

Bartolomeo Technical Briefing: Logistics

United Nations Office for Outer Space Affairs

27 February 2019



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Office for Outer Space Affairs



- 10:00 – Welcome and scope of the briefing
- 10:05 - Introduction to the cooperation with AIRBUS on Bartolomeo (UNOOSA)
- 10:30 – Technical Briefing (I) - Overview of the Opportunity (UNOOSA, AIRBUS)
- 11:00 Coffee Break
- 11:15 – Technical Briefing (II) - Capabilities of Bartolomeo (AIRBUS)
- 12:00 – Path Forward
- 12:15 – Questions and Answers Session
- 13:30 – Lunch Break
- 14:30 – Questions and Answers Session Continuation
- 16:30 – End of the briefing

Questions can be asked via Skype or alternatively by sending an e-mail to Jorge.delrio@un.org with the subject **[Bartolomeo]: Question**

Introduction to the Cooperation between UNOOSA and AIRBUS

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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

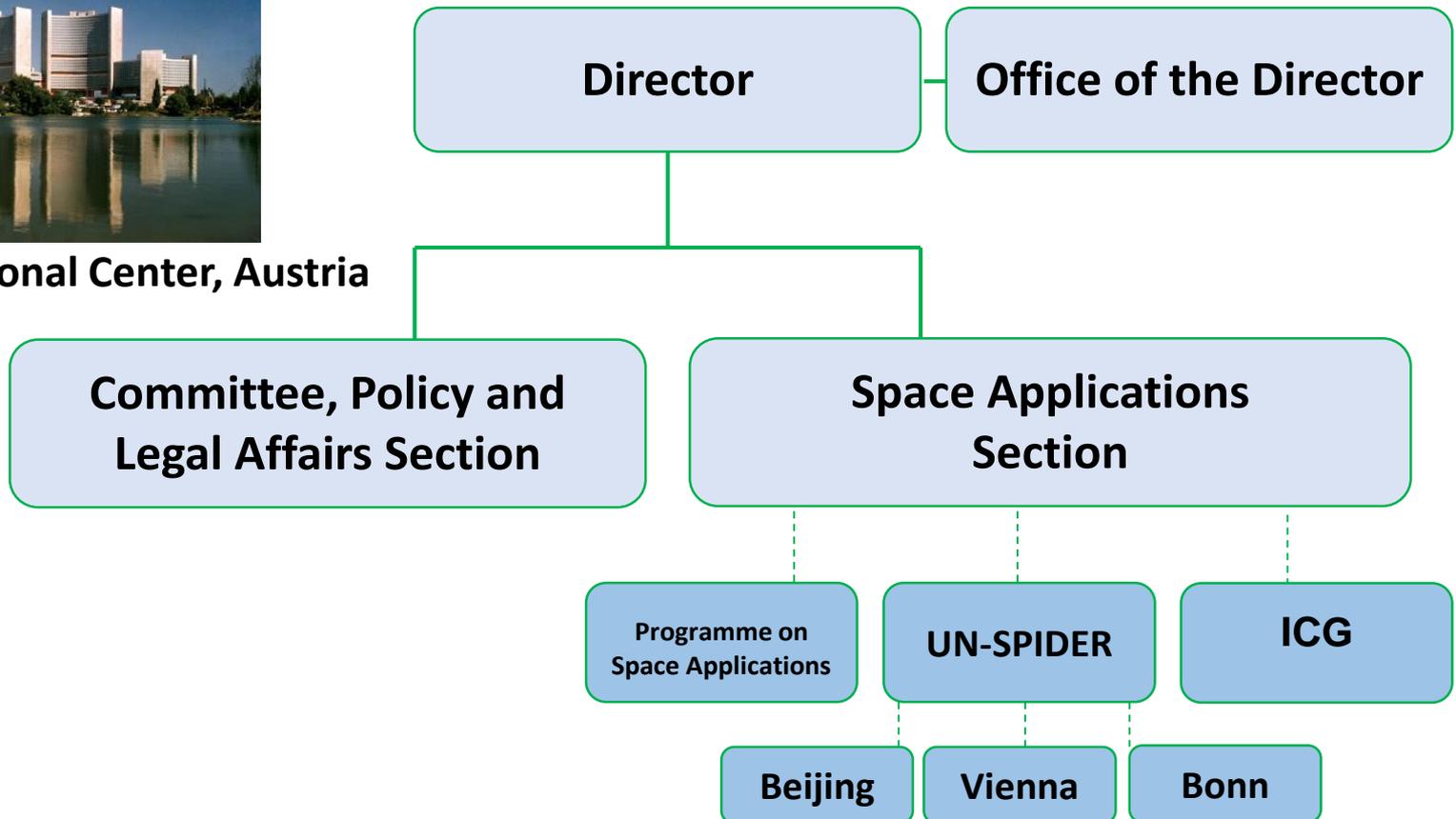




Structure



Vienna International Center, Austria





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Space for Women



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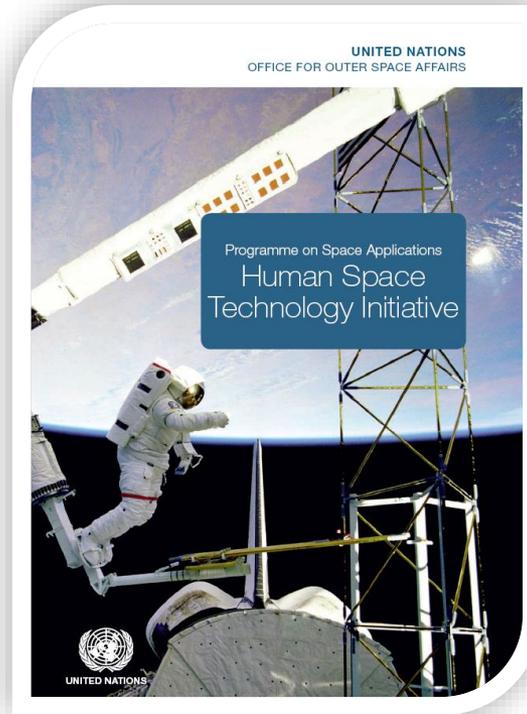
UN-SPIDER

www.un-spider.org



International Committee on
Global Navigation Satellite Systems

UNOOSA and the SDGs



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

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Space for Water



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: Research Opportunities

- Fellowship programme launched in 2013 with ZARM and DLR using the Bremen Drop Tower, with the agreement extended in 2016.
- Provides the opportunity to conduct microgravity experiments
- One team per year (with up to 4 students from bachelors to PhD level)
- Teams from Jordan, Bolivia, Costa Rica, Poland and Romania have participated.

Activities are performed with the generous support of ZARM and the German Aerospace Agency (DLR)





Access to Space for All: the International Space Station

KiboCUBE Project

- 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).
- 1st round: University of Nairobi, Kenya (satellite launched May 2018)
- 2nd round: Universidad del Valle de Guatemala, Guatemala
- 3rd round: Mauritius Research Council, Mauritius & Surya University, Indonesia
- 4rd round: Application deadline 31 January '19, extended to 28 February

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

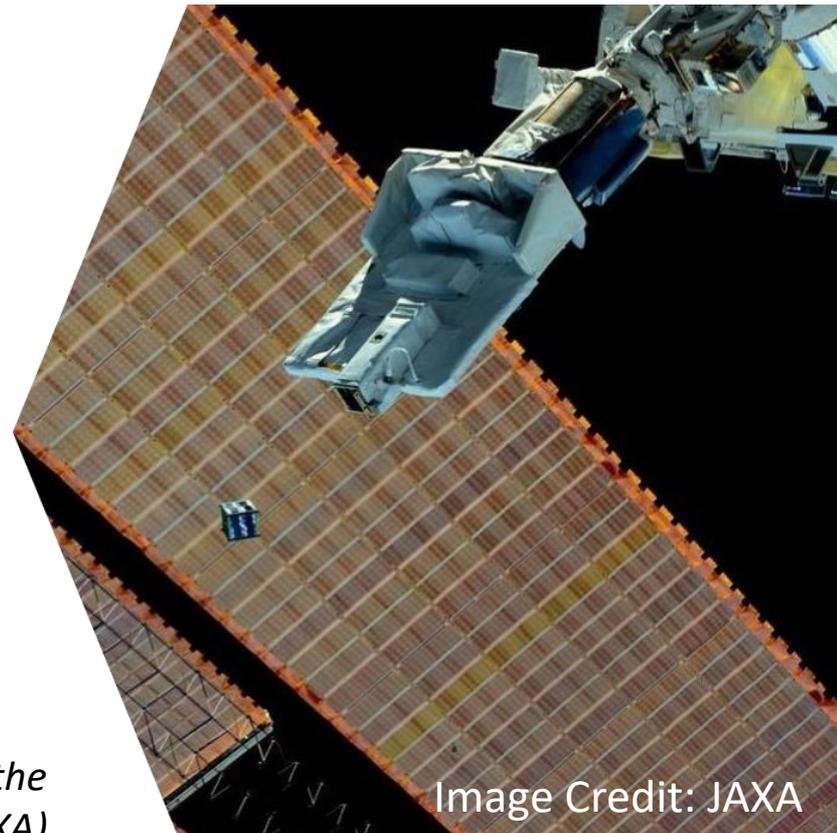


Image Credit: JAXA



Cooperation with AIRBUS

- 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





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 2020 or 2021 multi-payload ArgUS platform.
- (iii) Call for Interest open on December 6, 2018 and closed on January 31, 2019.
- (iv) 63 responses received

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 Q2 2019





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!

To increase the capacity-building potential of the initiative partnerships are encouraged

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



What kind of experiments can be run?

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

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

THANK YOU



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