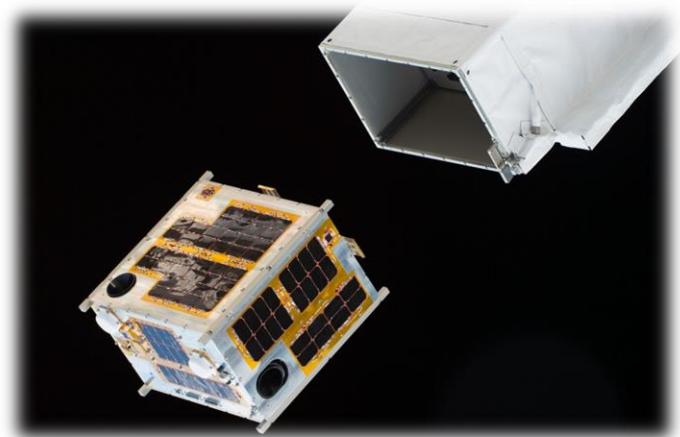


# International cooperation of small satellite deployment from ISS/Kibo and its legal aspects

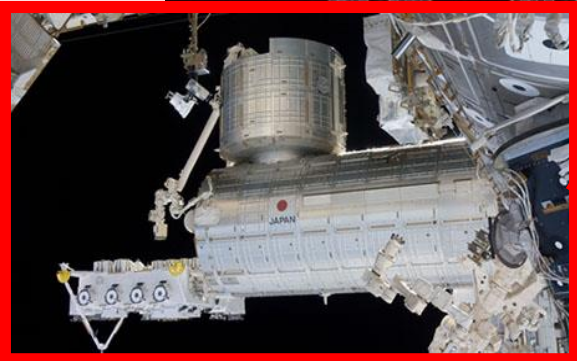
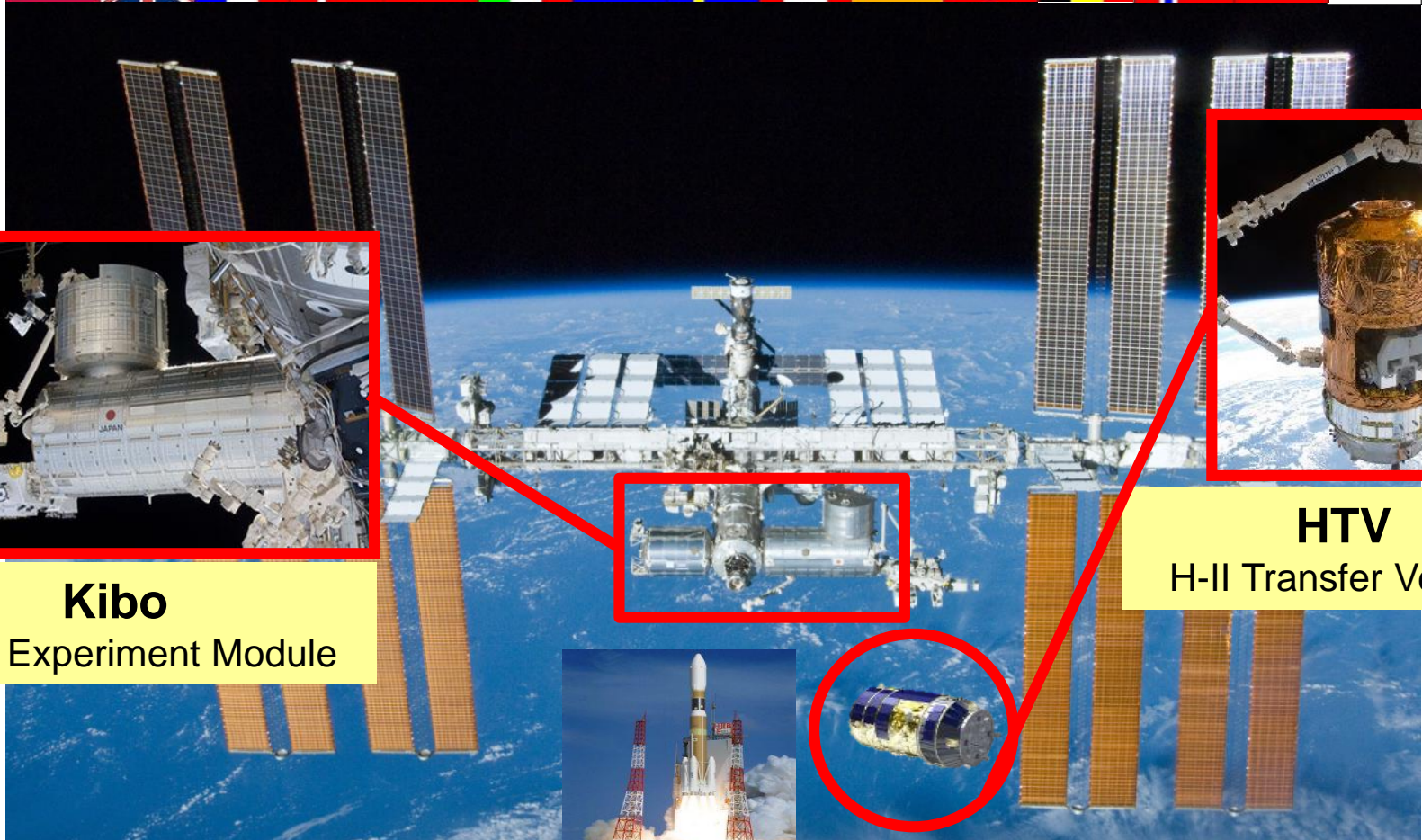


**Kazushi KOBATA**

Deputy Manager, Legal and Compliance Division  
Japan Aerospace Exploration Agency

# ISS: Japan's Capabilities and Contributions

## ISS The International Space Station



**Kibo**  
Japan Experiment Module



**HTV**  
H-II Transfer Vehicle



# “Kibo” is Unique! – Exposed Facility

Standard-class EF  
Mission:SEDA-AP (JAXA)

ExHAM:  
Material Exposure Mission

i-SEEP:  
Medium-class  
EF Misson

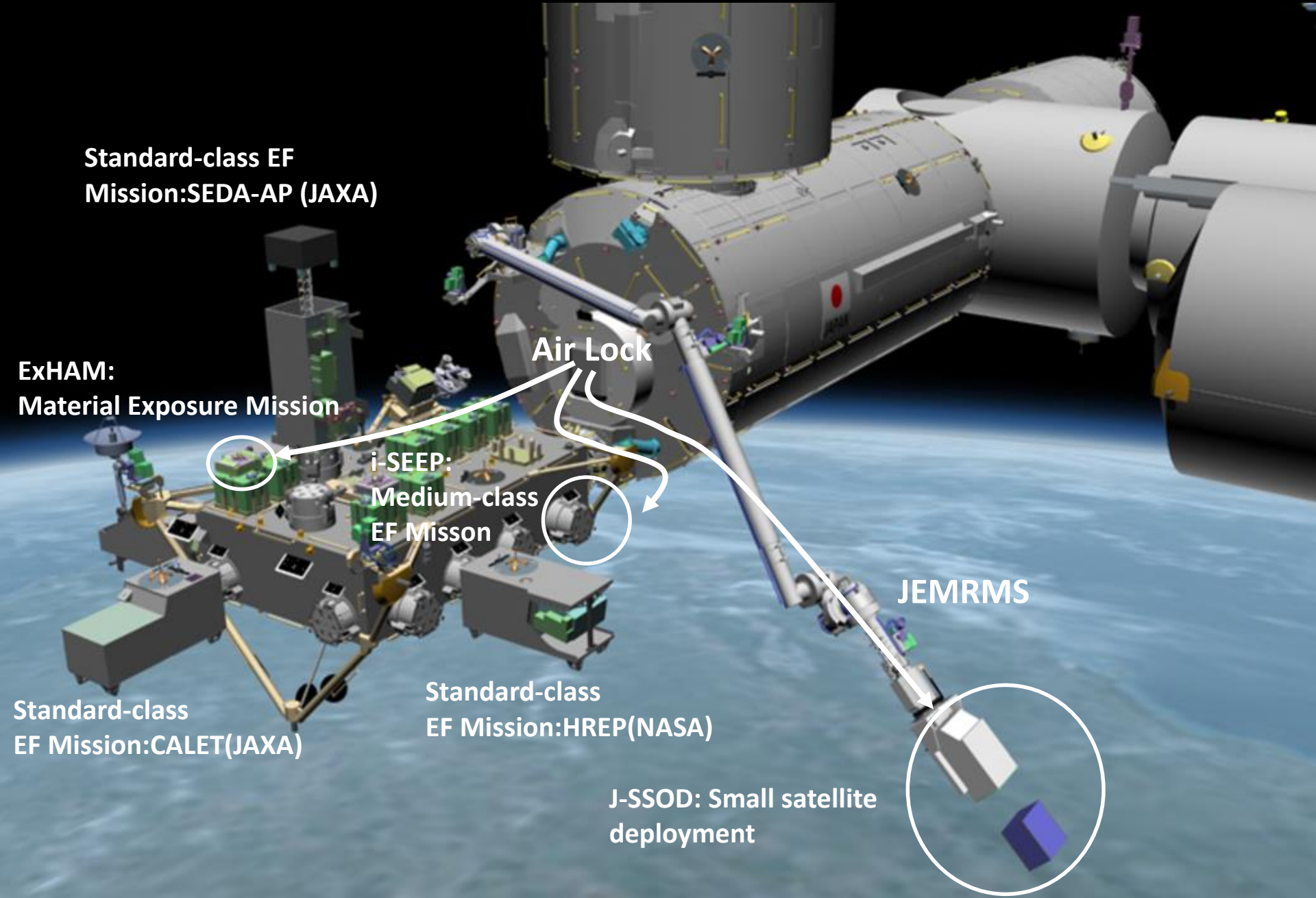
Air Lock

JEMRMS

Standard-class  
EF Mission:CALET(JAXA)

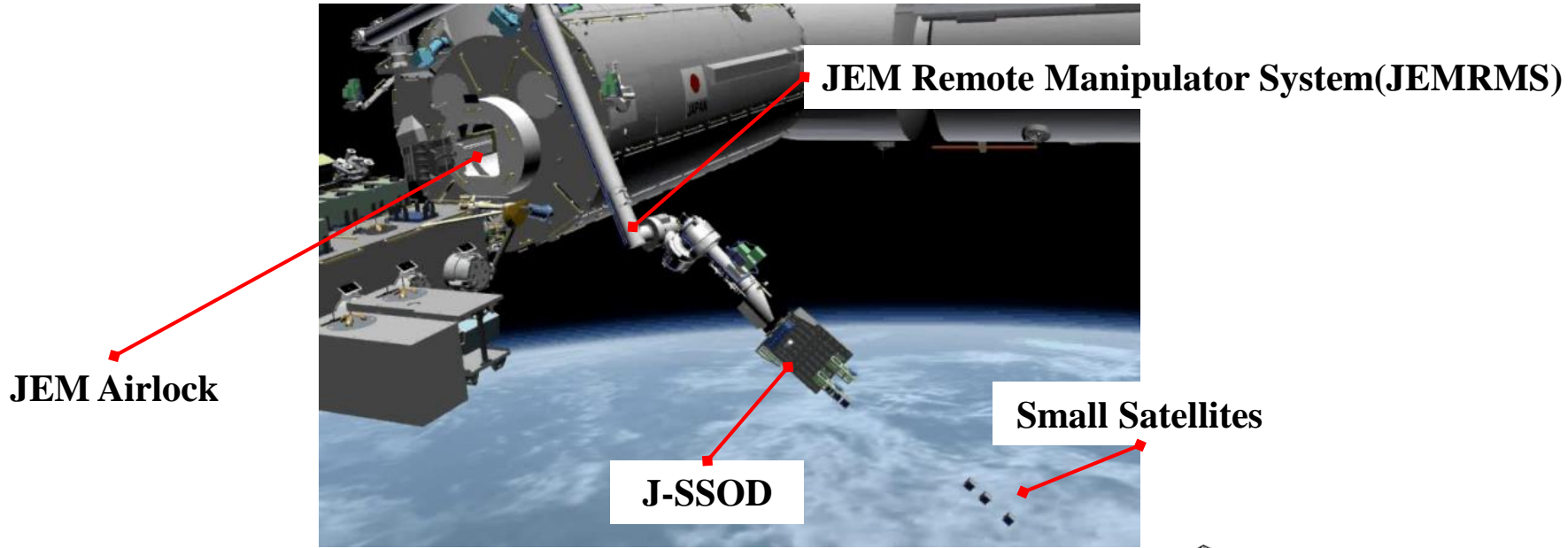
Standard-class  
EF Mission:HREP(NASA)

J-SSOD: Small satellite  
deployment

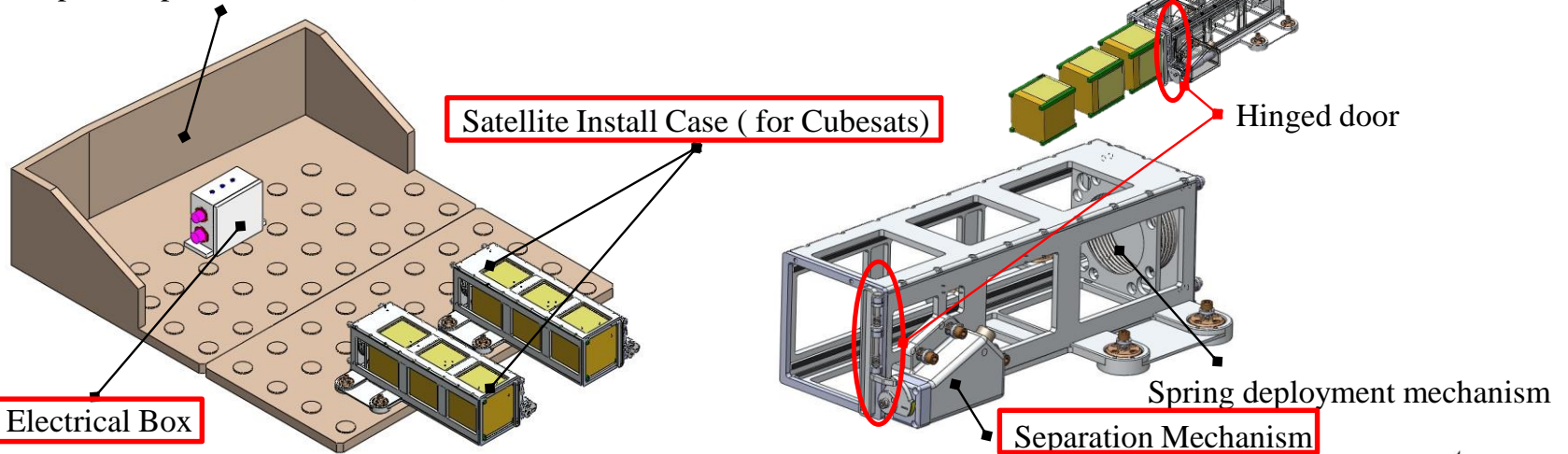




# J-SSOD: JEM Small Satellite Orbital Deployer



Multi-Purpose Experiment Platform (MPEP)



# J-SSOD: Opportunities for Increased Capacity

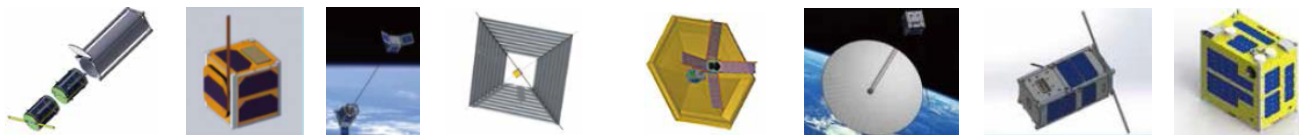
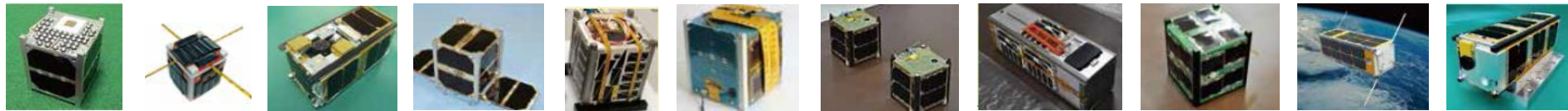
As of  
Today

- 159 satellites from Kibo

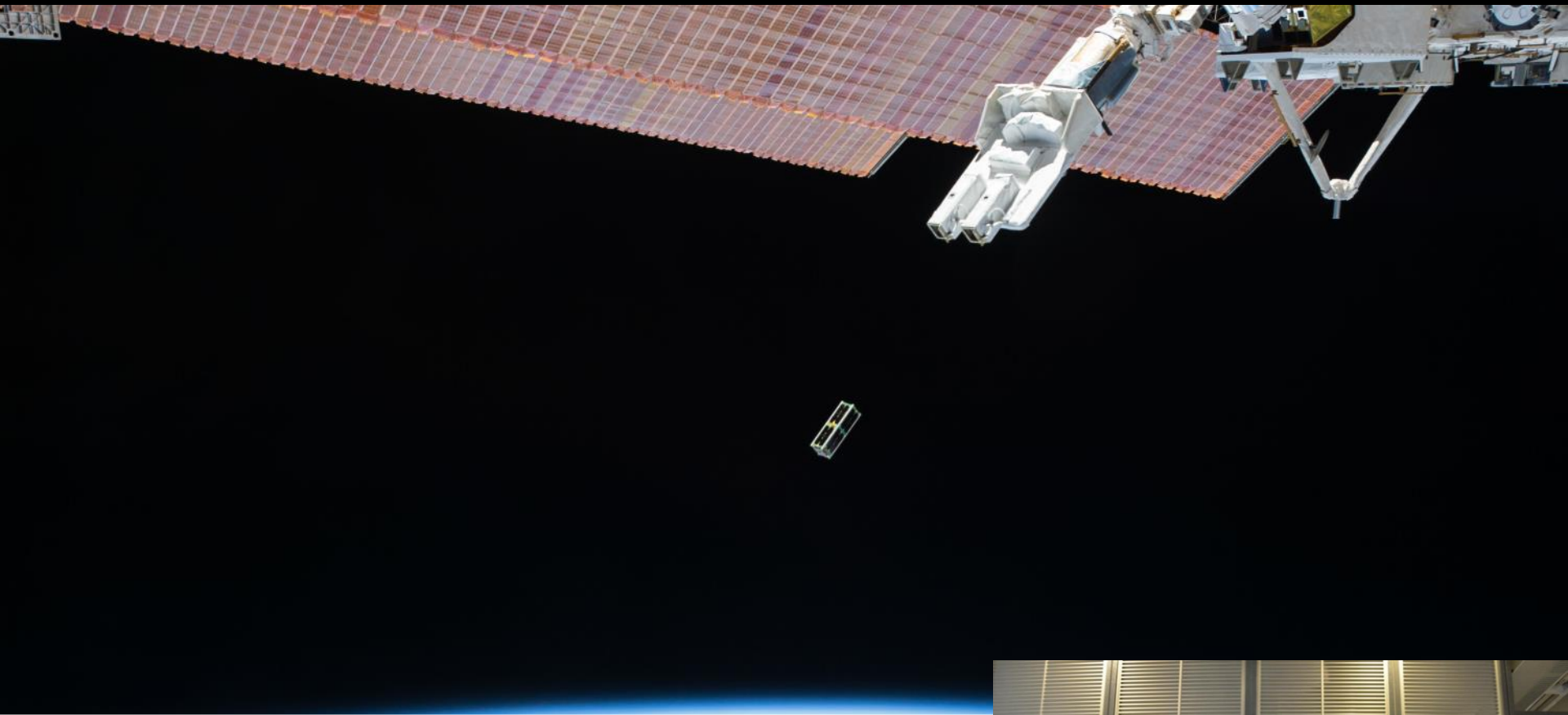
**Come  
Join Us!**

How?

- Moderate expenses
- Collaborate with Japanese universities or private enterprises
- (CubeSat (1U-3U) and Microsat (50 kg))



# CubeSat Deployment Mission Overview



## **SERPENS** Launch and Deploy:2015

**Investigator:**

University of Brasilia (**Brazil**)

Agência Espacial Brasileira(AEB)

Japan Manned Space Systems Corporation

**Size:3U**





# 50kg Microsat Deployment Mission Overview



**JAXA's First Mission for 50kg Microsat**

## **Diwata-1** Launch and Deploy:2016

**Investigator:**

University of the Philippines (**Philippine**)  
Department of Science and Technology (DOST)  
Tohoku University/Hokkaido University

**Size:** Micro-Satellite (55cm × 35cm × 55cm)





# Future Mission with J-SSOD in 2017

## Joint Global Multi Nation Birds (Birds Satellite Project)

Launch and deploy:2017

**Investigator:** Kyushu Institute of Technology

Students From Ghana, Bangladesh, Mongolia, Nigeria, Thailand,  
National Cheng Kung University

**Size:** 1U 5 satellites

**Mission:**

1. Take photograph of homeland via onboard cameras (CAM)
2. Digi-singer Mission (SNG)
3. Determination of Satellite Precise Location (POS)
4. Atmospheric Density Measurement (ATM)
5. Demonstrate Ground Station Network for CubeSat Constellation (NET)
6. Measure single-event-latchup in orbit (SEL)



Birds 2: to be launched **2018**

Students from

- Malaysia
- Philippines
- Bhutan

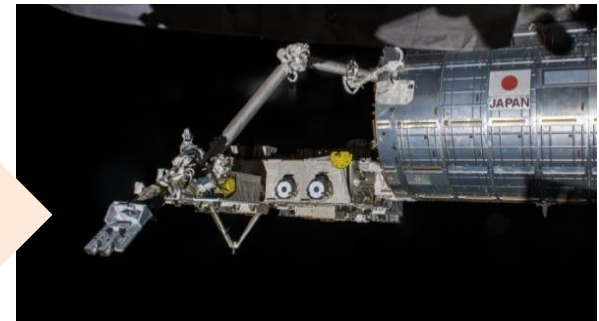
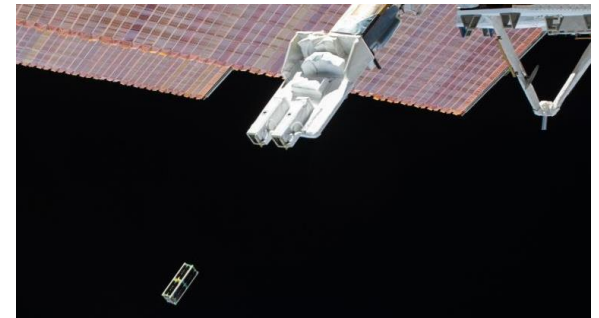
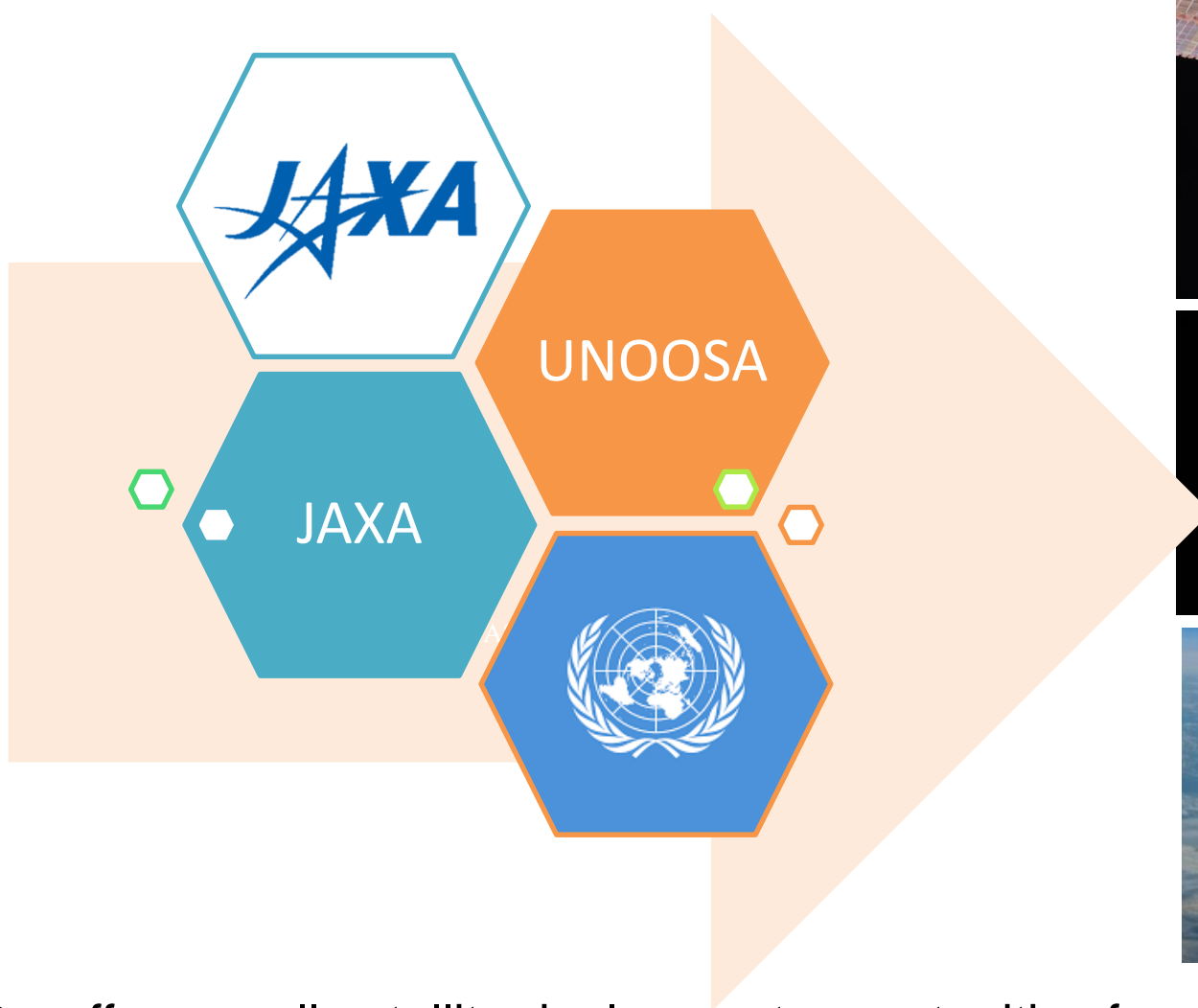




# Legal aspects

- In an arrangement between the foreign entity and the Japanese university, foreign entity, if it operates space object in its territory, is required to:
  - comply with any relevant treaties, including **OST, Registration Convention, Liability Convention, etc., if ratified**
  - comply with any relevant UNGA Resolutions relating to peaceful uses of outer space, including:
    - **UNGA Resolution 1962 (XVIII)** “Declaration of Legal Principles Governing the Activities of States in the Exploration and Use of Outer Space”, as of 13<sup>th</sup> December 1963
    - **UNGA Resolution 1721 (XVI)** as of 20<sup>th</sup> December 1961, etc.
  - take necessary measures to **register the space object and furnish information to the UNSG**, in accordance with the Registration Convention if ratified, or in accordance with the UNGA Resolution 1721 (XVI)
- Foreign entity shall also abide by **JAXA's safety assurance requirements** specified in “JEM Payload Accommodation Handbook”, **including JAXA Space Debris Mitigation Standard**, etc.

# “KiboCUBE” UNOOSA-JAXA Collaboration Programme



©JAXA/NASA

- offers small satellite deployment opportunities from Kibo in order to facilitate improved space technologies in developing countries
- CubeSat (1U) / once a year from 2017-2019



# Eligibility Criteria of “KiboCUBE”

The entity shall be...

Located in developing countries

Located in a country without the means to transport artificial satellites into space and place them in orbit

A head of research institutes, universities, or other public organizations

Responsible for the development, operation and utilization of their CubeSat



# Selection Milestone for KiboCUBE

## Selection Milestone

[ the 2<sup>nd</sup> Round ]

Announcement  
of Opportunity

Submitting application to UNOOSA

[ September 2016  
- 31 March 2017 ]

Selection of  
Successful  
Applicant

Several entities will be selected as “short listed entities”

One entity will be selected among the short-listed entities [ 31 August 2017 ]

Signing of an  
arrangement  
and

Signing of a non-disclosure agreement and an arrangement  
between JAXA and the Selected Entity

Technical  
coordination

Technical coordination in preparation of the CubeSat deployment  
between JAXA and the Selected Entity

[ 5 – 10 months ]





# University of Nairobi team was first selected !



# Legal aspects (1/2)

- In an arrangement between JAXA and Selected Entity, Selected Entity is required to comply with almost the same conditions as in the case of collaboration with Japanese universities or private enterprises  
(comply with UN treaties on outer space, register space object, conditions of Intergovernmental Agreement (IGA), JAXA's safety requirements, etc)
- In addition, Selected Entity is guided by UNOOSA document “Guidance on Space Object Registration and Frequency Management for Small and Very Small Satellites”, referred in the AO of KiboCUBE



# Legal aspects (2/2)

## “Guidance on Space Object Registration and Frequency Management for Small and Very Small Satellites”, documented by UNOOSA



UNITED NATIONS  
Office for Outer Space Affairs



International  
Telecommunication  
Union

### Guidance on Space Object Registration and Frequency Management for Small and Very Small Satellites

This handout serves as a guideline for small satellite developers and operators on issues related to registration, authorization, debris mitigation and frequency management of small and very small satellites.

#### International legal regime relating to space activities and space objects

Legal issues relating to responsibility and liability at a national and international level should be considered at the “Project Definition” stage of a satellite mission design process.

Under the provisions of the 1967 Outer Space Treaty<sup>1</sup>, a State bears “international responsibility” for national activities in outer space, including the Moon and other celestial bodies, whether such activities are carried on by governmental agencies or by non-governmental entities. A State is also required to authorize and continually supervise the space activities of non-governmental entities.<sup>2</sup> In addition, a State is “internationally liable” for damage caused by a space object that it launches or procures the launching of or from whose territory or facility an object is launched.<sup>3</sup> The issues of liability for damage caused by space objects are expanded upon in the 1972 “Liability Convention”.<sup>4</sup>

When a space object is launched into Earth orbit or beyond, a State is required to register it with the Secretary-General of the United Nations under the 1976 “Registration Convention” or in accordance with General Assembly resolution 1721B (XVI).<sup>5</sup>

For a list of Parties to the Outer Space Treaty, Liability Convention and Registration Convention, see the [UNOOSA website](#).

#### Authorization, implementation of space debris mitigation measures and space object registration

#### Authorization/licensing of satellite missions

Depending on national legislation, satellite missions may require licensing/authorization by a national authority. This agency may be the national radio-telecommunications regulatory entity, the national

<sup>1</sup> Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies, see [UNOOSA website](#).

<sup>2</sup> Article VI of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies

# Summary

- important to provide the opportunity of deployment of small satellites for any regions and countries, and to enhance the capacity of spacecraft engineering, etc.
- at the same time, also important to increase knowledge on how to comply with the requirements under the international rules, and to make sure any activities are in consistent with such requirements, through developing an appropriate arrangement



# ***Declaration on International Cooperation in the Exploration and Use of Outer Space for the Benefit and in the Interest of all States (1996)***

## *Appendix*

*“1. International cooperation in the exploration and use of outer space for peaceful purposes (hereinafter “international cooperation”) shall be conducted in accordance with the provisions of international law, including the Charter of the United Nations and the Treaty on the Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies. It shall be carried out for the benefit and in the interest of all States, irrespective of their degree of economic, social or scientific and technological development, and shall be the province of all mankind. Particular account should be taken of the needs of developing countries.”*

# Thank you for your attention



For further information, please contact

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JAXA Kibo utilization: [Z-KIBO-PROMOTION@jaxa.jp](mailto:Z-KIBO-PROMOTION@jaxa.jp)

