Vietnam Academy of Science and Technology (VAST)
VIETNAM NATIONAL SPACE CENTER (VNSC)

27TH APRSAF
ASIA-PACIFIC REGIONAL SPACE AGENCY FORUM
ONLINE

INTERNATIONAL COOPERATION ON SPACE ENGINEERING EDUCATION IN VIETNAM

Dr. Le Xuan Huy
Vice Director General

December 1, 2021

Government's strategies

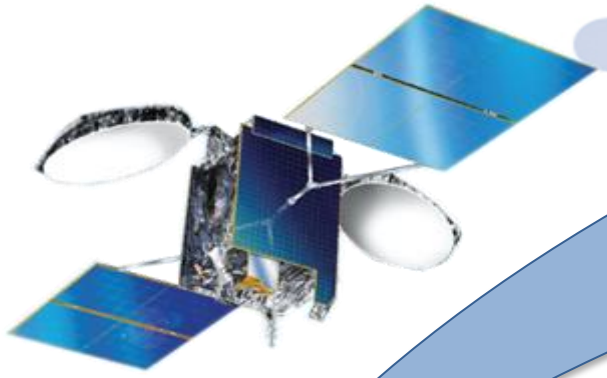
1. Strategy for development and application of space science and technology towards 2030 (approved on February 4th, 2021)

The strategy's overall goal is to widely apply achievements of space science and technology; selectively invest in some areas related to national defence, security, and management of natural resources and the environment; and improve the country's scientific and technological capacity.

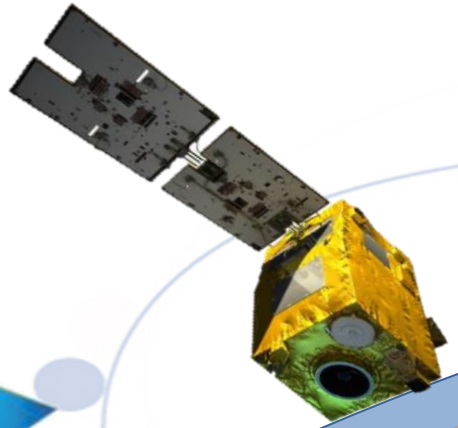
2. National remote sensing development strategy by 2030 with a vision towards 2040 (approved on February 1st, 2019)

By 2030, Vietnam will master manufacture technology of RS satellites, receiving station system, processing of RS data, RS satellite stations,…; build systems to collect and process of national RS data in favor of socio-economic development, national defense and security

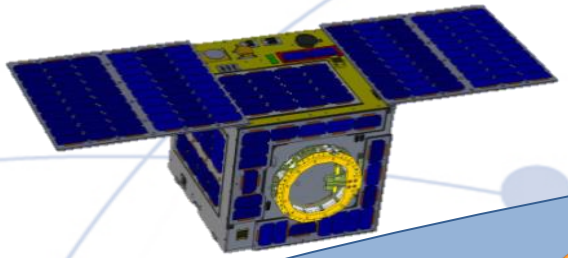
Vietnam Satellites



2008:
VINASAT-1
VNPT



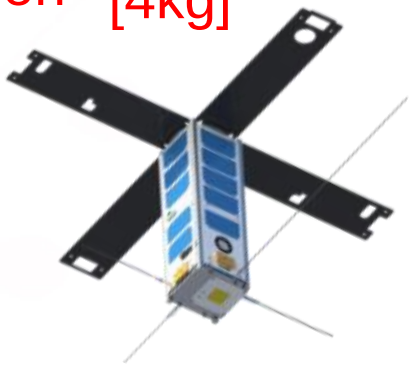
2012:
VINASAT-2
VNPT



2013:
VNREDSat-1 [120kg] –
STI/MONRE
PicoDragon [1kg]

1/2019:
MicroDragon [50kg]

2021:
NanoDragon [4kg]



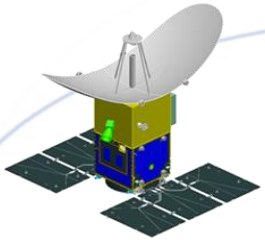
2023:
LOTUSat-1 [570kg]

© NEC

Managed and developed by other agencies

Managed and developed by VNSC

On-Going Infrastructures in Vietnam



Vietnam Space Center

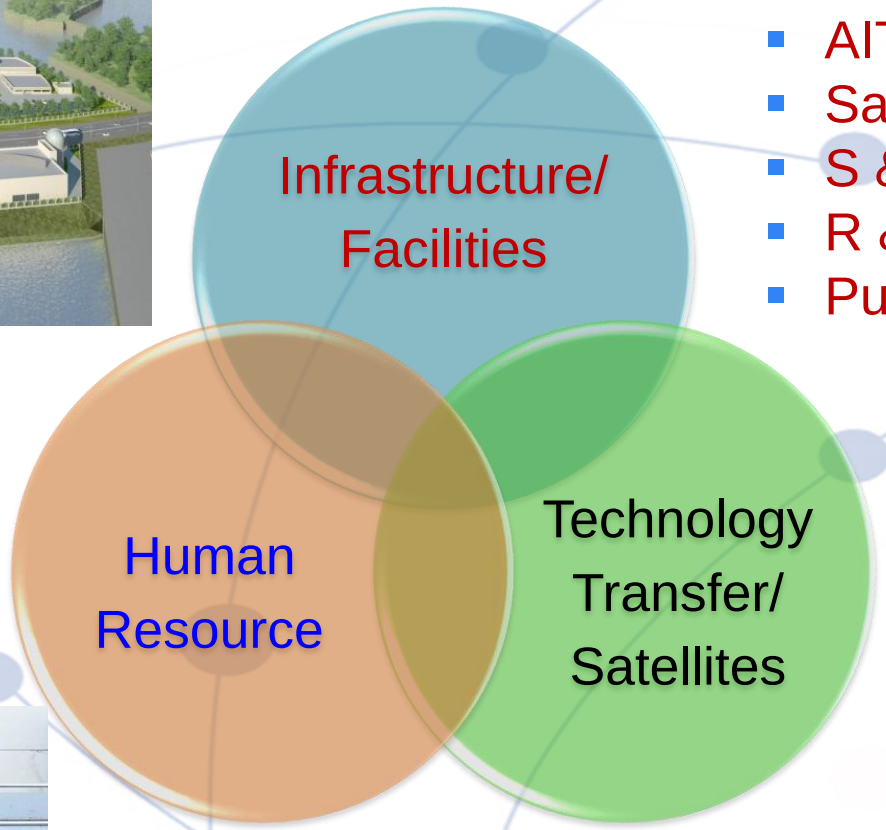
- R & D Center, AIT Center
- Mission Data Utilization Center
- Satellite Operation Center
- LOTUSat-1 SAR Satellite

- VNREDSat-1 Satellite
- VNREDSat-1 Operation Center

MONRE National Remote Sensing Center

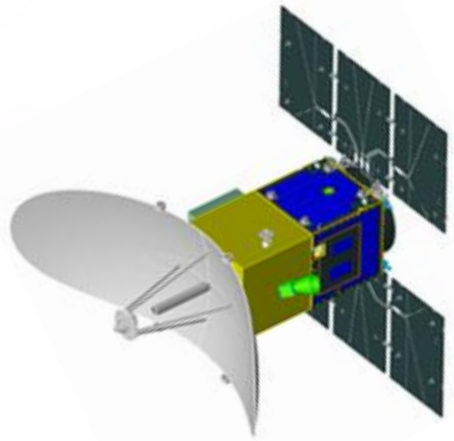
2008 2013 2018 2023

Vietnam Space Center Project



- AIT facilities for small satellites.
- Satellite operation center
- S & X-band ground station
- R & D facilities
- Public education in space

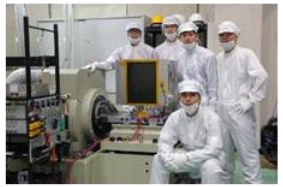
Capacity Building for Satellite Development

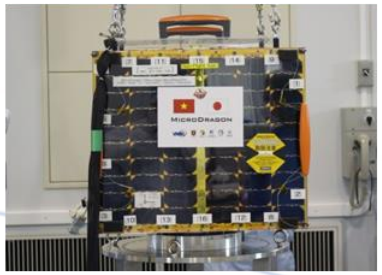


- SAR EO satellites
- Utilization of satellite SAR image

Education and Technology Transfer

Basic course 36 master in 5 Japanese Universities





MicroDragon (50 kg)

Successful launch and receive data on Jan. 18, 2019

Advance course

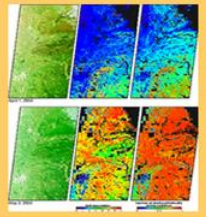
Space Segment

- Project Management
- Satellite technologies
  - ✓ Mission Design
  - ✓ AIT
  - ✓ Launch
- Support Technologies
  - ✓ Design and manufacture Subsystem

Ground Segment

- Ground Station Technologies
  - ✓ Bus system operation
  - ✓ Mission control
  - ✓ TLM control
- On-orbit operations
  - ✓ Mission management

Users Segment



- Data ultilization technologies
  - ✓ GIS
  - ✓ Remote sensing
  - ✓ GNSS
- Ground networks system

LOTUSat-1 (570 kg)

WGCapD

The Working Group on Capacity Building and Data Democracy

SAR training workshops

Please join us for a CEOS webinar

GROUND MOTION FROM SPACE

Organizer: Vietnam National Space Center (VNSC), VAST

Fri. Oct. 15th, 2021, 8-9pm Hanoi Time / 9-10am EDT

To join the meeting from your computer, tablet, or smartphone visit:
https://www.gotomeet.me/WGCapD/vnsc-webinars

Webinar Overview

Monitoring ground motion is critical to mitigate related hazards. How to measure it precisely for large scale? SAR interferometry (InSAR) allows measuring large scale land motion with unprecedented spatial resolution and accuracy from space. The talk is about: (1) to provide a better understanding of the capabilities of the InSAR for measuring the ground subsidence; (2) to demonstrate examples in Hanoi, Ho Chi Minh city and the Mekong; (3) to highlight the implication on a new Vietnam X-band SAR mission (JV-LOTUSat) which has been scheduled for launch for the 2023 timeframe.

Speaker:

Dr. Habil. Dinh HO TONG MINH (Dinh.Ho-Tong-Minh@inrae.fr)
- Engineering (2003) & Master (2005), HCMUT, Vietnam
- Doctor (2013), Politecnico di Milano, Italy
- Doctor Habilitation (2019), University of Montpellier, France

https://www.researchgate.net/profile/Dinh-Ho-Tong-Minh

Moderator:

Prof. Dr. Le Trung Chon (ltchon@hcmut.edu.vn)
Dr. Pham Thi Mai Thy (ptmthy@vnsc.org.vn)

This webinar is brought to you by the CEOS Working Group on Capacity Building and Data Democracy (WGCapD)

Please join us for a CEOS webinar

AGRICULTURE MONITORING USING SAR DATA IN THE VIETNAM MEKONG DELTA

Organizer: Vietnam National Space Center (VNSC), VAST

Mon. Nov. 15th, 2021, 8-9pm (Hanoi Time)/ 3-4pm (CEST)/ 9-10am EDT

To join the meeting from your computer, tablet, or smartphone visit:
https://www.gotomeet.me/WGCapD/vnsc-webinars

Webinar Overview

In Vietnam and in the Mekong region, rice agriculture plays a crucial role in both food security and climate change. Increasing temperatures, droughts and water salinity will decrease the rice productivity, and meantime, due to rising sea level, salinity intrusion, soil erosion, the land suitable for rice cultivation will be significantly reduced.

Rice monitoring using SAR data has become more effective in the last few years, with the widely accessible Sentinel-1 data. In this presentation, we will share information from our studies on the monitoring of rice area in the Mekong delta. The focus will be on the changes observed in the last 5 years, on land use, on rice harvested area, rice calendar, and rice cropping density . The impacts of drought, flood, and salinity intrusion on these observed changes will be discussed, and the approach to simulate crop production in future climate scenarios will be outlined.

Speaker:

Dr. Thuy Le Toan (CESBIO)
Dr. Lam Dao Nguyen (VNSC)

Moderator:

Prof. Dr. Le Trung Chon (ltchon@hcmut.edu.vn)
Dr. Pham Thi Mai Thy (ptmthy@vnsc.org.vn)

This webinar is brought to you by the CEOS Working Group on Capacity Building and Data Democracy (WGCapD)

CEOS Committee on Earth Observation Satellites

➔ https://training.ceos.org/

Main Vietnam capacity building programs

- Mission (Imagers using LCTF)
- Mission (S&F)
- ADCS
- Funding (through ODA loan)
- Human Resource (36 students)
- Frequency Application
- Operation & Control

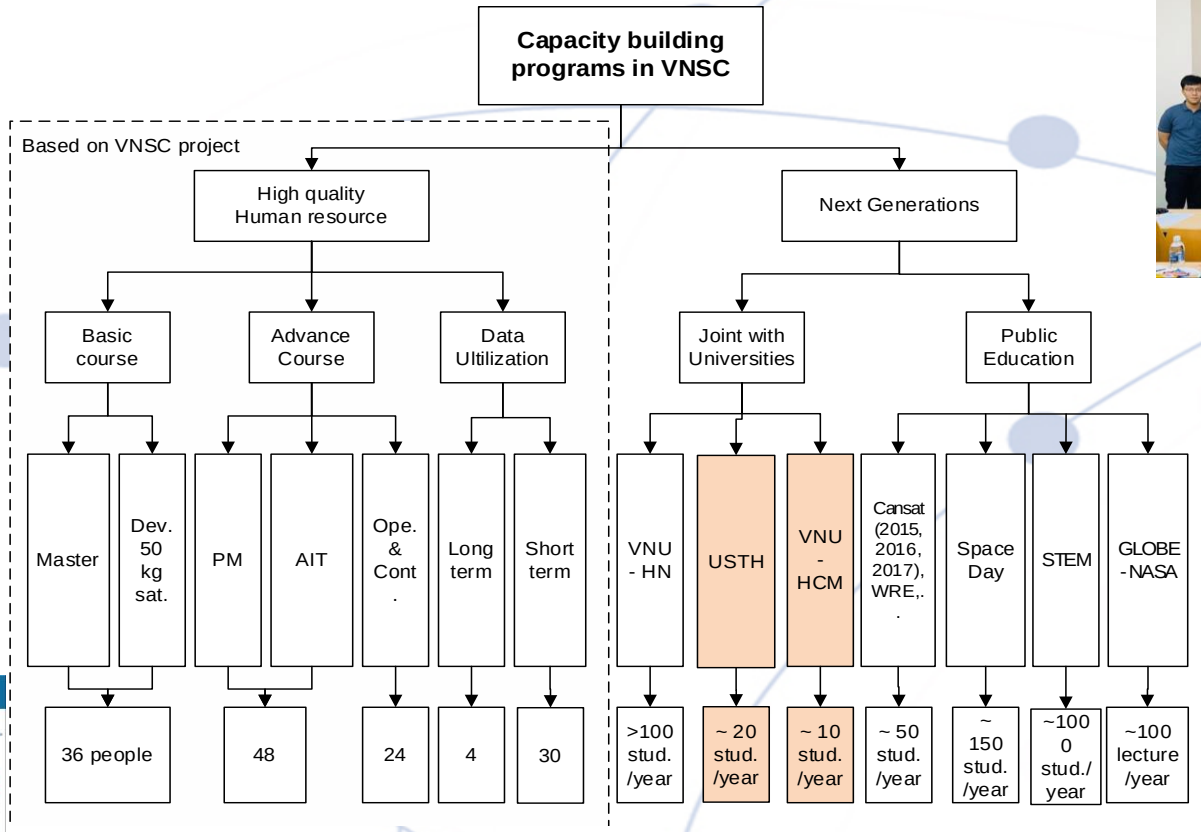
MicroDragon Project

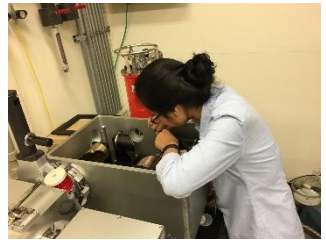
- Integration
- Electrical & Function Test
- Structure & Thermal
- Environment Tests
- Project Management
- Bus Development
- Rocket IF

JAXA/IHI — Launch Service (Innovative Satellite Technology Demonstration Program)

Via Vietnam Space Center Project

Vietnam France University





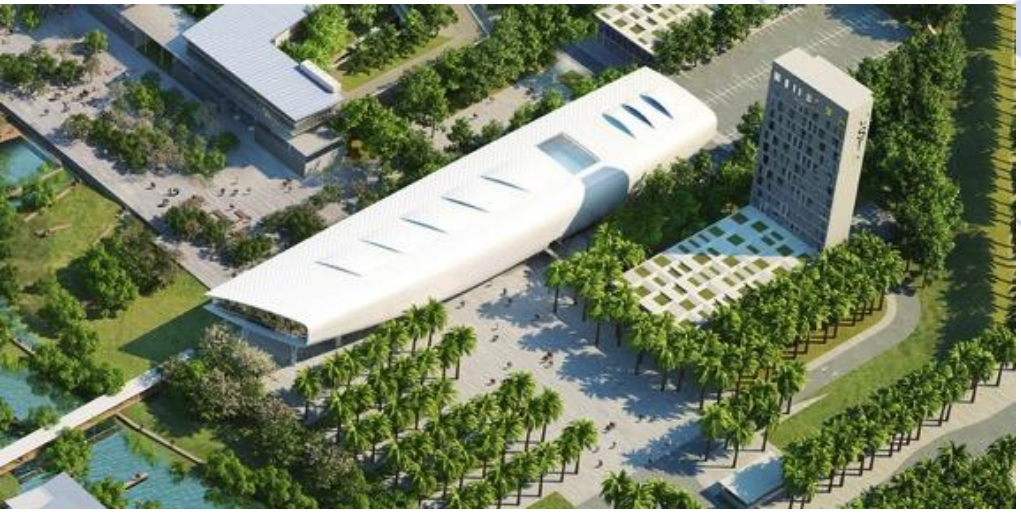
International University, Vietnam National University in HCM

Intergovernmental agreement signed on November 12th, **2009** between Vietnam and France

University of Science and Technology of Hanoi (USTH), also called Vietnam-France University

- One of the first 3 international Universities of Excellence in Vietnam
- Teaching programs in English
- International Joint Laboratories
- French Consortium of USTH (42 members)

USTH future campus (65ha)



MASTER IN SPACE

EARTH OBSERVATION, ASTROPHYSICS, SATELLITE TECHNOLOGIES

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Two specialties:

- Science from Space
- Satellite technologies

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UNIVERSITÉ DE MONTPELLIER

l'Observatoire de Paris

LAB REMOSAT
UNIVERSITY OF SCIENCE AND TECHNOLOGY OF HANOI

CLS
COLLECTE LOCALISATION SATELLITES

MARS INSTITUTE

CITA ICAT
Canadian Institute for Theoretical Astrophysics
L'institut Canadien d'astrophysique théorique

VNSC

Laplace

KASI
Korea Astronomy and Space Science Institute

UPEC
UNIVERSITÉ PARIS-EST CRÉTEIL VAL DE MARNE

USTH
PLMCC
PRODUCT LIFECYCLE MANAGEMENT COMPETENCY CENTRE
3D-imensional partnership
Liberté · Égalité · Fraternité
RÉPUBLIQUE FRANÇAISE
DASSAULT SYSTEMES

50th ANNIVERSARY
National Astronomy and Ionosphere Center
Arecibo Observatory - Puerto Rico
The William E. Gordon Telescope

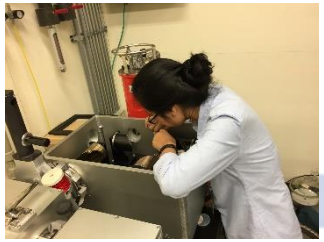
SETI INSTITUTE

UNIVERSITY OF TORONTO

DUNLAP INSTITUTE
for ASTRONOMY & ASTROPHYSICS

Space Engineering in Vietnam National University HCM City International University

Academic year	Number of internship	Institution
2016-2017	3	Academia Sinica Institute of Astronomy and Astrophysics (ASIAA), Taiwan
2017-2018	2	ASIAA, Taiwan
2018-2019	1	Institute of Space and Astronautical Science (ISAS), Japan
	3	ASIAA, Taiwan
	3	Korea Astronomy & Space Science Institute (KASI), South Korea
2020-2021	1	ASIAA, Taiwan
	2	Leiden University, Netherland



Conclusions

1. Vietnam Strategy of space science and technology development and application to 2030” was approved on February 4, 2021;

2. It’s clear a demand on high quality human resources in Space Engineering in Vietnam;

3. International cooperation and technology transfer from developed countries is the key for the fast development;

4. Vietnam needs improving human capacities and creating space industry ecosystem for sustainable development;

Thank you for your attention!