, STeP-UP scholars prepared an internal presentation of the different subsystems of the BIRDS-2 cube-satellite to gauge their understanding of the subsystems. The presentation was also conducted to prepare the scholars for their Mission Definition Review and for future conference presentations. Joven Javier, the former project manager of BIRDS-2, gave insights for each presentation and also discussed things to consider.

Into the Vault: A visit to the FAC

-Derick Canceran

The BIRDS-2S team visited UP Diliman's Full Anechoic Chamber (FAC). The FAC is a facility used to determine the characteristics of an antenna.

First visit to the FAC. The team marveling at the sight of the FAC.

Antenna test planning. BIRDS-2S member Renzo Wee inspecting the antenna mount.

STeP-UP joins the National Intellectual Property Month celebration!

-Renzo S. Wee

Patent and Invention Disclosure Workshop

By Technology Transfer and Business Development Office

8:30 am to 4:30 pm
April 15-16, 2019
Maynilad Room
College of Engineering
University of the Philippines-Diliman

Source University of the Philippines - Diliman Technology Transfer & Business Development Office (UPD-TTBDO):

STeP-UP joins the National Intellectual Property Month celebration!

-Renzo S. Wee

The University of the Philippines - Technology Transfer and Business Development Office (UP-TTBDO) aims to gear the participants with knowledge on patents enabling them to use patent information in their research activities.

In line with the celebration of the National Intellectual Property Month, UP-TTBDO organized a workshop composed of a series of seminars with topics ranging from the preview of the office to patent information and invention disclosure.

The workshop was attended by the College of Engineering faculty, Research, Extension and Professional Staff and representatives from the UP College of Medicine. Representatives from the STAMINA4Space namely – Lorenzo Sabug Jr., Delburg Mitchao, Gabriel Mabini, Carlo Pastoral, and Renzo Wee, one of the 8 STeP-UP scholars, were sent to participate the activity.

UP-TTBDO website: ttbdo.up.edu.ph

STeP-UP joins the National Intellectual Property Month celebration!

-Renzo S. Wee

Renzo answering a question of the speaker

All of the attendees and speakers of the workshop!

STAMINA4Space representatives happily discussing during the group activity

Source University of the Philippines - Diliman Technology Transfer & Business Development Office (UPD-TTBDO):

Meet the Project Manager!

-G. Bajaro and L.P. Daquioag

"The right leader would build and initiate a trail to be followed by the STeP-UP scholars to proliferate the skills, knowledge, and attitude in smarter ways. "

The project scholars started the nanosatellite engineering track last January 2019. For the past four months, the eight scholars were being guided and lead by Joven Javier, former BIRDS-2 project manager. Finally, the team has appointed Bryan Custodio as the project manager.

Bryan Custodio is a licensed Electronics Engineer and ranked 9th place in the 2018 ECE Board Exam. He obtained his BS Electronics and Communication Engineering degree from Far Eastern University where he eventually served as an instructor at the Electrical and Electronics Engineering Department. Despite his young age, he's competent and goal oriented in every project and institution he joined in. And having good time management and being critical thinker, reaching all the team targets is attainable.

Meet the Project Manager!

-G. Bajaro and L.P. Daquioag

"The camaraderie within the team is getting stronger as they enjoyed every meal together. "

The STeP-UP scholars team enjoyed grilling the Korean dishes together.

In celebration of the appointment of Bryan as the new PM, the team decided to feast in an unlimited korean bbq restaurant, SAMGYEOPSAL! YUM!

Judiel and Derick are really eager to bite their juicy Samgyeopsal.

JAMSAT symposium 2019

Kyoto, Japan, March 16th -17th 2019
Report by Apiwat

L-R red circle: Apiwat JE6RJA (BIRDS-1) and Nakayama JE6VHF (BIRDS-4)

Apiwat presented QO-100 GS in Thailand

Apiwat (BIRDS-1) and Nakayama (BIRDS-4) attended JAMSAT symposium in Kyoto, Japan during March 16-17, 2019. Many amateur radio members around the world gathered to exchange information on satellite communication. NEXUS, OrigamiSAt-1 and QO-100 satellites members presented operation report in the symposium.

JAMSAT members operating NEXUS satellite

This page made by G. Maeda.
All from page 86 of JAMSAT Newsletter of April-2019

♥♥ 新入会者の紹介 ♥♥

2018年11月以降、次の方が入会されました。

鐘ヶ江 重宏	JE6DNN	福岡県
今井 一雅	JA5DMF	高知県
佐々木 誠至	JH3FDA	大阪府
Apiwat Jirawattanaphol	HS4SCI/JE6RJA	福岡県
多田 浩	JA3VQW	大阪府
西河 洋雄	JR3MHP	滋賀県
島袋 辰巳	JR6DI	沖縄県

今後のご活躍を期待いたします。

New member

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①入退会/会費納入/住所変更/会誌発送等 業務一般に関しては委託先の上記毎日学術フォーラムへ
②会の活動/技術相談/衛星計画等技術に関する質問/連絡についてはJAMSAT直接窓口:madoguchi@jamsat.or.jp〉へ
③個別の件については
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JA3GEP 毛利幹生 jbh02173@nifty.com へ
都合により返信が遅れる事もありますが、ご理解下さい。

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Contributors

FO-99アップリンクに際してのお願い

NEXUS/FO-99は現在、大学の研究テーマをメインにデータ収集と解析が進められています。データ収集や電源事情を勘案して、週末を中心にオービットを限定してトランスポンダーがONされる場合があります。QSOに使える状態かどうか、必ずNEXUSホームページで確認をお願いします。それ以外の時間帯は、たとえダウンリンクがあっても、アップリンクはしないで下さい。

賛助会員のご紹介

本会の活動に理解をいただき、下記の方々には賛助会員となっていただいています。

UNISEC
University Space Engineering Consortium

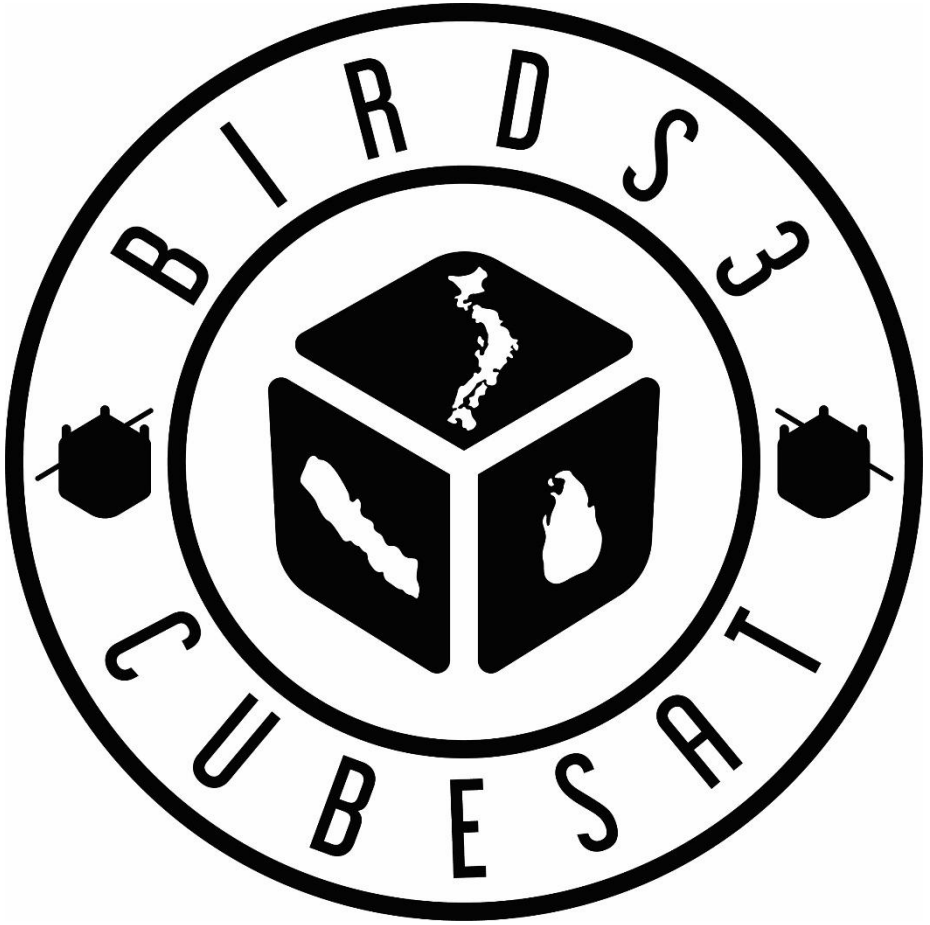
intostellar

JAMSAT Newsletter No.293(2019-April-18)

16. BIRDS-3 API has been published!!

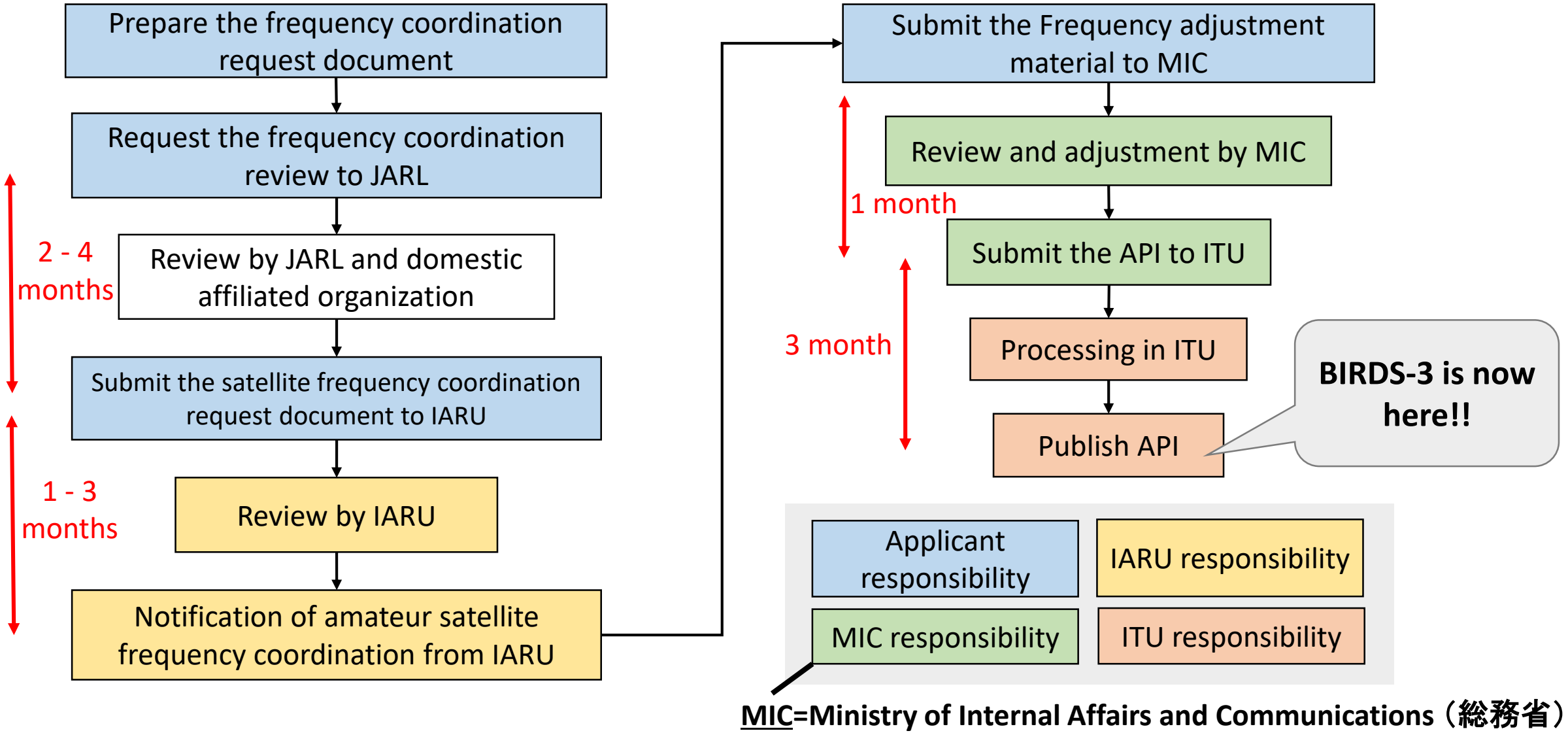
The following 2-page report about BIRDS-3 frequency coordination was submitted by Ms. Kishimoto (BIRDS-3 team member) on 17 May 2019.

Note: BIRDS-3 is scheduled to be released from the ISS on 17 June 2019.



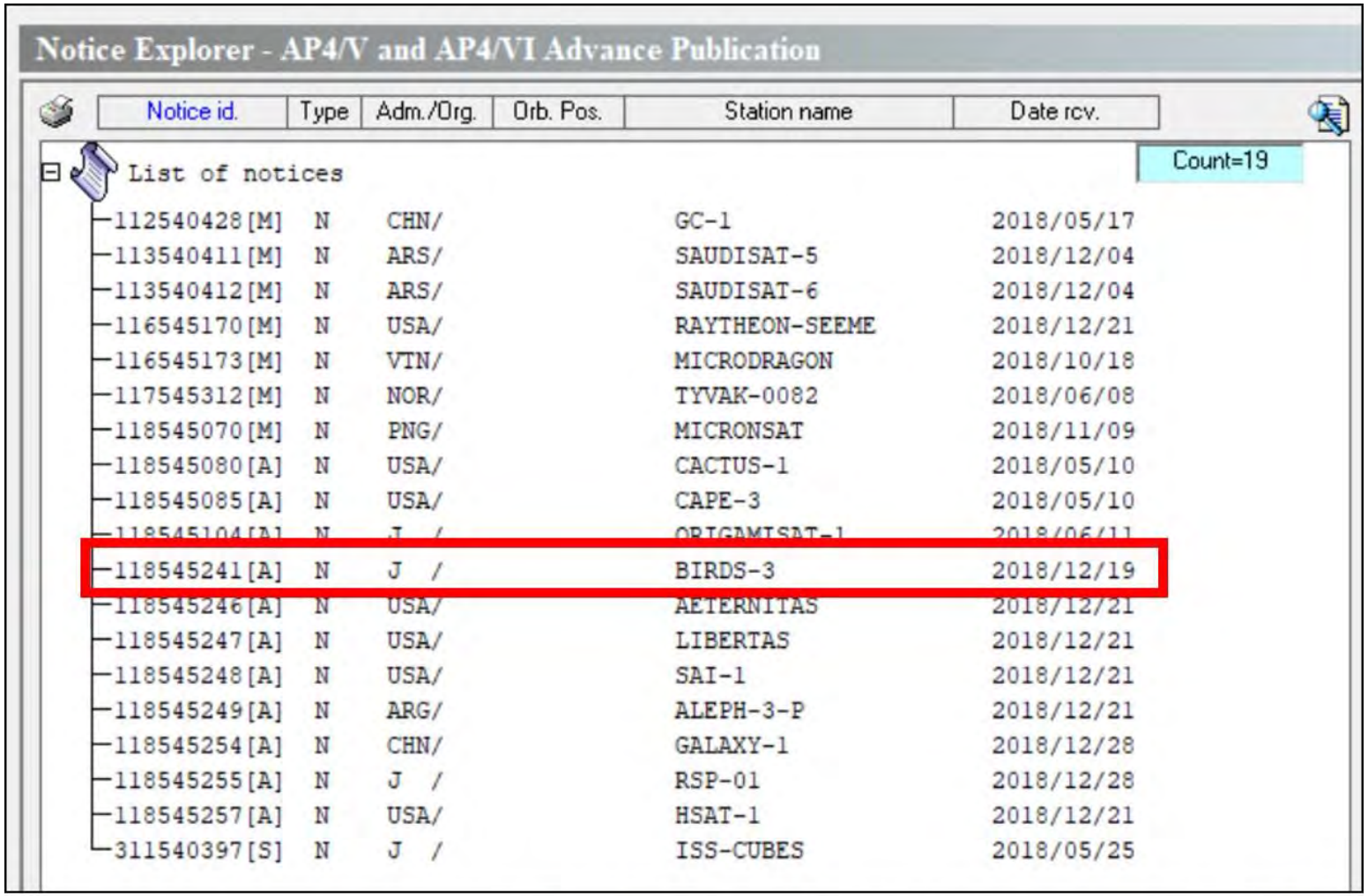
In this official logo of BIRDS-3 you can see the outlines of Japan, Nepal, and Sri Lanka.

Frequency Coordination Procedure [boxes are color-coded]



MIC=Ministry of Internal Affairs and Communications（総務省）

BIRDS-3 API has been published!!



Notice Explorer - AP4/V and AP4/VI Advance Publication

Notice id.	Type	Adm./Org.	Orb. Pos.	Station name	Date rcv.
List of notices					Count=19
112540428[M]	N	CHN/		GC-1	2018/05/17
113540411[M]	N	ARS/		SAUDISAT-5	2018/12/04
113540412[M]	N	ARS/		SAUDISAT-6	2018/12/04
116545170[M]	N	USA/		RAYTHEON-SEEME	2018/12/21
116545173[M]	N	VTN/		MICRODRAGON	2018/10/18
117545312[M]	N	NOR/		TYVAK-0082	2018/06/08
118545070[M]	N	PNG/		MICRONSAT	2018/11/09
118545080[A]	N	USA/		CACTUS-1	2018/05/10
118545085[A]	N	USA/		CAPE-3	2018/05/10
118545104[A]	N	J /		ORIGAMISAT-1	2018/06/11
118545241[A]	N	J /		BIRDS-3	2018/12/19
118545246[A]	N	USA/		AETERNITAS	2018/12/21
118545247[A]	N	USA/		LIBERTAS	2018/12/21
118545248[A]	N	USA/		SAI-1	2018/12/21
118545249[A]	N	ARG/		ALEPH-3-P	2018/12/21
118545254[A]	N	CHN/		GALAXY-1	2018/12/28
118545255[A]	N	J /		RSP-01	2018/12/28
118545257[A]	N	USA/		HSAT-1	2018/12/21
311540397[S]	N	J /		ISS-CUBES	2018/05/25

* API from Space Cap software application of ITU

I explained “Frequency Coordination” in Issue No.28 of the *BIRDS Project Newsletter* Issue 28, pages 75-81.

Submission API (Advance Publication Information) is a space systems regulation. API should be published by ITU (International Telecommunication Union) before starting satellite operation. Because API is the document which inform the frequencies to use to another countries. They will check our API and if that doesn’t matter, we can use frequencies which we will use for our operation.

In other words, after the API is published, we can deploy satellites and can operate them.

Introducing the New Main Structure Material: PEEK

Yiğit Çay

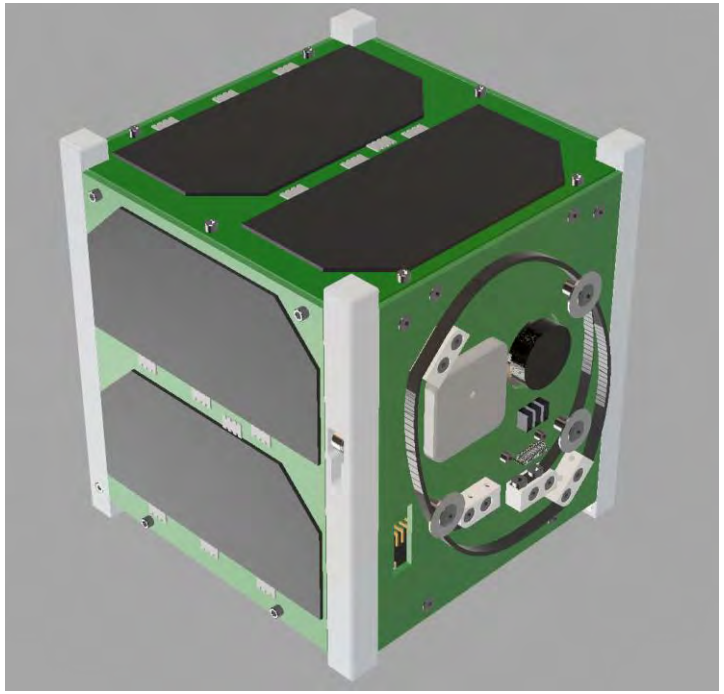
BIRDS-4

May 5, 2019

New BIRDS Main Structure

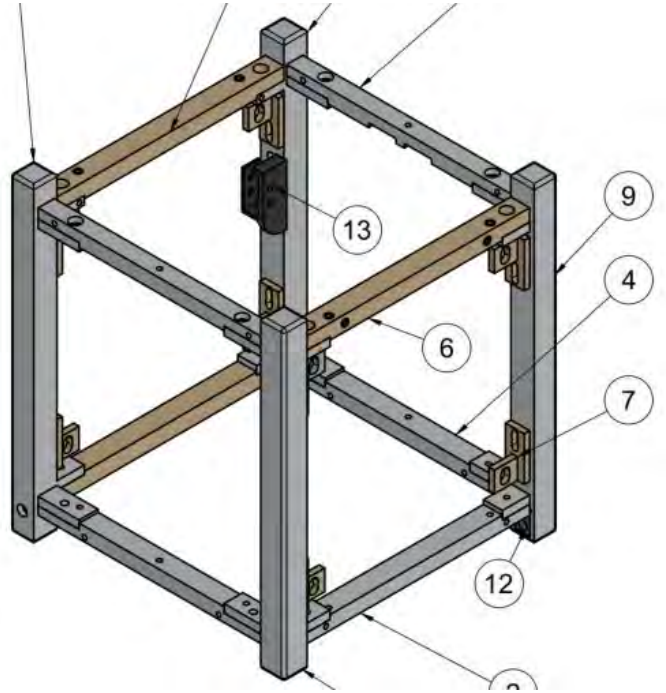
Written By: Yiğit Çay

One of the strong aspects of BIRDS satellites is to make them lean-produced. These lean satellites are beneficial since they are time, effort and cost-efficient. Basically, the golden rule we need to apply to our lean satellite is to utilize things that have already worked well in the previous designs. That was the reason why BIRDS-2 and 3 satellites had exactly the same structural design of BIRDS-1. Of course, small changes were allowed when it comes to bringing advancement to the design but most of the design was the same and trustworthy. In BIRDS-4, I had a big challenge to redesign the structure due to the Hentenna mission. This mission utilizes the structure as an antenna which requires the mainframes had to be chosen as an insulator material.



BIRDS-4 Computer Aided Design model drawing

As you can see from the main frame's picture on the right-top side, 3 of the booms (no. 6, for example) are converted into insulator material, named as PEEK.



Screenshot of the main structural frames of BIRDS-4 from the blueprints

Using PEEK booms and connectors (no. 7) will provide us the similar structural redundancy that Aluminum frames provided.

About PEEK

Written By: Yiğit Çay

This article is to focus on understanding this new structural material. PEEK is an acronym stands for "PolyEtherEtherKethone". The material is a colourless organic thermoplastic polymer in the PolyArylEtherKetone (PAEK) family, used in engineering applications [source1]. I found out this material used in Diwata-2 which is operational in the space at the moment, thanks to Izrael's recommendation. Although it's a thermoplastic, which means it's a polymer material that becomes moldable at a certain increased temperature and solidifies after cooling, PEEK has an extremely high heat resistance compared to other thermoplastics [source2]. Some material properties of Aluminum and PEEK are…

Material Properties	A6061-T6	PEEK
Density (ρ) [g/cm^3]	2.70	1.32
Young's modulus (E) [GPa]	68.9	3.6
Tensile strength (σ_t) [MPa]	124-290	90-100
Thermal conductivity (k) [W/(m.K)]	151–202	0.25
Melting temperature (T_m) [°C]	585	343

Aluminum 6061-T6 [source3] vs. PEEK [A. K. van der Vegt & L. E. Govaert, Polymeren, van keten tot kunstof, ISBN 90-407-2388-5] chart for material properties comparison

…provided in the table on the right side for comparison. If PEEK frames pass the vibration and thermal vacuum tests properly as the previous tests, this structure would be used for space application of this and future BIRDS projects. As can be understood from the table, using this new material will…

…provide us a more lightweight structural frame for BIRDS-4 and future generations. For the manufacturing of structural testing model (STM) of BIRDS-4, we decided to procure a PEEK board from a vendor and manufacture the necessary parts in the university's workshop.

About PEEK

Written By: Yiğit Çay

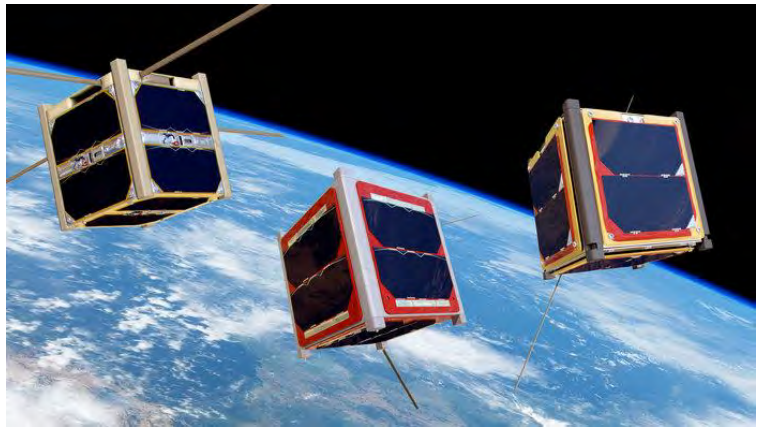
STM manufacture is expected to be finished within the 3rd week of May when the environmental tests are going to be conducted as soon as it's assembled.

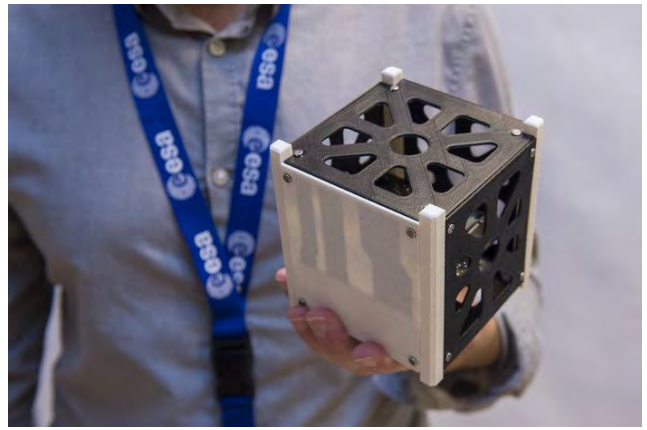
From the catalog provided by vendor, some properties of PEEK are given as follows [source2]:

Features: Extremely high in heat resistance, insulation, dimensional stability, chemical resistance, abrasion resistance, and machinability. It is a well-balanced material.

Sliding: It has excellent mechanical and sliding characteristics at high temperatures.

Conductivity: Similar to the standard, it has low volume resistivity and excellent conductivity.





PEEK used CubeSat designs and electrical lines in PEEK material. For detailed information, please visit [source5].

Appearance: The top and bottom of the material are glossy. It becomes clear by milling.

Machinability: Although machinability is good, it is harder than MC nylon®, so it may be chipped in the direction in which the milling cutter comes off.

In the catalog, it's written that the optimum temperature to utilize the material varies between -50 to 250 °C. Although it's mainly colourless, our standard PEEK frames have a light brown colour.

According to the article in 3dprint.com, European Space Agency's (ESA) 3D printed CubeSat models highly rely on the PEEK material and its modifications with conductive lines to add electrical functionality. Some pictures from the article are given above [source5].

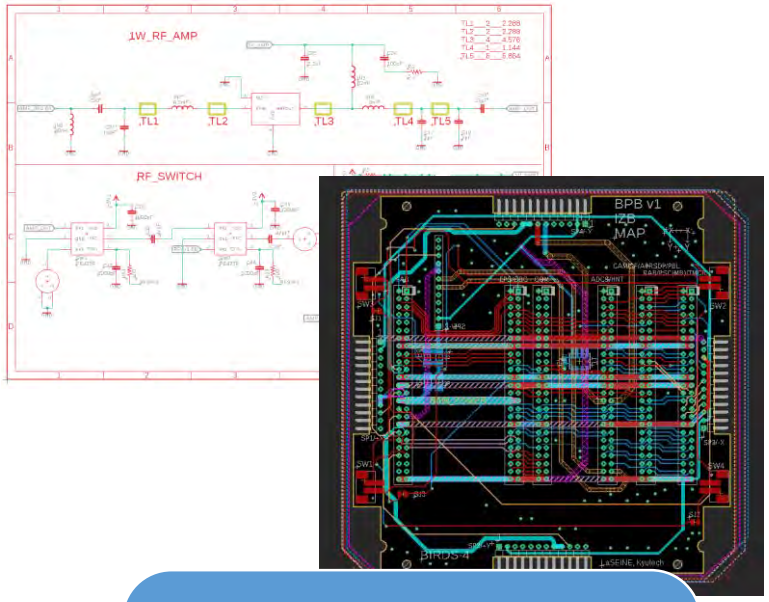
BIRDS-4 Project Timeline

Izrael Zenar Bautista
BIRDS-4

May 8, 2019

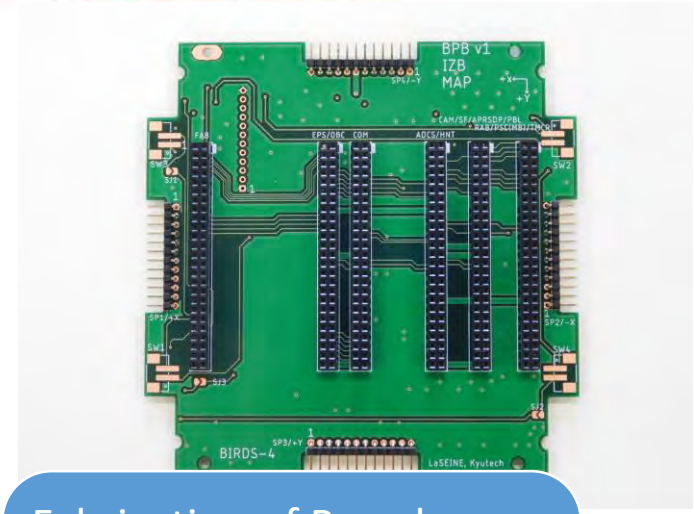
BIRDS-4 Project Timeline

Written By: Izrael Zenar Bautista



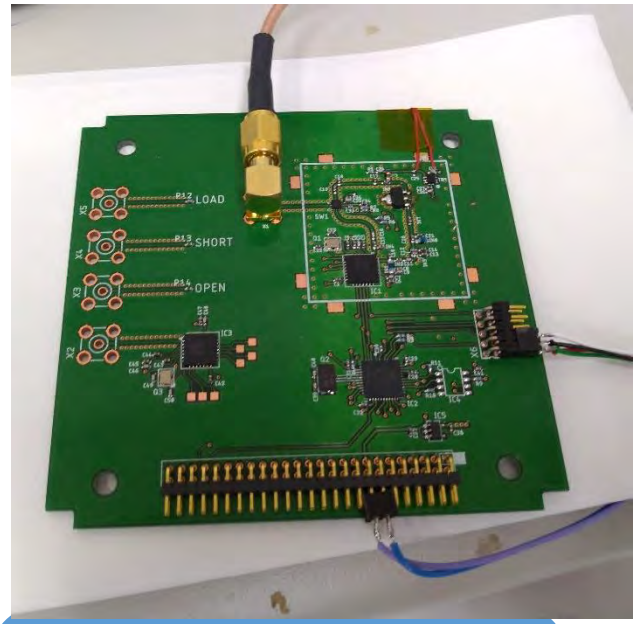
Schematic, Layout, and Crosschecking(April 15-May 6)

- BIRDS-4 members assigned to each board will design their schematic and layout. Crosschecking between boards will also be done to avoid errors in design



Fabrication of Boards (May 7-28)

- Gerber files and components will be sent to Pban company for PCB fabrication and component soldering

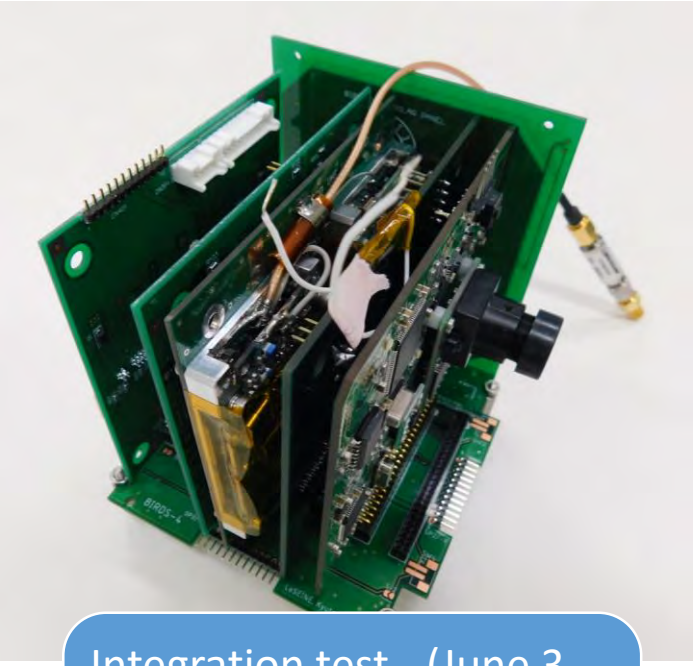


Individual board test (May 29 – June 3)

- After fabrication, each board will be tested individually for functionality.

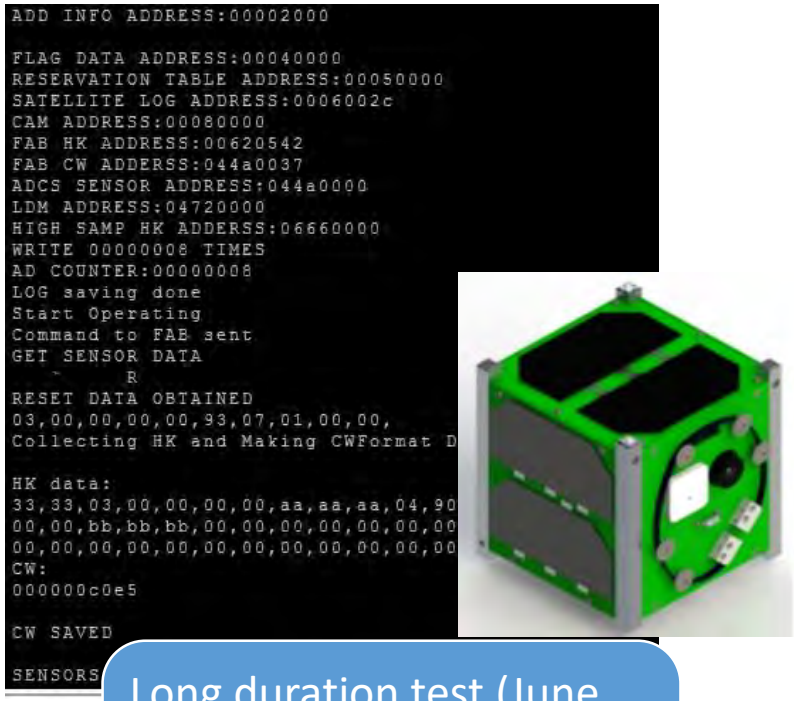
BIRDS-4 Project Timeline

Written By: Izrael Zenar Bautista



Integration test (June 3-24)

- The fabricated boards and structure will be assembled and tested for functionality as the Engineering model



Long duration test (June 25-July 12)

- Full functionality testing of the assemble Engineering model communicating with a ground station in the lab will be done to simulate actual operation in space

Long range test (June 13-19)

- Engineering model will be tested in an outdoor environment to simulate communication with the ground station in Kyutech

BIRDS-4 Project Timeline

Written By: Izrael Zenar Bautista

Space environment test (July 20-August 23)

- Engineering model's functionality will be tested under simulated space environment (Thermal, vibration, etc.) to see if it will work in space

Documentation and Preparation(August 24-September 4)

- BIRDS-4 members will make a presentation on test results with Engineering model for the Critical Design Review

BIRDS-4

JOINT GLOBAL MULTI-NATION BIRDS SATELLITE PROJECT

Critical Design Review

Critical Design Review(September 5)

- Stakeholders from participating countries and Professors will review the work done by BIRDS-4

BIRDS-4 IARU Frequency Coordination Request

Marloun P. Sejera

BIRDS-4

May 7, 2019

BIRDS-4 IARU Frequency Coordination Request

Written By: Marloun P. Sejera

Communication between the ground station and satellite plays a vital role in the operation of the satellite system. Without it, ground station cannot send commands to the satellite, and the satellite cannot send telemetry and mission data to the ground station. As with previous BIRDS projects, BIRDS-4 satellites will use the amateur radio frequency band on both uplink and downlink communications. Because of this, the team prepared the IARU Frequency Coordination Request document.

International **A**mateur **R**adio **U**nion, or IARU, is an organization consisting of over 160 national Amateur Radio communities all over the world. It works with the United Nation's ITU-R

IARU. http://www.iaru.org/

(**I**nternational **T**elecommunication **U**nion - **R**adiocommunication sector) in preserving and maintaining the radio frequency spectrum allocated to the amateur radio and amateur-satellite services.

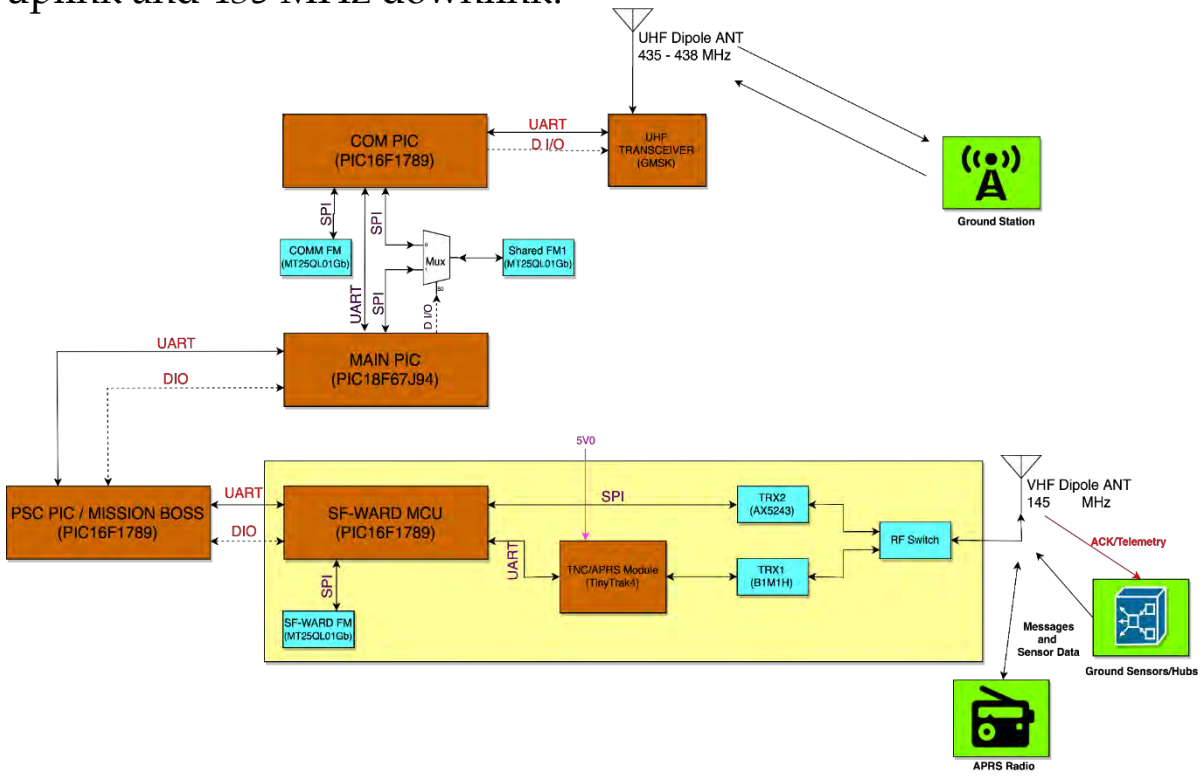
The Frequency Coordination Request template can be found at IARU's official website. Now on its 39th version, it contains seven sections which provides information about spacecraft, licensee of the space station, organisations, space station, telecommand , telemetry, and launch plans.

In the document, the names of BIRDS-4 satellites are revealed: Maya-2 for Philippines, GuaraniSat-1 for Paraguay and Tsuru for Japan. All satellites shall carry eight missions, namely APRS-DP (Automatic Packet Reporting System – digipeat), store-and-forward (SF), study on Total Induced Dosage (TID) on electronic components, Hentenna demonstration (HNT), two-axis active attitude control demonstration for CubeSats (ADCS), study of Perovskite solar cells in space (PSC), camera mission (CAM) and image classification demonstration (ICU). The requested amateur satellite bands are 144 – 146 MHz and 435 – 438 MHz. APRS-DP and SF missions shall use the VHF band, with the requested center frequency at 145.825 MHz both uplink and downlink.

BIRDS-4 IARU Frequency Coordination Request

Written By: Marloun P. Sejera

The rest of the missions, as well as CW beacon, shall use UHF band, with the requested center frequencies at 437 MHz uplink and 435 MHz downlink.



Communication Block Diagram of BIRDS-4 satellites.
This is one of the supporting documents needed.

Supporting documents are also required and these are the communication block diagram (see photo on the left), communication plan, antenna radiation pattern, power budget, and link budget. All documents were uploaded on the project's official website: http://birds4.birds-project.com

The documents are ready for submission to JARL (**J**apan **A**mateur **R**adio **L**eague) and JAMSAT (**J**apan **Am**ateur **Sat**ellite Communications Association) for comment. These are Japan's national amateur radio and amateur satellite organizations to IARU Region 3. Once approved, it will be endorsed to IARU.

Japan's national organizations to IARU Region 3
JARL: https://www.jarl.org/
JAMSAT: https://www.jamsat.or.jp/

Development of Automatic Coil Maker

Hiroki Hisatsugu

BIRDS-4

May 10, 2019

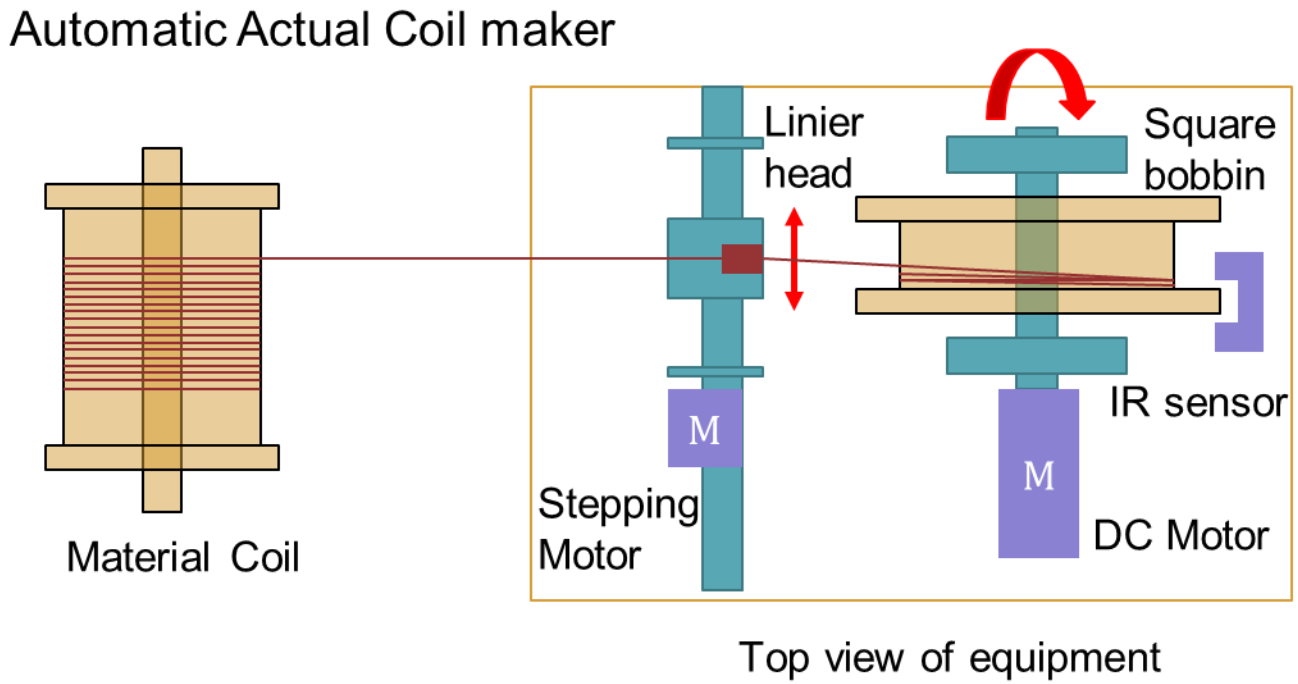
Development of Automatic Coil Maker

Written By: Hiroki Hisatsugu

In the attitude control mission of BIRDS-4, the attitude is controlled using an electromagnet called “magnetic-torquer”. In the previous BIRDS, a coiled layout was made on the PCB to make the magnetic-torquer, but in BIRDS-4, the stronger torque is required for pointing mission. Therefore, we are working on the production of the magnetic-torquer using an actual coil. Recently, I created a magnetic-torquer by winding a coil on a square bobbin.

Since it cannot be made with high quality when it’s handmade, it is produced using a machine. In this time, I will introduce this coil winding machine I designed.

The structure is simple and consists of a motor that turns the bobbin, a sensor that detects the rotation, and a moving head to feed the wire to the correct position.



Operation principle of the device

Development of Automatic Coil Maker

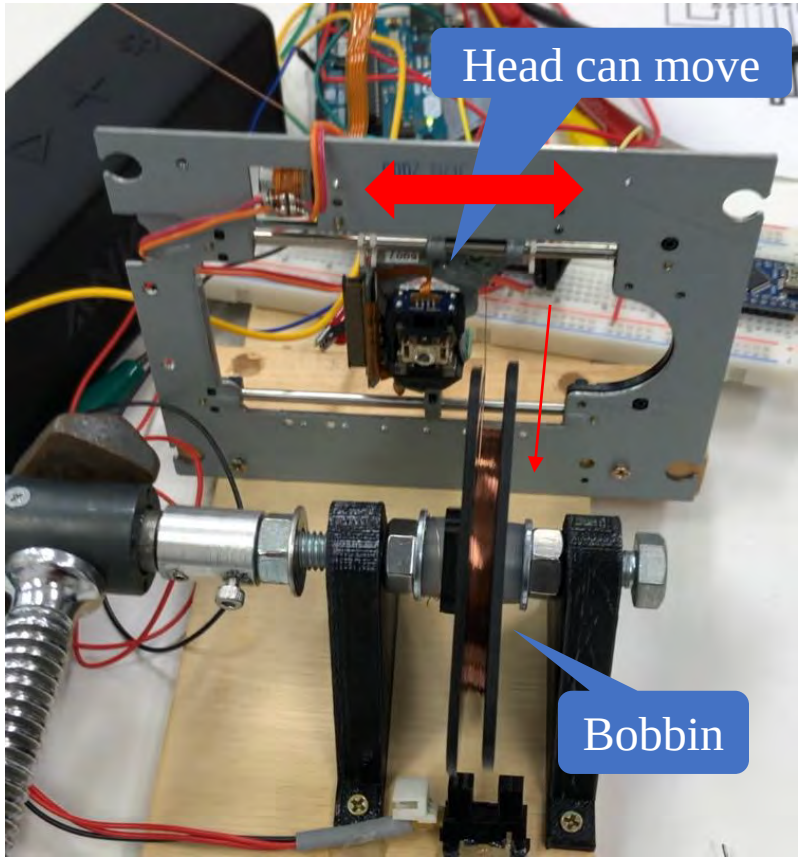
Written By: Hiroki Hisatsugu

The moving head mechanism utilizes the linear moving mechanism of the pickup lens of a CD drive.

The head moves one wire pitch each time the bobbin rotates once, and the coil becomes stacked.

Since this linear movement mechanism is driven by a step-motor, it sends signals from the microcontroller to a dedicated motor driver and moves it. The microcontroller counts the turns and displays them on the computer.

In an experiment with this set-up, it was wound about 1700 times. The bobbin and housing were produced by a 3D printer and fixed to the base of the wood. I hope this equipment will be useful for the next BIRDS satellites.



Set-up overview

Actual coil made by the set-up

Near-Field Emission Experiment on BIRDS-4 Subsystem Boards

Hari Ram Shrestha & Marloun Sejera

BIRDS-4

May 6, 2019

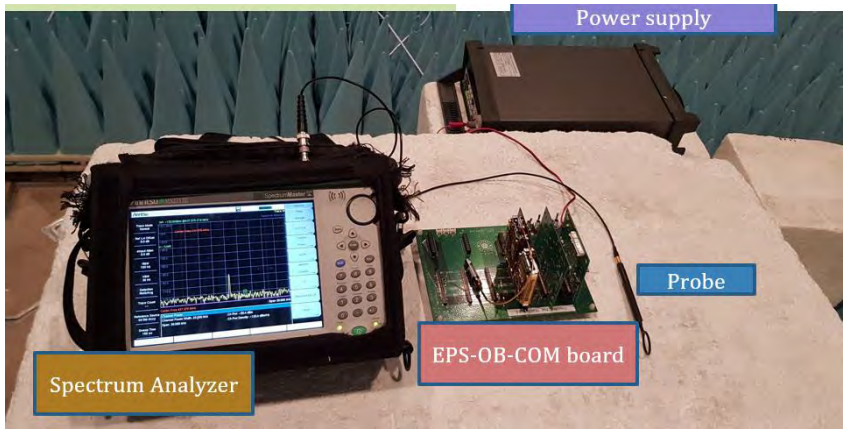
Near-Field Emission Experiment

Written by: Hari Ram Shrestha & Marloun Sejera

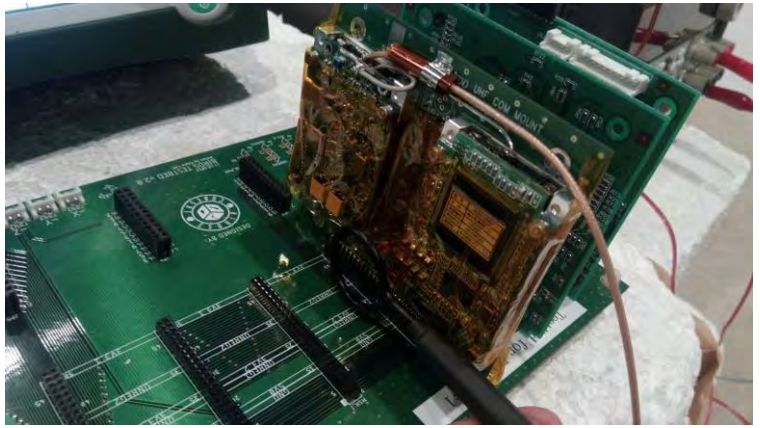
Electromagnetic Interference (EMI) plays a factor in the failure of uplink communication of CubeSats. Specifically, a strong electric (E) and/or magnetic (H) field from one component inside the satellite may cause interference to weak uplink signal at the front-end of the communication subsystem. This may result in reduced or worse, no received signal strength in the satellite.

An experiment was conducted inside the anechoic chamber of KyuTech. The objective was to identify components with high near-field emission which causes EMI. Also, it would verify the reduction of near field emission by placing Aluminum (Al) sheet around the components.

A Rhode & Schwarz H-field probe (H 400-1) was used in the experiment. The probe is extremely sensitive and provides average magnetic field strength in the 25mm – loop area of the probe. The probe was then connected to Anritsu MS2712E spectrum analyzer (SA).



Experiment set-up: spectrum analyser, H-field probe, dc power supply and boards under test



Boards under test: FAB, OBC/EPS board and COM board

Three boards were under test: Front-Access Board (FAB), On-Board Computer (OBC)/ Electric Power Subsystem (EPS) board, and Communication (COM) transceiver board. The boards were powered up by a DC power supply and were placed on a test bed.

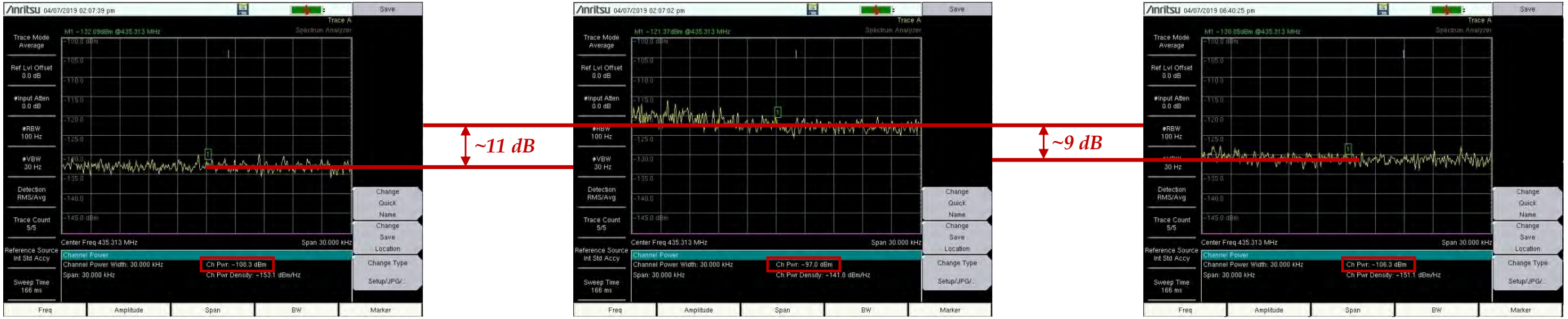
Near-Field Emission Experiment

Written by: Hari Ram Shrestha & Marloun Sejera

With the boards (under test) powered up and the probe placed away from the boards, power was measured using SA. This measured power served as the reference power. After that, each board were probed and components on the boards with high measured power were noted. A comparison between the measured power and the reference provides how much H-field emission the components produced.

Once the components with high field emission were identified, Al sheet was used to cover the area. The Al sheet would serve as EM shield. The boards were then probed again and power is measured. Measured power comparison (without EM shield vs. with EM shield) verified that EMI greatly reduced near-field emission. The figure below shows an example of the test conducted.

*Measured power at 5V bus system of OBC/EPS board. **b – a** is the field emission (~11 dB) caused by the bus system. **c – b** is the reduction in near-field emission (~9 dB) when EMI sheet is applied*



a. Reference power

b. Power measured at 5V bus system without EMI sheet

c. Power measured at 5V bus system with EMI sheet

Implementation of Target Mode for BIRDS-4 Camera Mission

Mark Angelo C. Purio

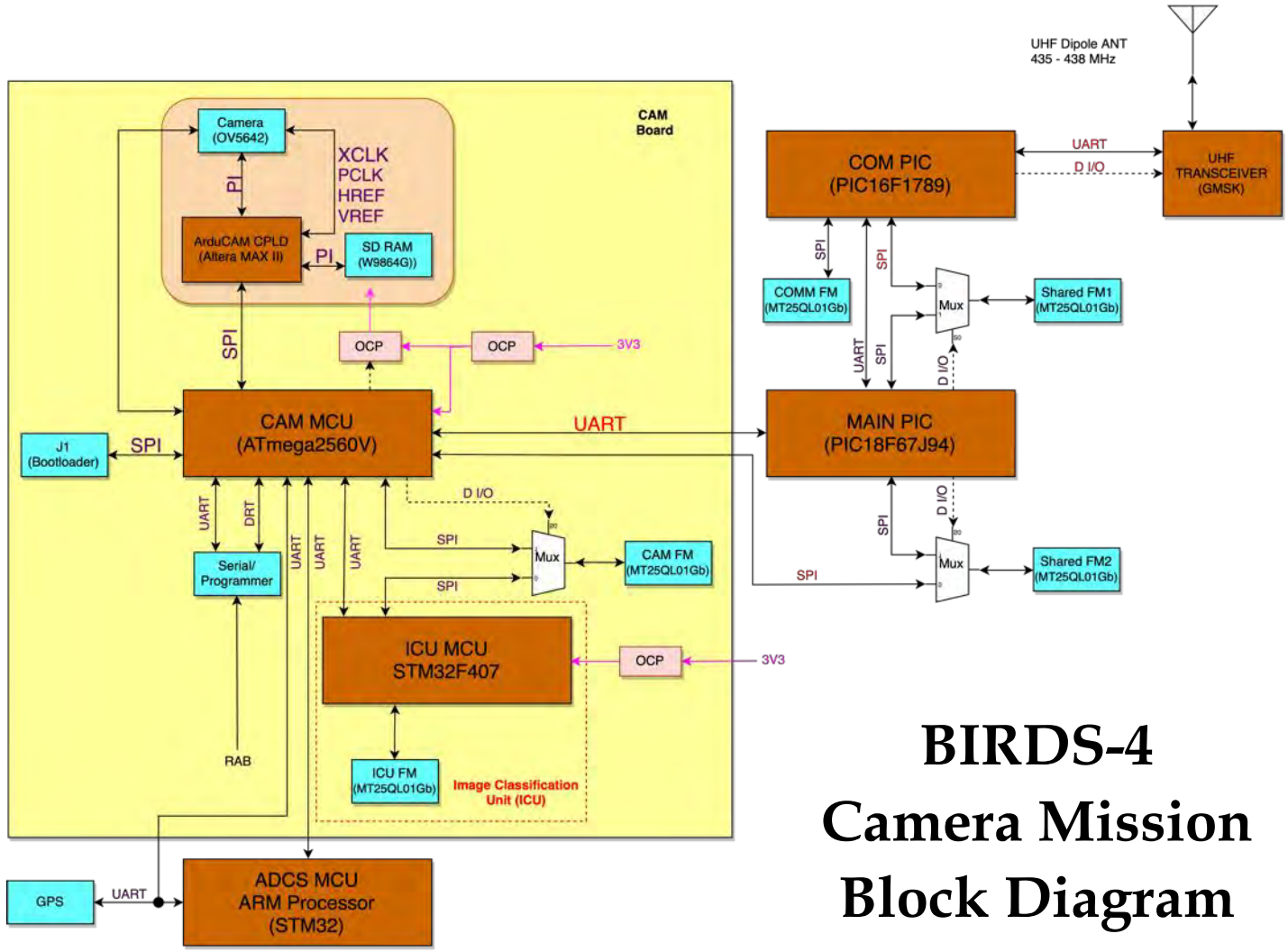
May 7, 2019

Implementation of Target Mode for BIRDS-4 Camera Mission

Written By: Mark Angelo C. Purio

The *Camera Mission* has been part of the BIRDS Satellite project since BIRDS 1. In the January issue of this newsletter, a brief overview of the Camera Mission of BIRDS-4 was provided. By this time, the team has come up with its final block diagram (as shown) for the said mission. This article will discuss the implementation of 'Target Mode' for BIRDS-4 Camera Mission.

For BIRDS-4, the camera mission will implement the same modes what BIRDS-3 will do but with additional mode, the 'Target Mode'. This mode is based on the BIRDS-2 initial plan with a little modification.



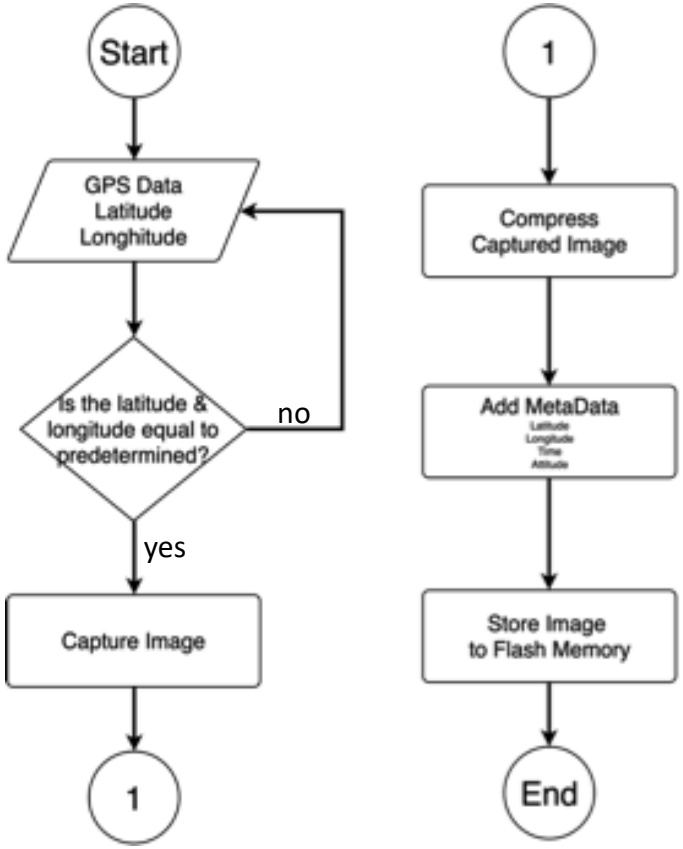
BIRDS-4 Camera Mission Block Diagram

Implementation of Target Mode for BIRDS-4 Camera Mission

Written By: Mark Angelo C. Purio

As shown in the block diagram, the Camera Mission also includes another mission which is termed as Image Classification Unit (ICU). In addition, it also communicates with the Attitude Determination and Control System (ADCS) and tapped to the GPS line.

As previously discussed, since it is expected that the camera mission shall take photos of the participating countries, the mission needs the exact location of the country and be taken by the camera as the satellite points to Earth. To make sure that this will be achieved the team deemed the need to implement the 'Target Mode'.



Target Mode Process Flow

The key element in order to implement the Target Mode is its access to the GPS module. Participating countries such as Japan, Philippines, and Paraguay are situated in different locations in the globe; therefore, distinct latitude and longitude values. This mode will leverage in this, the GPS data from the module (latitude and longitude) will be compared with the predetermined latitude and longitude as a basis for the camera to capture the image.

In this kind of implementation, it is crucial that the GPS module provides accurate data while the microprocessor used is able to receive such data and parse it to extract the latitude and longitude data.

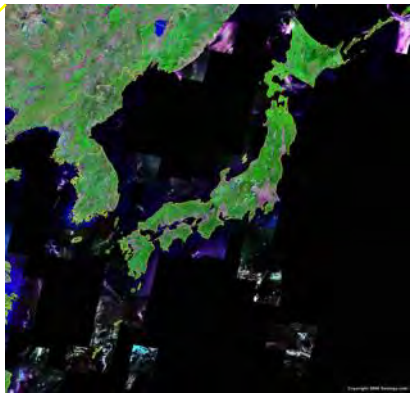
Implementation of Target Mode for BIRDS-4 Camera Mission

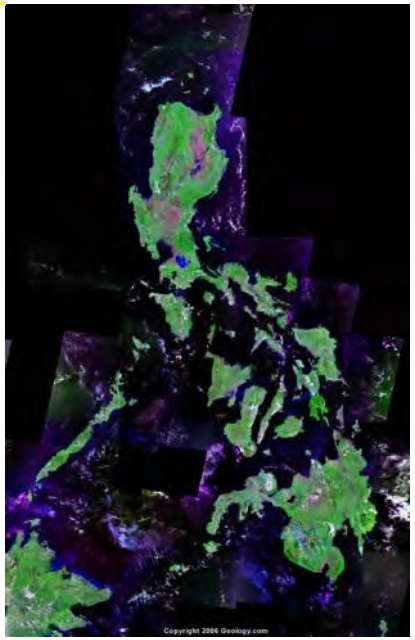
Written By: Mark Angelo C. Purio

The figure illustrates the locations of the participating countries in terms of their coordinates (latitude and longitude) as the basis for the implementation of the target mode.

As of now, the team is still on the process of developing the program to perform the 'Target Mode'. Currently, the program can now obtain data from the GPS module and parse such data to get the needed latitude and longitude locations. Moreover, the program can already execute GPS data comparison to trigger the camera. Moving forward, orbit simulation will also be developed to verify the functionality of the program. More updates will be discussed after the engineering model of the BIRDS-4 satellite is done.

Source: https://geology.com



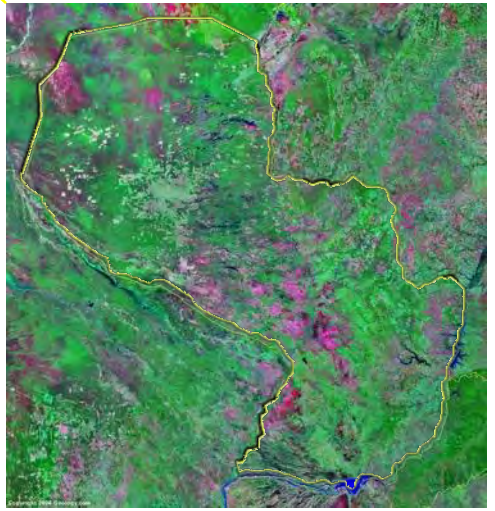


COUNTRY LOCATIONS
(Latitude and Longitude)

Paraguay:
23.4425° S
58.4438° W

Philippines:
12.8797° N
121.7740° E

Japan:
36.2048° N
138.2529° E



Cosmonaut Fyodor Yurchikhin Visits Paraguay

Adolfo Jara

BIRDS-4

May 7, 2019

Cosmonaut Fyodor Yurchikhin Visits Paraguay

Written By: Adolfo Jara

In the framework of the anniversary of the Space Agency of Paraguay (AEP), the Russian cosmonaut Fyodor Yurchikhin visited Paraguay to share his experiences with students and encourage interest in science and space research. The Russian cosmonaut accumulated 673 days in space, which makes him one of the people who has spent more time outside the planet in history. Yurchikhin is an engineer and test pilot of the Russian space corporation "RSC Energy" who has carried out three space missions and 8 spacewalks.

The objective of the visit was to motivate children and young people to scientific research to put into practice the formula of research plus development plus innovation in the field of scientific research and space issues.

For Fyodor Nikolayevich Yurchikhin, a cosmonaut of ROSCOSMOS, the development in the area of science is "all", and the deficiencies of a developing country are not an obstacle for us to expand through knowledge. The main input for that is the new generations, and of that Fyodor is more than sure.

The Russian cosmonaut in his encounter with Paraguayan children

"It was a great experience to meet this new generation of Paraguayan girls and boys who dream of working and experimenting in a space program," he said at the end of his last activity in an AEP classroom, surrounded by young students.

The President of the Republic of Paraguay and the cosmonaut during the meeting held by both

Cosmonaut Fyodor Yurchikhin Visits Paraguay

Written By: Adolfo Jara

Meanwhile, the cosmonaut suggested learning from all the space schools, in addition to Russian, North American, Chinese and Japanese, so that the Paraguayan school has a multidisciplinary vision.

Fyodor Nikolayevich Yurchikhin at his meeting with students at the facilities of the Space Agency of Paraguay

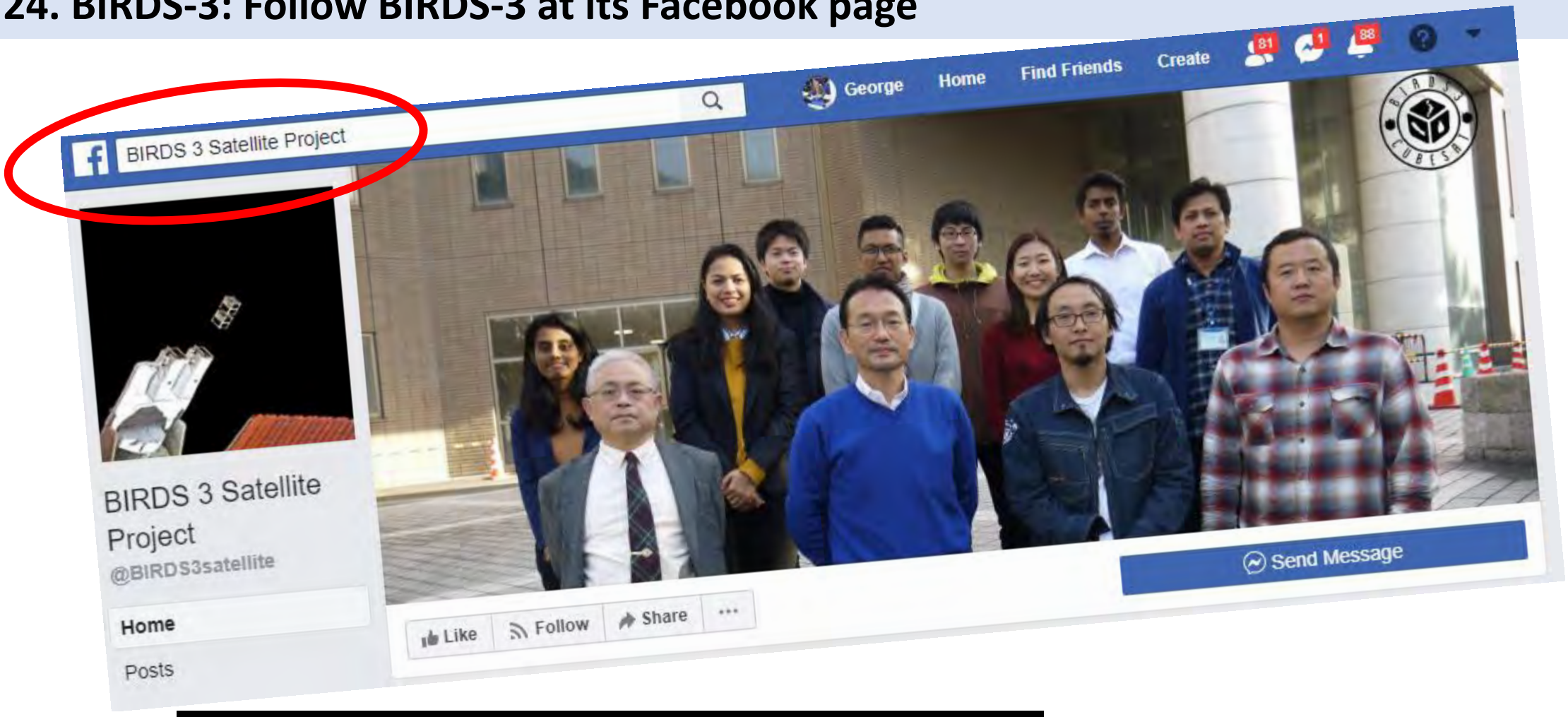
For Fyodor Yurchikhin, communication is key in this process of scientific construction. "You can think that why invest money in this, knowing that there are other priorities, but it is very important to communicate what is being done. For that, the mass media are the key, because they help us to tell why it is important for Paraguay to develop a space program, why it would be great. People often say that health, food, and other things must first be priorities, but ... in what way do you think a building was built, a car was assembled, clothes were designed or even the food one is consuming?... All that is science. Science surrounds us all the time," he argued.

The visit occurred on 25 March 2019.

The End.

Fyodor Nikolayevich Yurchikhin

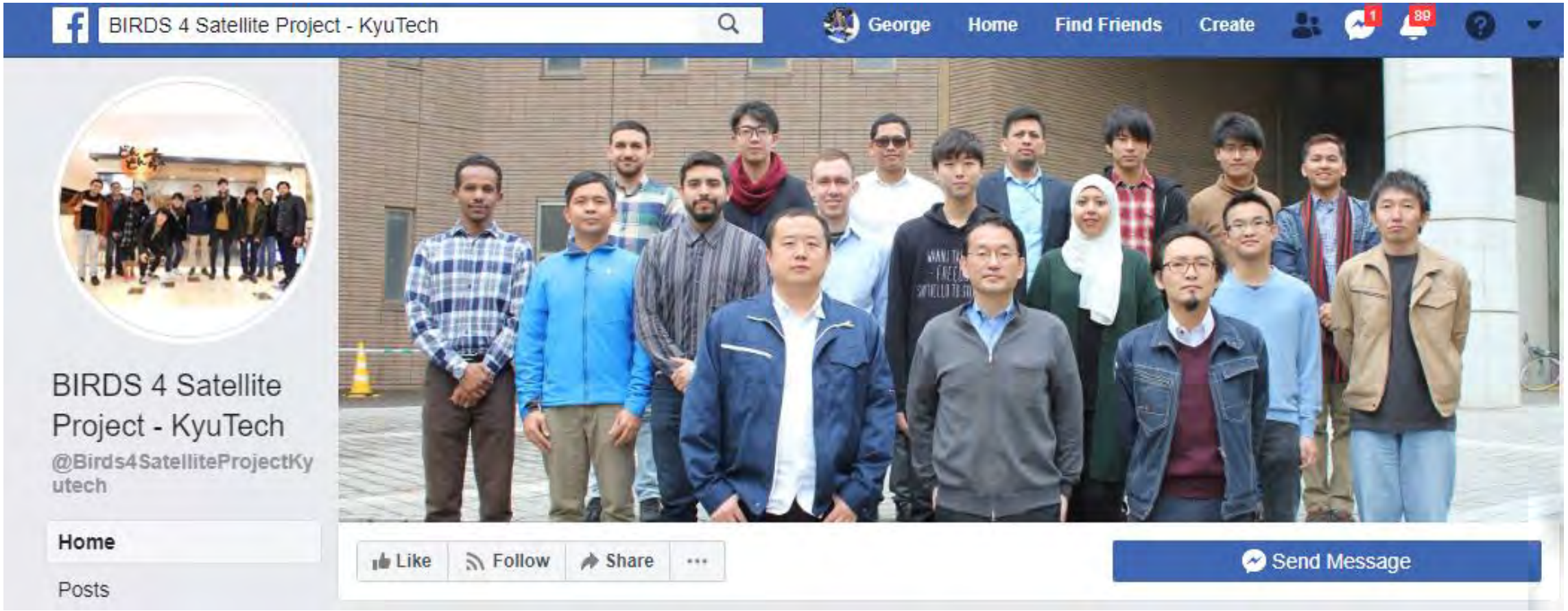
24. BIRDS-3: Follow BIRDS-3 at its Facebook page



Follow BIRDS-3 activities in near real-time at its Facebook page

BIRDS-3 Facebook link:
https://www.facebook.com/BIRDS3satellite/

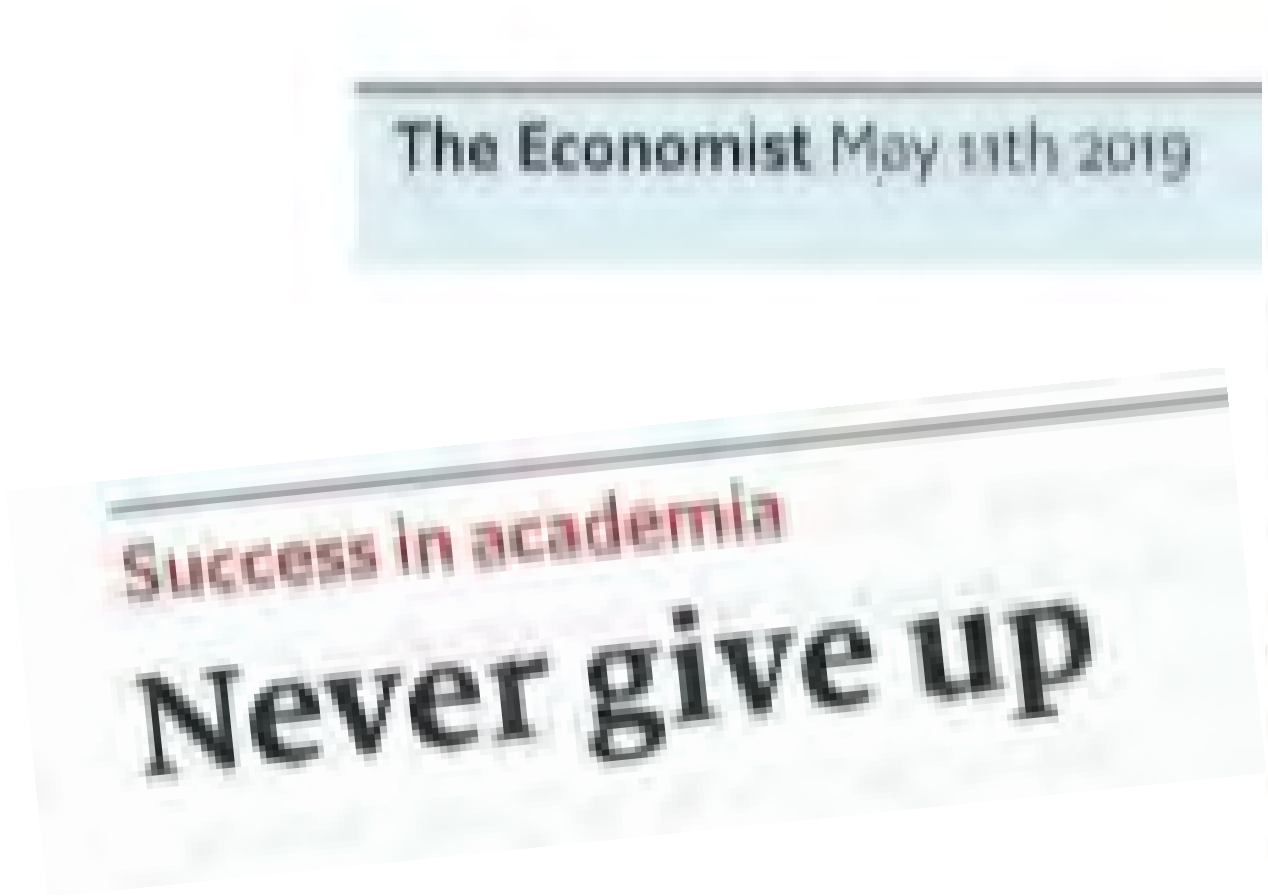
BIRDS-4 is also on Facebook. Check it out.



Link is here:

https://www.facebook.com/Birds4SatelliteProjectKyutech/

25. Success in academia: Never give up



New research confirms the value of an old proverb

IN 1968 ROBERT MERTON, a sociologist at Columbia University, identified a feature of academic life that he called the Matthew effect. The most talented scientists, he observed, tend to have access to the most resources and the best opportunities, and receive a disproportionate amount of credit for their work, thus amplifying their already enhanced reputations and careers. Less brilliant ones, meanwhile, are often left scrambling for money and recognition. Or, as St Matthew puts it (Chapter 13, verse 12), "For whosoever hath, to him shall be given, and he shall have more abundance: but whosoever hath not, from him shall be taken away even that he hath."

The Matthew effect is undoubtedly real. But a more recent piece of research, by Yang Wang, Benjamin Jones and Dashun Wang of Northwestern University, in Illinois, suggests Matthew's verse is not the only relevant aphorism. Another, "If at first you don't succeed, try, try, try again", also seems to be true.

The Drs Wang (who are unrelated) and Dr Jones discovered this by collecting data on grant applications. In particular they examined those submitted between 1990 and 2005 to America's National Institutes of Health (NIH) by junior-level scientists. Rather than analyse every proposal, they focused on two groups of applicants: those who received relatively high scores on their submissions but just missed getting a grant, and those who scored similarly well but just succeeded in being awarded one.

The three researchers found that, rather than automatically holding the failures back, as the Matthew effect might be thought to predict, an early-career setback of this sort was sometimes associated with greater academic success in the long run. Those in the sample who missed out on funding were more likely to drop out altogether from the NIH system than those who won it. That came as no surprise. What did surprise was that those in the near-miss group who persevered and continued to apply for grants after their initial failure outperformed their counterparts who had succeeded first time, as measured by the number of citations of their research that they received over the subsequent ten years. On average, they garnered, over that period, 36% more citations and published 39% more "hit" papers (those with citations in the top 5%) than their near-win counterparts.

True grit

While some of this can be explained by the weakest scientists in the no-grant group giving up, something else is going on as well. The three researchers showed this by removing the lowest-performing scientists from the group that had won grants until its dropout rate matched that of the group that had not. That done, they found that there was still a significant gap between the subsequent performances of the two groups. They thus conclude that other, unobservable, characteristics are at work—the sort of stuff that laymen refer to as "effort" or "grit". ■

End of this **BIRDS Project Newsletter**

(ISSN 2433-8818)

Issue Number Forty

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

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

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