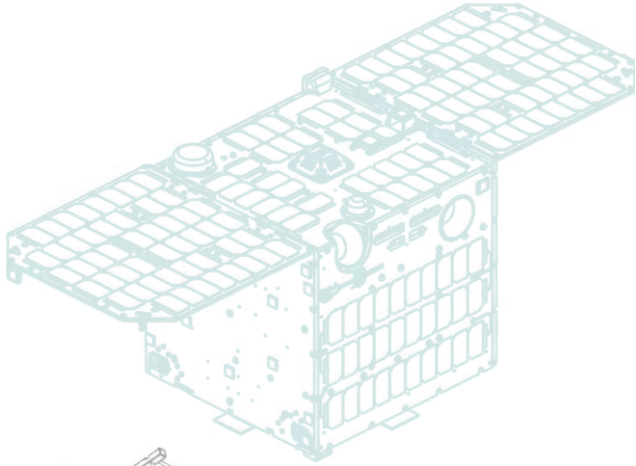
December 1, 2021
Space Education for All – APRSAF-27



The STAMINA4Space Program – Transitioning from State University to Space Agency

Maricor Soriano
Program Leader
Space Technology and Applications Mastery, Innovation and Advancement (STAMINA4Space) Program

PHILIPPINE SPACE TECHNOLOGY DEVELOPMENT

2013

BASELINE RESEARCH ON SPACE ACTIVITIES AND INFRASTRUCTURE

2014

DEVELOPMENT OF DIWATA-1

2015

NATIONAL SPACE DEVELOPMENT PROGRAM

2016

APRIL 27, 2016
DIWATA-1 WAS DEPLOYED FROM THE INTERNATIONAL SPACE STATION

PHILIPPINE GROUND RECEIVING STATION RECEIVED SIGNALS FROM DIWATA-1

2017

DEVELOPMENT OF DIWATA-2

2018

AUGUST 10, 2018
MAYA-1 WAS DEPLOYED TO SPACE

OCTOBER 29, 2018
DIWATA-2 WAS LAUNCHED VIA H-11A ROCKET IN JAPAN

2019

AUGUST 8, 2019
ESTABLISHMENT OF THE PHILIPPINE SPACE AGENCY

NEW SPACE PROGRAM FOR LOCAL CAPACITY DEVELOPMENT

2020

FEBRUARY 21, 2021
MAYA-2 DEPLOYED TO SPACE

2021

OCTOBER 6,, 2021
MAYA-3 and 4 DEPLOYED TO SPACE

2022

DEVELOPMENT OF ADVANCED SATELLITE PLATFORM WITH MULTISPECTRAL IMAGER

PROGRAM

STAMINA SPACE

Space Technology and Applications Mastery, Innovation, and Advancement

1. Get **DATA**
2. Build **INDUSTRIAL BASE**
3. Set up **ENVIRONMENT** for R&D
4. Develop **PEOPLE**

PROJECT COMPONENTS

STAMINA4SPACE

Dr. Maricor Soriano
Program Leader

PROJECT 1
OPTIKAL
Optical Payload Technology, In-depth Knowledge Acquisition, and Localization

Dr. Maricor Soriano
Project Leader

Implementing Institutes:

PROJECT 2
PHL-50
Building PHL-50: Localizing the Diwata-1,2 Bus System as the Country's Space Heritage 50kg Microsatellite Bus

Dr. Marc Caesar Talampas
Project Leader

Implementing Institute:

PROJECT 3
STeP-UP
Space Science and Technology Proliferation through University Partnerships

Paul Jason Co
Project Leader

Implementing Institute:

PROJECT 4
GRASPED
Ground Receiving, Archiving, Science Product Development, and Distribution

Engr. Alvin Retamar
Project Leader

Implementing Institutes:

PROJECT 5
ASP
Advanced Satellite Development and Know-How Transfer for the Philippines

Dr. Gay Jane Perez
Project Leader

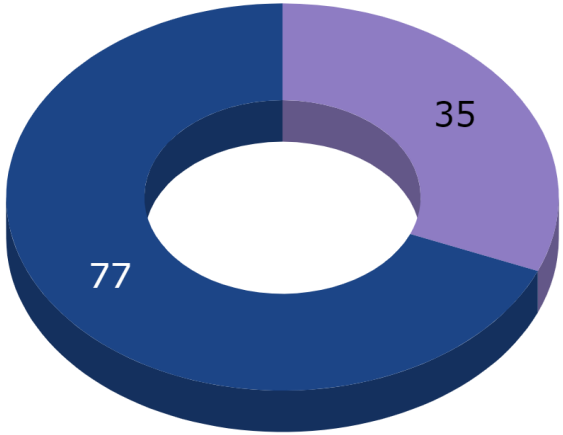
Implementing Institutes:

Director of Space Technology Missions PhilSA

Deputy Director General of PhilSA

DEVELOP PEOPLE

STAMINA4Space Program



TOTAL: 112 members
(personnel, staff, scholars)

STEP-UP Project

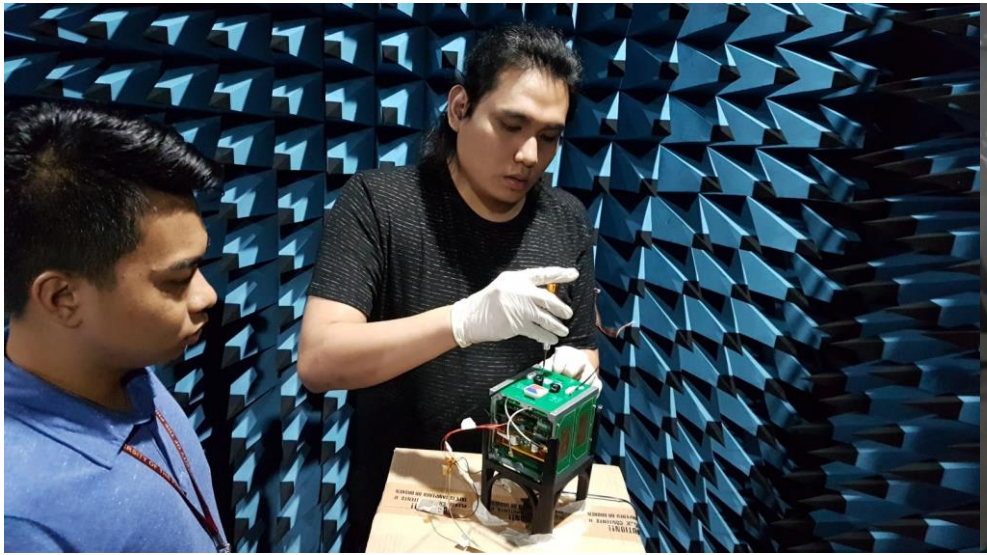
- Offer graduate programs on nanosatellite development
- Develop MAYA nanosatellites locally (with BIRDS project)
- Establish University Space Engineering Consortium (UNISEC Philippines)
- Establish university-based amateur ground station network

ULyS^{3}ES

University **L**aborator**y** for **S**mall **S**atellites and **S**pace **E**ngineering **S**ystems

Features:

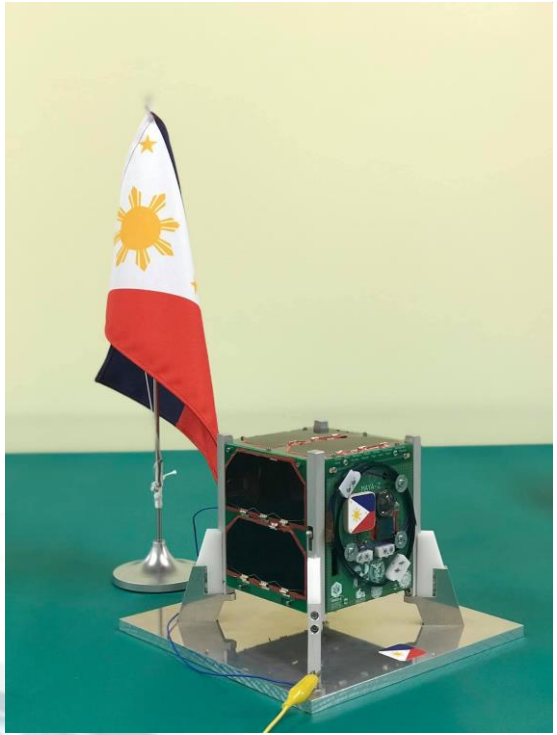
- Lean satellite development
- Small-satellite simulator system (S^4)
- Prototyping equipment
- Full anechoic chamber test facility
- Amateur radio and satellite station
- Graduate students' workstations
- Administration office



Components for University to Space Agency/Industry Transition

- Scholarships from government or interested agencies
- Immersive courses and projects in university
- Availability of positions in Philippine Space Agency and other interested industries

Scholarships



- Studying space tech is expensive
- Scholarship funding can come from government or industries which have use for space tech or system engineering

Immersive Courses

- Space tech is mostly learnt by doing
- Space is not only about the engineering tech
    - Communications
    - Law and Governance
    - Data Science
- Companies can offer on-the-job training as well

Positions for Graduates

- The Philippine Space Agency can only absorb so much.
- There are other industries and agencies which have a need for space
  - Department of Foreign Affairs
  - Department of Environment and Natural Resources
  - Department of Agriculture
  - Mapping companies etc.
  - Aerospace industries

STAMINA4SPACE

sustainable

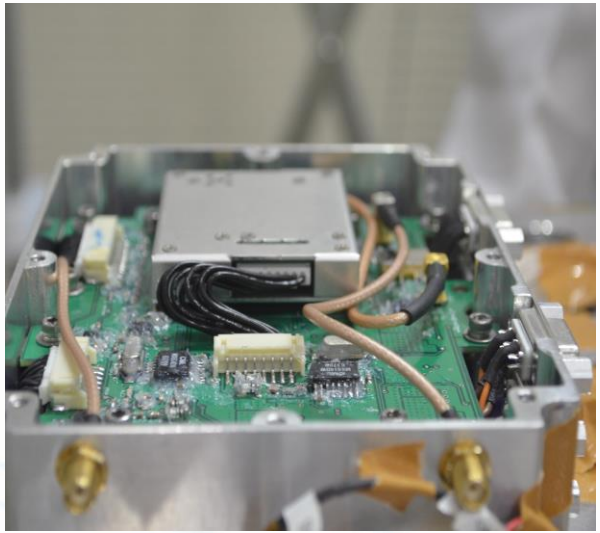
Components for^ University to Space Agency/Industry Transition

- Scholarships from government or interested agencies
- Immersive courses and projects in university with industry
- Availability of positions in Philippine Space Agency and other interested industries/agencies

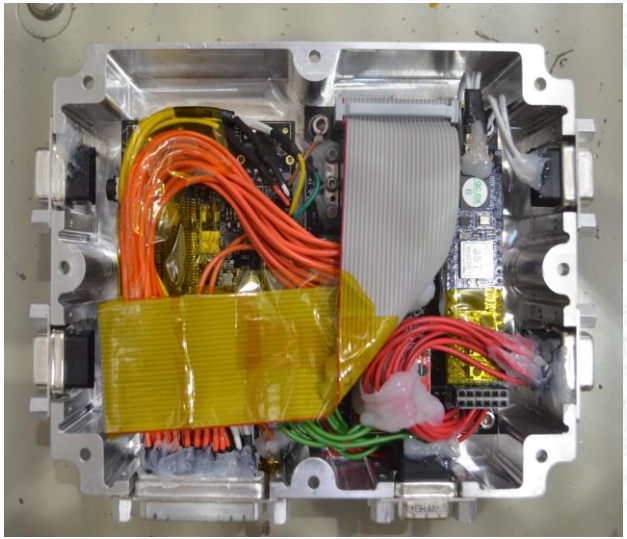
SYNERGY BETWEEN GOVERNMENT, ACADEME, AND INDUSTRY

We are developing a Local Industrial Base

Locally developed Experimental Modules flying with Diwata-2



Amateur ("Ham") Radio Payload



Attitude Control Unit (ACU-Ex)

Sun Aspect Sensor (SAS-Z)

STAMINA SPACE

We are building cameras for remote sensing

HYPIE

Hyperspectral Imaging Camera

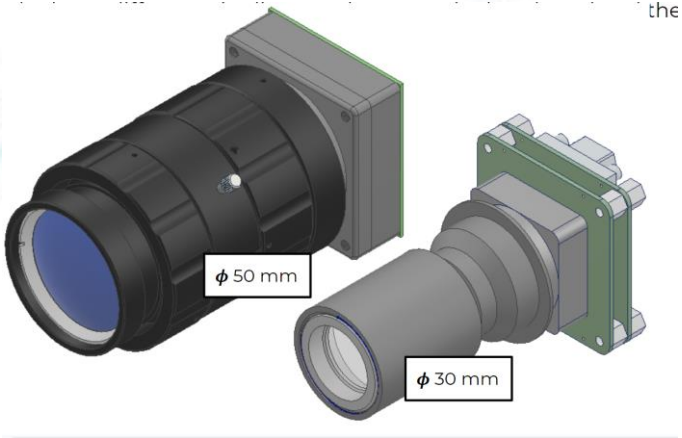
(Airborne Payload)

MALIC-MATA

Multi-Application Line Imaging Camera - Monochrome and Tri-linear Array and

PANCHROMATIC CAMERA

(Spaceborne Payload)



Engaged/currently engaging with/talked to the ff:

PRECISION MANUFACTURING

NSB ENGINEERING
DESIGN AND FABRICATION

VJF

Frias Precision Technologies Corporation

DRZ Precision Toolings, Inc
ISO 9001: 2008 QUALITY MANAGEMENT SYSTEM

WIRE HARNESS AND CABLE ASSEMBLY

MACRO
WIRING TECHNOLOGIES CO. INC.

PCB DESIGN, FABRICATION, AND ASSEMBLY

ARKUS
Philippines

IMES

PYTHOS
...the Filipino can!
PYTHOS TECHNOLOGY PHILIPPINES INCORPORATED

FPGA, DEV KITS, and IP Development

LATTICE SEMICONDUCTOR

esi labs

SMARTFOX
DATA SOLUTIONS, INC.
STAMINA SPACE

*2 of these companies are PhilGEPS-registered
*The program have encouraged 4 more companies to register

The STAMINA4Space and PHL-Microsat programs are funded by the **Department of Science and Technology (DOST)**, monitored by **DOST-Philippine Council for Industry and Emerging Technology Research and Development (PCIEERD)**, and implemented through the collaboration between the **University of the Philippines Diliman**, the **DOST-Advanced Science and Technology Institute (ASTI)**, and Hokkaido University and Tohoku University in Japan.

Funded by

Monitored by

In collaboration with

STAMINA4SPACE