

# **CONTEXT: Introduction to the Cooperation between UNOOSA and AIRBUS**

United Nations Office for Outer Space Affairs

25 November 2019



UNITED NATIONS  
Office for Outer Space Affairs



# United Nations Office for Outer Space Affairs (UNOOSA)

## Vision

*Bringing the benefits of space to humankind*

## Mission Statement

The core business of the Office is to promote

International Cooperation

in the peaceful uses of outer space to achieve  
sustainable development goals





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# UNOOSA and the SDGs

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## Space for Women



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## Space for Water



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# UN-SPIDER

[www.un-spider.org](http://www.un-spider.org)



International Committee on  
Global Navigation Satellite Systems

Space is a **cross-cutting technology**, contributing in one way or another to the achievement of **all 17 SDGs**



# SUSTAINABLE DEVELOPMENT GOALS



# Partnerships

- To pursue its global agendas, UN needs to unlock the potential of partnerships
- UNOOSA has conducted 400+ capacity-building projects, reaching 23000+ participants
- UNOOSA is working with partners and seeking new partnerships to be able to bring the benefits of Space to humankind





# Access to Space for All: the International Space Station Cooperation with JAXA - KiboCUBE

- UNOOSA and JAXA provide access to space to non space-fairing Member States
- Free deployments of 1U CubeSats from the ISS, Japanese Experiment Module (Kibo).
- 1<sup>st</sup> round: University of Nairobi, Kenya (satellite launched May 2018)
- 2<sup>nd</sup> round: Universidad del Valle de Guatemala, Guatemala
- 3<sup>rd</sup> round: Mauritius Research Council, Mauritius & Surya University, Indonesia
- 4<sup>rd</sup> round: Application deadline 31 January '19, extended to 28 February

*Activities are performed with the generous support of the  
Japanese Aerospace Exploration Agency (JAXA)*

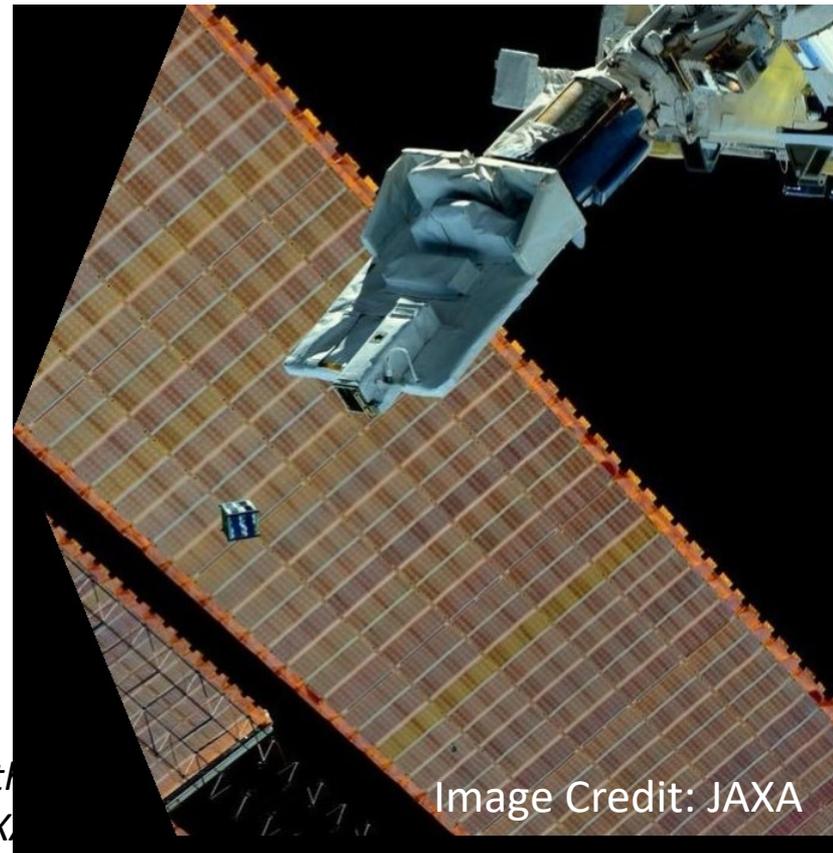


Image Credit: JAXA



## Access to Space for All: the International Space Station Cooperation with AIRBUS - Bartolomeo

- MoU signed during UNISPACE+50, 18 June 2018
- Two main areas of cooperation:
  - Earth Observation
  - Utilization of Bartolomeo

- For Bartolomeo
  - 3U-Cubesat payload getting All in One Space Mission Service
  - Free reservation of slot on 2020 or 2021
  - AO Available:

<https://www.unoosa.org/oosa/en/ourwork/psa/hsti/orbitalmission/bartolomeo/index.html>





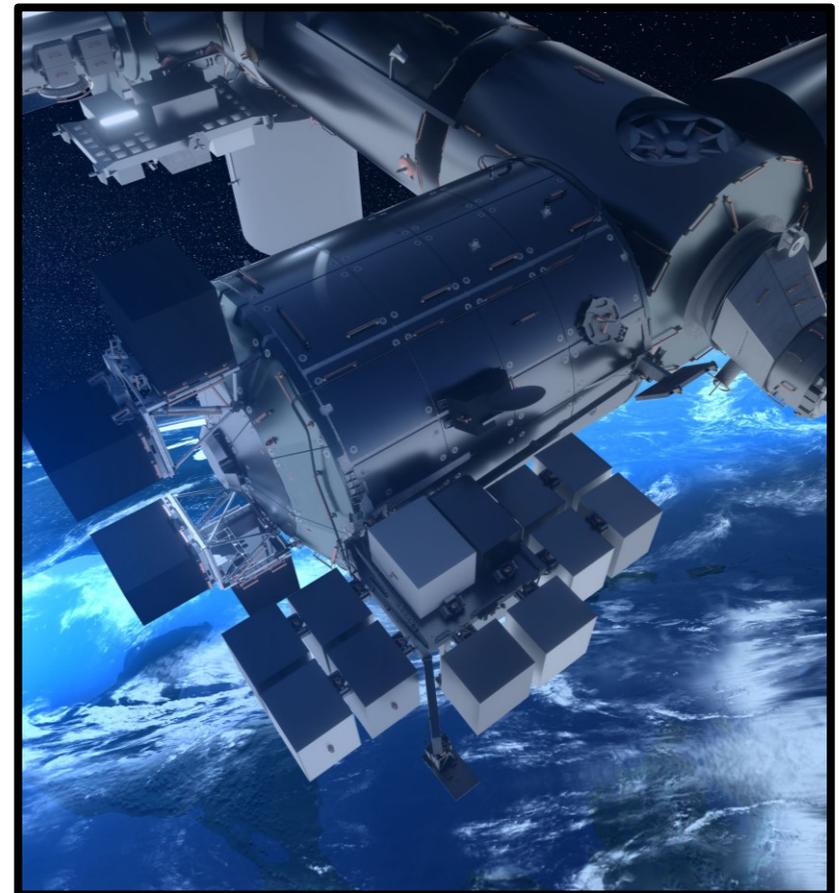
## The International Space Station: Airbus Bartolomeo Project

In June 2018, UNOOSA and Airbus agreed to jointly collaborate in the framework of Bartolomeo Project, which is being pursued under the leadership of Airbus and enables the hosting of external payloads in low-Earth orbit, on-board the ISS.

Opportunity:

- (i) A free slot (a 3U-cubesat class payload) getting full Bartolomeo All-in-One Space Mission Service;
- (ii) Free reservation of a slot for a 3U-CubeSat class single-payload on our 2021 or 2022 multi-payload ArgUS platform.

*Activities are performed with the generous support of Airbus*





# Cooperation with AIRBUS

- Open a Call for Interest 
  - Call for interest opened on 6 Dec 2018
  - Closed on 31 January
  
- Technical Briefing 
  - 27 February
  
- Announcement of Opportunity 
  - 24 October 2019
  
- Webinars:
  - 25 November 2019
  - ...

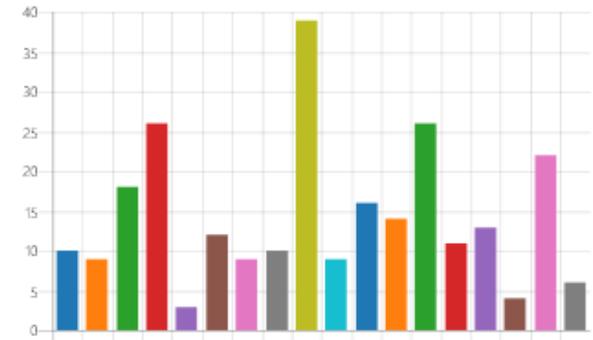




# Call for Interest - Summary

- 63 Expressions of Interest
- Countries most represented:
  - Mexico 6
  - Italy 5
  - USA 4
  - South Africa 3
  - Peru 3
  - Nigeria 3
  - Australia 3

SDG1: No Poverty	10
SDG2: Zero Hunger	9
SDG3: Good Health and Well-...	18
SDG4: Quality Education	26
SDG5: Gender Equality	3
SDG6: Clean Water and Sanita...	12
SDG7: Affordable and Clean E...	9
SDG8: Decent Work and Econ...	10
SDG9: Industry, Innovation, an...	39
SDG10: Reduced Inequalities	9
SDG11: Sustainable Cities and...	16
SDG12: Responsible Consump...	14
SDG13: Climate Action	26
SDG14: Life Below Water	11
SDG15: Life on Land	13
SDG16: Peace, Justice, and Str...	4
SDG17: Partnerships for the G...	22
Unknown	6



SDG 9 is the one repeated most in the expressions of interest



# Technical Briefing - Summary

- Half have not submitted an Expression of interest

7. Have you submitted an answer to the Call for Interest for Bartolomeo?

[More Details](#)

● Yes	51
● No	46



8. Modality of attendance

[More Details](#)

● I will be traveling to Vienna	28
● I will attend online	69



**We expect that the AO will be even more successful! – Submit your applications!**

# Overview of the Opportunity

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# What kind of experiments can be run?





# What kind of experiments can be run?

Use Case	Description
Remote Sensing	<ul style="list-style-type: none"><li>• The unobscured view of Earth from <i>Bartolomeo</i> in approximately 400 km orbit altitude enables high quality imaging with cost-efficient instrumentation</li><li>• Line-of-sight pointing and stabilization systems may be made available as optional service, if necessary</li></ul>
Astrophysics / Heliophysics	<ul style="list-style-type: none"><li>• <i>Bartolomeo</i> offers among the best view towards the Zenith direction</li><li>• Line-of-sight pointing and stabilization systems may be made available as optional service, if necessary</li></ul>
Atmospheric Research	<ul style="list-style-type: none"><li>• All forward-facing payloads have unobstructed view to the space / atmosphere boundary</li><li>• Usually, Limb-oriented instruments do not require specific pointing or stabilization and can be hosted on <i>Bartolomeo</i> very easily</li><li>• Broadband data downlink capabilities of <i>Bartolomeo</i> allows for a high data production rate</li></ul>
Space Weather	<ul style="list-style-type: none"><li>• The unobstructed Zenith-oriented view allows cost-efficient space observation, e. g. for solar activity monitoring</li></ul>
On-orbit Assembly for Exploration	<ul style="list-style-type: none"><li>• <i>Bartolomeo</i> payloads have only some restrictions regarding their volume in space</li><li>• <i>Bartolomeo</i> can provide an opportunity to assemble space system components on-orbit and deploy them with appropriate systems</li><li>• Short-term realization of a long-term vision to provide larger space systems unrestricted by the launcher payload fairing for exploration</li></ul>



# What kind of experiments can be run?

<b>Robotics Testing</b>	<ul style="list-style-type: none"><li>• <i>Bartolomeo</i> payloads have only some restrictions regarding their volume in space</li><li>• <i>Bartolomeo</i> can provide an opportunity to perform robotic operations in a protected testing environment</li></ul>
<b>In-orbit Testing</b>	<ul style="list-style-type: none"><li>• With power, data and viewing available <i>Bartolomeo</i> can serve as general in-orbit demonstration test bed</li><li>• If compliant with safety regulations any technology can be tested on ISS as long as it is of civilian purpose</li></ul>
<b>Propulsion Testing</b>	<ul style="list-style-type: none"><li>• With power available up 800 W per payload <i>Bartolomeo</i> can serve as testbed for new electric space propulsion systems</li></ul>
<b>Material Science</b>	<ul style="list-style-type: none"><li>• With unobstructed Zenith-oriented view <i>Bartolomeo</i> gives the opportunity to expose material samples to space and solar radiation</li><li>• With unobstructed Ram-facing view the effects of atomic oxygen can be studied on samples</li></ul>
<b>Spacecraft Deployment</b>	<ul style="list-style-type: none"><li>• One of the <i>Bartolomeo</i> payload sites can be converted to a small satellite deployment system</li><li>• If deployed directly from <i>Bartolomeo</i> satellites can have more mass than deployable by existing systems</li></ul>
<b>In-space Manufacturing</b>	<ul style="list-style-type: none"><li>• Via <i>Bartolomeo</i> and its large / extendable payload envelopes on orbit in-space manufacturing can be performed to produce large space structure with 3D printing or other appropriate methods</li></ul>

**3U-Cubesat payload** getting All in One Space Mission Service

# THANK YOU



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