Philippines Promotes Technological Self-Reliance: Achievements, Current Activities and Future Plans on Space Technology Applications

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UNITED NATIONS/COSTA RICA
WORKSHOP ON HUMAN
SPACE TECHNOLOGY

Outline

- Status of Philippine Space Development
- Government’s Key Result Areas / Outcomes
- Space Technology Applications & Utilization
- Human Space Technology Initiatives
- Future Plans
- Recommendations

Philippines

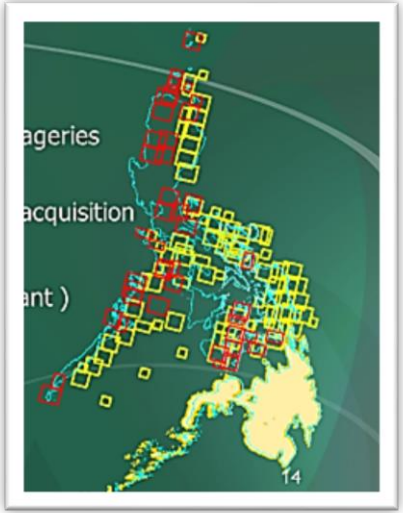
Southeast Asian country
Newly industrialized country
Comprising 7,100 islands
Population – 98.39 Million
Tropical country – visited by almost 20 typhoons /yr
300,000 square kilometers. (115,831 sq mi)

History

Optical and Radio Astronomy since 1897
Project Santa Barbara in the 1970s
Agila-2 Telecom Satellite in 1990s
Committee on Space Technology Applications
Space Science Education Program
National Astronomy and World Space Week
HB 6725 Philippine Space Act of 2012
10-year Baseline Research of Space Technology Applications (SSTA)
Philippine Microsat Program
Pedro Ground Receiving Station and Data Center
National Space Development and Utilization Policy and National Space Agency
National Space Development Program

Overview of Space Technology Applications in the Philippines

- Astronomical Observation
- Satellite data acquisition from free and commercial sources
- Developing a broad range of space technology applications



Status of Philippine Space Development

- Disregarded for more immediate concerns such as food security, poverty alleviation and economic growth
- Has no direct access to space
- Highly reliant on foreign satellites for data and communications
- Lack of a functional space policy and agency hampered the country’s ambition to become a space-capable nation

Status of Philippine Space Development

- Lack of critical mass of trained local experts in astrophysics, aerospace engineering and related fields
- Small space industry sector in the country, composed mainly of aerospace companies focusing on the aviation sector as it is more economically viable

Agencies Involved

GOVERNMENT

DOST	DENR	DOTC
PAGASA	NAMRIA	NTC
PHIVOLCS	MGB	PADC
PCIEERD	FMB	CAAP
SEI	LMB	MMDA
ASTI	DA	OCD - NDRRMC
ICTO	BSWM	DEPED
DTI - BOI	BAS	CHED

ACADEME

PUBLIC	PRIVATE
UP	ADMU
MMSU	MO
ISU	MIT
CLSU	ADNU
CSU	USC
MSU-IIT	
RTU	
PHILSCA	

INDUSTRY

AIAP

National Space Development Program (NSDP) (2015-2025)

1. Serve as the primary strategic roadmap for space development until 2025
2. Help address national issues and concerns
3. Space promotion, advancement and capability expansion

Goal: To become a space-capable and space- faring nation by 2025

Space Policy Framework

Key Development Areas (KDAs):

1. National Security and Development
2. Hazard Management and Climate Studies
3. Space Research and Development
4. Space Industry Capacity Building
5. Space Education and Awareness
6. International Cooperation

Philippines Promotes Technological Self-Reliance: Space technology is out there, but we should have mastery over these technologies for us to continue and come up with appropriate programs that can directly benefit our people

Philippines Social Contract

Poverty Reduction and Empowerment of the Poor and Vulnerable

Rapid, Inclusive and Sustained Economic Growth

Integrity of the Environment and Climate Change Adaptation and Mitigation

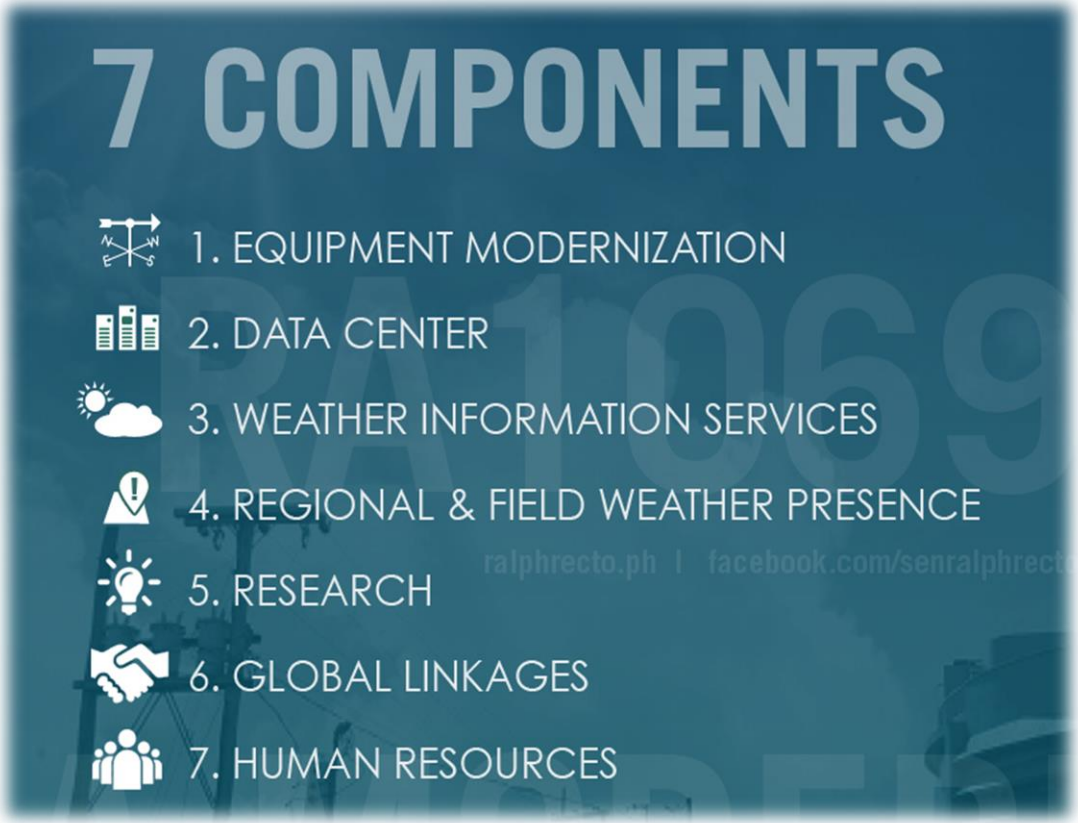
Key Result Areas

OUTCOMES

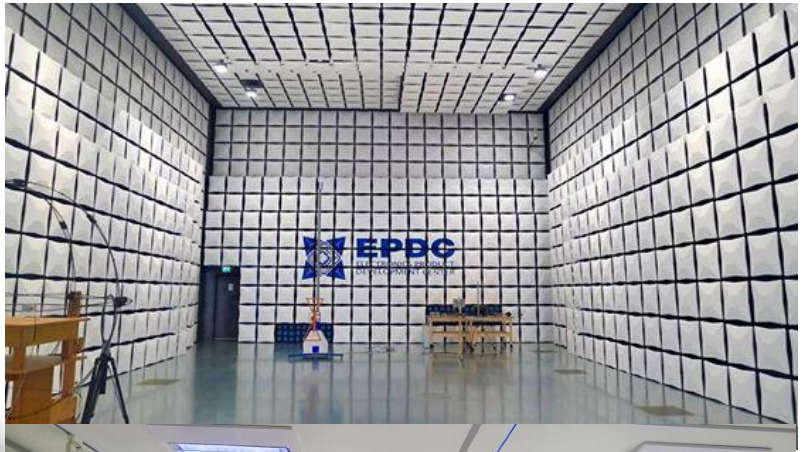
1. Innovative, Cost-effective and Appropriate Technologies
2. State-of-the-art Facilities to Move up the Value Chain and Attain Global Competitiveness
3. Science-based Weather Information and Climate Change Scenarios for a Disaster and Climate Change Resilient Philippines
4. Highly Skilled and Globally Competitive S&T Human Resources

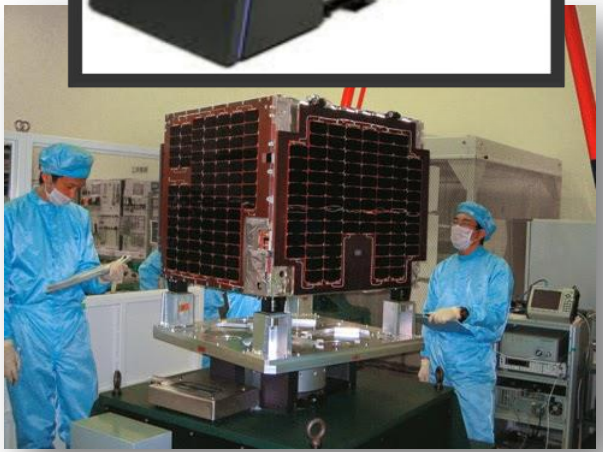
1. Innovative, Cost-effective and Appropriate Technologies

In November 3, 2015, the **Republic 10692** providing for the modernization of the **Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA)** was signed by the Philippine President.

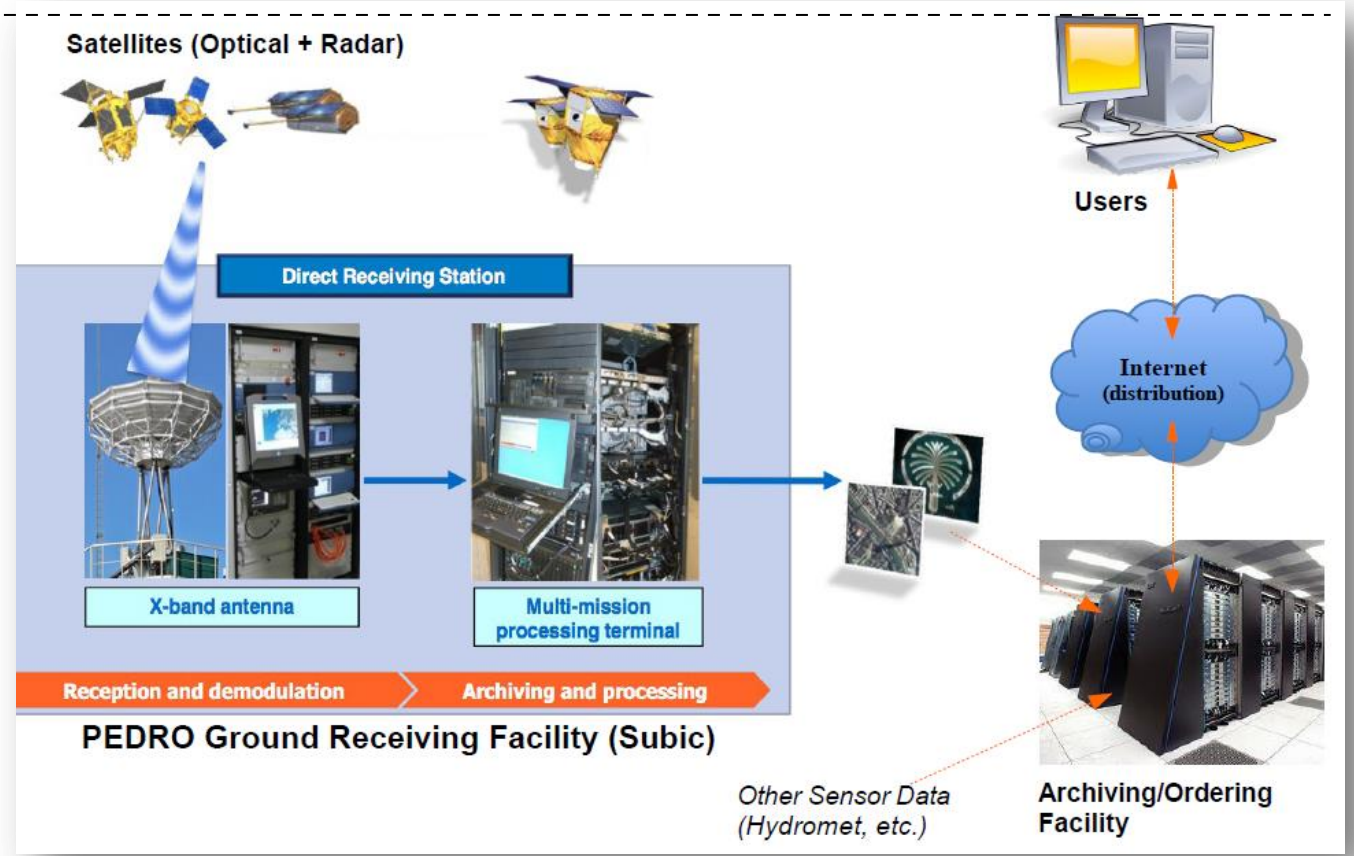


2. State-of-the Art Facilities





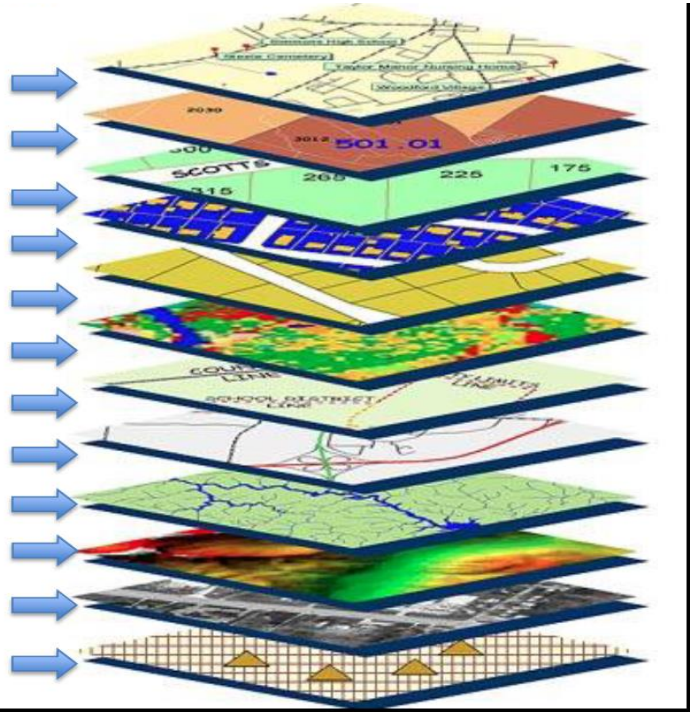
Philippine Earth Data Resource Observation (PEDRO) Center



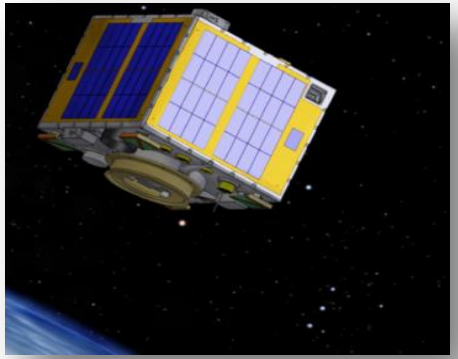
36 STA Facilities with selected Higher Education Institutions Nationwide

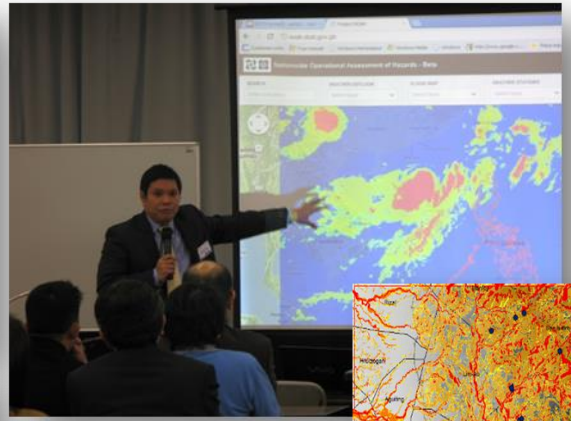
Developing Solutions for Various Applications

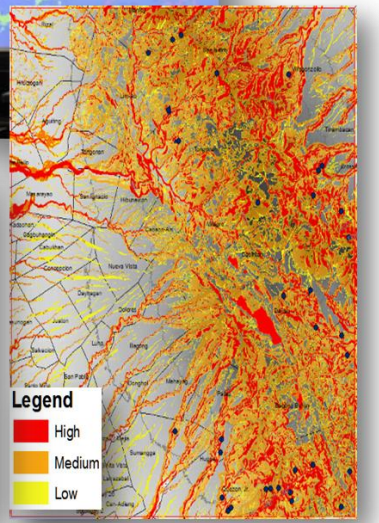
CC-GAP LAYERS
Leptospirosis incidence
Dengue vector incidence
Coral reef diversity and abundance
Coastal and marine ecosystems
Aquatic ecosystems
Forestry ecosystems
Agricultural ecosystems
Renewable energy sources
Populations (Demographics)
Infrastructure
METEOROLOGICAL DATA SETS (weather, seasonal, climate change)
HI-RESOLUTION 3-D MAPS



3. Science-based Weather Information and Climate Change Scenarios for a Disaster and Climate Change Resilient Philippines







4. Highly Skilled and Globally Competitive S&T Human Resources

PHIL-MICROSAT Team

Space Technology Applications Team

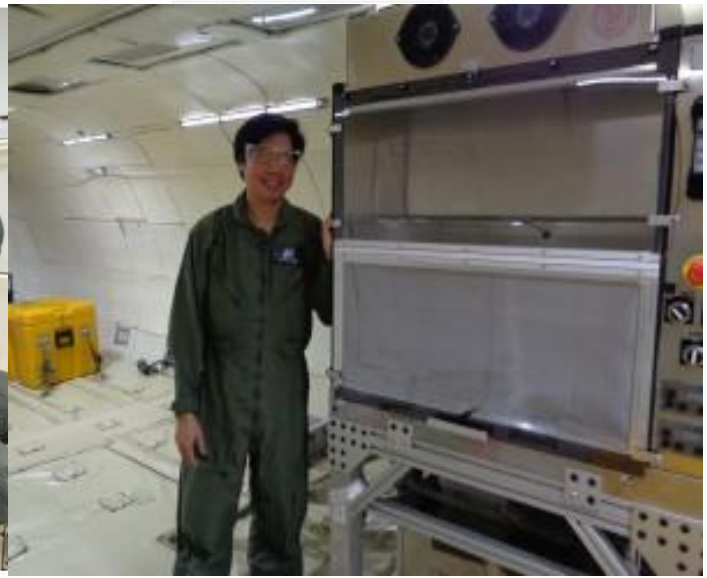
Filipino scientist helps make cooking on Mars possible

SHARES: 7406
VIEW COMMENTS

By: Anthony Advincula
@inquirerdotnet

INQUIRER.net US Bureau
11:38 AM September 22nd, 2014

A Filipino scientist with Cornell team helped develop a low-gravity space galley for cooking in space



First Philippine Microsatellite to be Deployed from Kibo

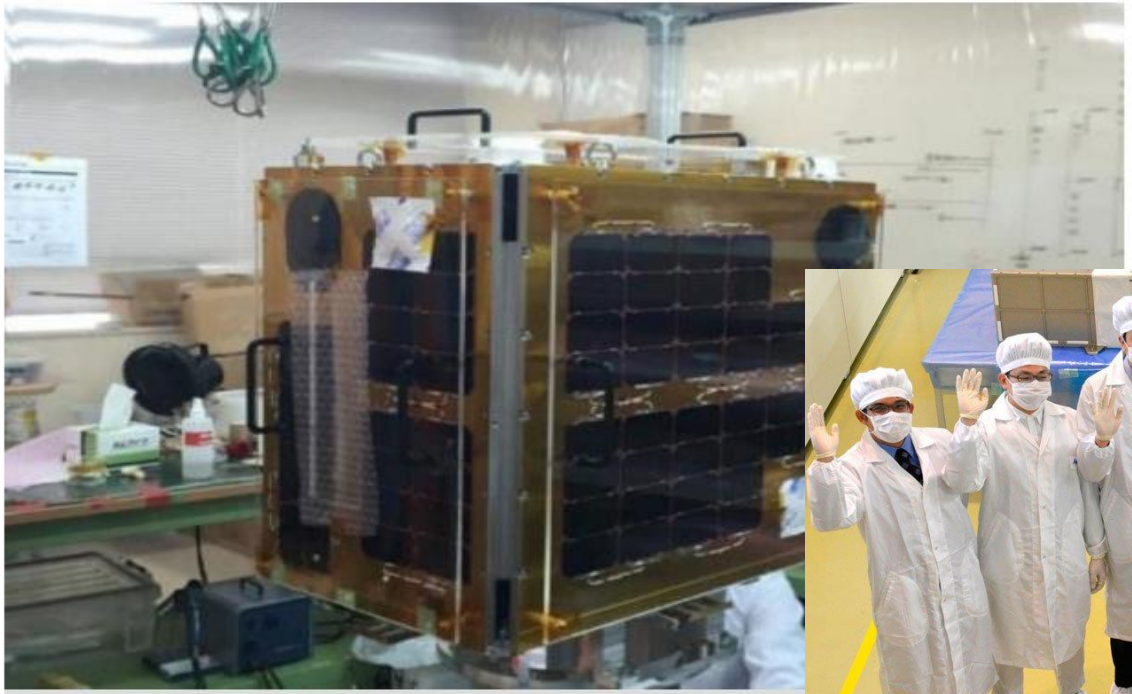
On January 13, 2016, the first Philippine-assembled microsatellite, DIWATA-1, was handed over to the Japan Aerospace Exploration Agency to be deployed from the Japanese Experiment Module “Kibo” in the International Space Station (ISS).

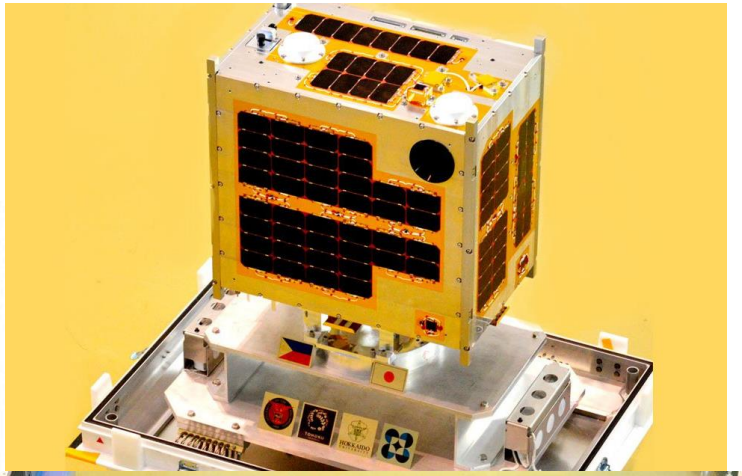
The 50kg class earth observation satellite to be launched in April 2016 was developed by Philippine researchers and engineers sent to Japan with support from two Japanese universities: Hokkaido University and Tohoku University. Another model will be launched in 2017

It is expected to contribute to the country’s weather forecast, disaster management, and to help provide other environmental solutions.

Diwata-1 may pave way for local satellite-building industry

By Rainier Allan Ronda (The Philippine Star) | Updated January 18, 2016 - 12:00am



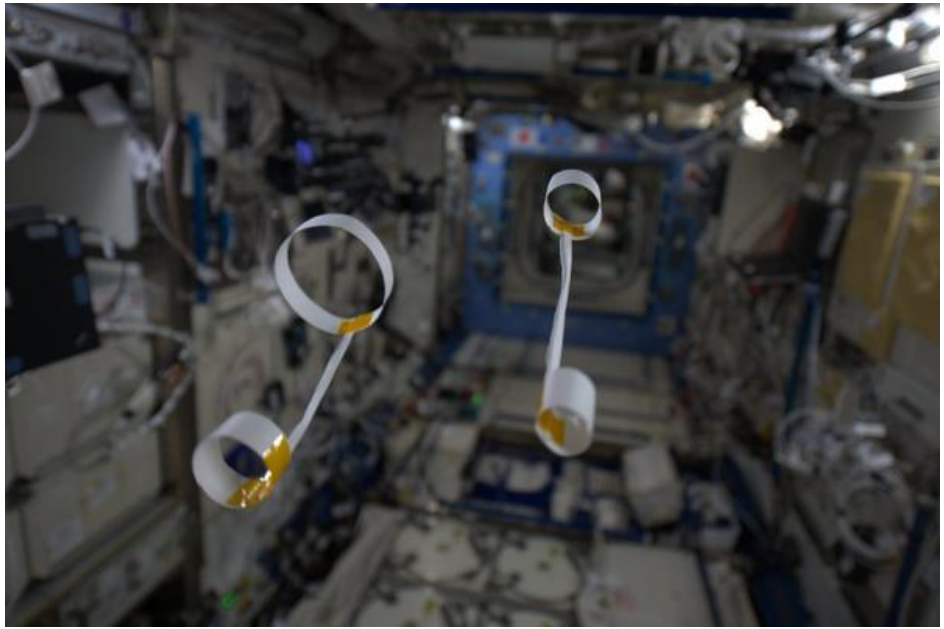


The Philippines handed over last week Diwata-1 to the Japan Aerospace E
which will arrange the shipment of the 50-kilogram microsatellite to the US
launched into space in April. **DOST photo**

Philippine participation in Kibo-ABC Try-Zero G Program

Participated in the ABC workshop on November 30th, 2015

Philippine Science High School (PSHS) - Central Luzon campus' hoop glider experiment on board the Kibo module of the ISS



https://twitter.com/Astro_Kimiya/status/634843079158169600/photo/1

Space Science Education

XVII world space week
celebration

October 5-7, 2015
BP International-Makiling
Jamboree Site, University of the Philippines
Los Baños, Laguna

Two Filipina in shortlist to join Mars space voyage in 2026

Jaymee del Rosario (left) and Minerva Raneses (right). Del Rosario is the founder of International Metal Source, which distributes raw material metals and exotic alloys to aerospace, defense and commercial industries since 2009.
Both are willing to exchange their profession for the outer space endeavor.

Synergy in Providing Products to End-Users

Sharing Solutions in Regional and International Events

APRSAF 21

ACRS 2015

IAC 2015 Jerusalem

66th International Astronautical Congress
12-16 October, 2015, Jerusalem, Israel

ADRC

GeoSmart Asia 2015

Regional Cooperation

UN-Economic and Social Commission for Asia and the Pacific (UN-ESCAP)
ASEAN-COST - Subcommittee on Space Applications (SCOSA)
Asia-Pacific Regional Space Agency Forum (APRSAF) – Sentinel Asia

Asian Association on Remote Sensing (AARS)

International Cooperation

Committee on the Peaceful Uses of Outer Space (COPUOS)


MEXT
JAXA
23RD
APRSAF
ASIA-PACIFIC REGIONAL
SPACE AGENCY FORUM
PHILIPPINES
THE 23RD SESSION OF THE
ASIA-PACIFIC REGIONAL
SPACE AGENCY FORUM
BUILDING A FUTURE THROUGH SPACE SCIENCE, TECHNOLOGY, AND INNOVATION
NOVEMBER 15-18, 2016
SOFITEL, MANILA
PHILIPPINES
CO-ORGANIZED BY THE DEPARTMENT OF
SCIENCE AND TECHNOLOGY (DOST),
DEPARTMENT OF FOREIGN AFFAIRS (DFA)
MINISTRY OF EDUCATION, CULTURE, SPORTS,
SCIENCE AND TECHNOLOGY OF JAPAN (MEXT),AND
JAPAN AEROSPACE EXPLORATION AGENCY (JAXA).
I
MANILA

Space Development Long-Term Goals

Space Technology Applications for Nation-Building

Indigenous Satellite Development Capability

Indigenous Rocket and Missile Launch Capability

Pool of Filipino SSTA Scientists and Engineers

Robust and Thriving Space Industry and Economy

Strong International Linkages and Cooperation

Satellite Requirements for the next 15 yrs

Satellite	Specification	Timeline
Telecommunications	3,000 kg (large satellite) ~ 36,000 km C-band and Ku-band / 60 transponders	7 yrs (2017-2023) Dev't to testing
Earth Observation	Three 70 kg (microsatellite) ~ 500 km S-band / 2 optical and 2 SAR	4 yrs (2017-2020) Dev't to testing
Meteorological	600 kg (medium-sized satellite) Ku-band / 1 visible and 1 IR	TBD
Atmospheric and Climate Studies	50 kg (microsatellite) Ku-band / 1 visible and 1 IR	TBD
Space Education / R&D	3 kg (nanosatellite)	TBD

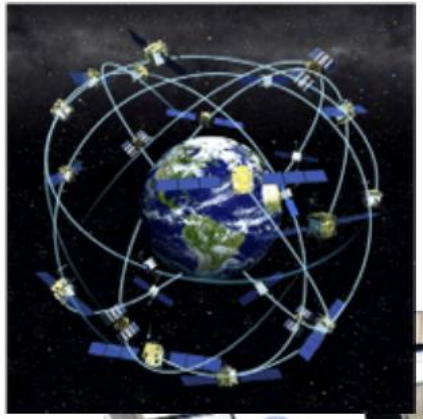
PH Space Development Timeline

For a competitive and sustainable space program and industry, the Philippines needs:

- to invest an amount of at least **PHP 21.875 billion in the next 10 years;**

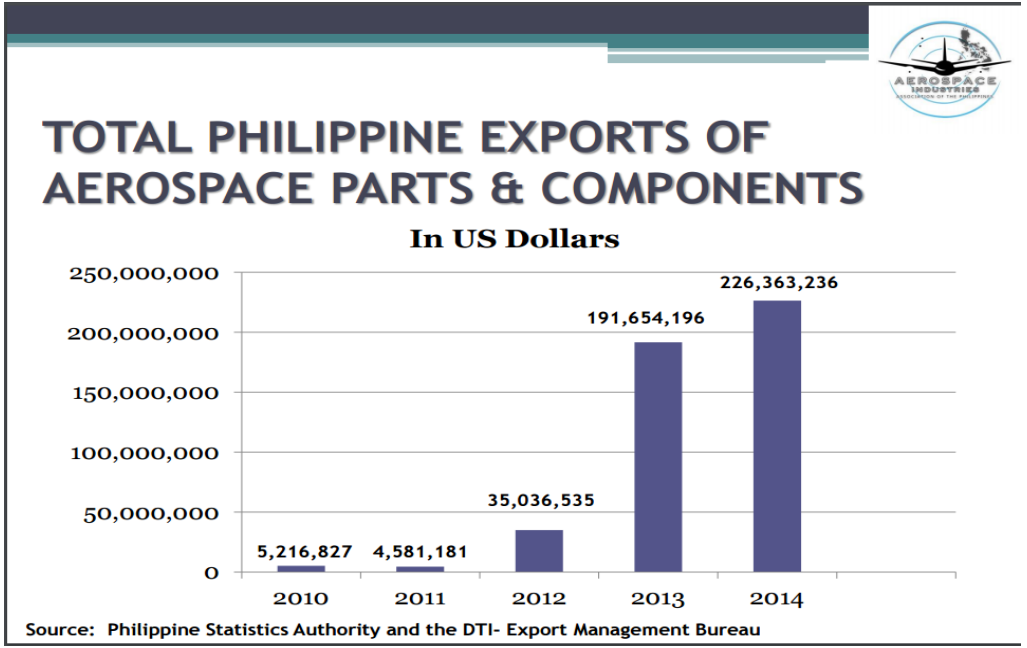
- at least **800 trained aerospace scientists and engineers within the next 10 years**.

- ensure that space technology can provide benefits for Filipinos;



To be globally competitive

- Need to provide a conducive environment for aerospace companies willing to invest in the country
- Need a strong national space policy committed to space industry development
- Strong international linkages



Potential of Philippine Aerospace Industry

MB HOME NEWS BUSINESS SPORTS ENTERTAINMENT LIFEST

PH aerospace exports to top $1 B in 2015

by **Bernie Magkilat**

April 21, 2015

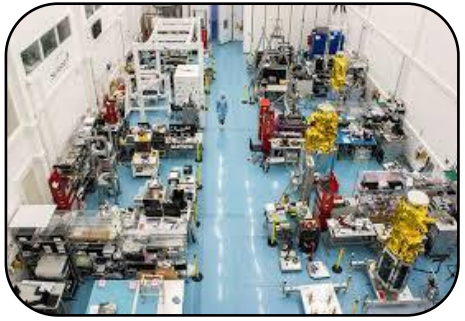
AEROSPACE INDUSTRIES ASSOCIATION OF THE PHILIPPINES

Philippine Aerospace Development Corporation

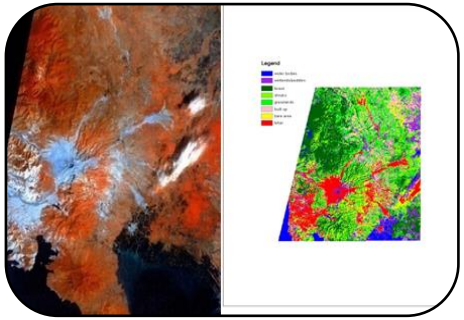
boi PHILIPPINES BOARD OF INVESTMENTS

Niche areas for the Philippines

Space Sub-Systems Manufacturing



Satellite Assembly, Integration and Testing



Space Applications Development

Space Launch Services

We call on the continued support of space capable nations to help bridge the gaps

Thank you

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