



UNITED NATIONS
Office for Outer Space Affairs

INFORMATION NOTE

United Nations/Brazil Symposium on Basic Space Technology "Creating Novel Opportunities with Small Satellite Space Missions"

Natal, Brazil

11-14 September 2018

Co-organized by the United Nations Office for Outer Space Affairs and
the Government of the Brazil

1. Introduction

Space technology and its wide range of applications contribute essential information and services to many aspects of sustainable development, that is, economic and social development and environmental conservation and protection. Small satellite missions, which provide an affordable and low risk means to developing and using space technologies, are therefore becoming increasingly important in supporting sustainable development, as well as in the advancement of basic space science and technology, notably through capacity-building. Recognizing this opportunity, the Office for Outer Space Affairs (UNOOSA), implementing the United Nations Programme on Space Applications (PSA), launched Basic Space Technology Initiative (BSTI) in 2009, in support of capacity-building for the development of basic space technology (www.unoosa.org/oosa/en/ourwork/psa/bsti/index.html).

UNOOSA held a series of three UN/Austria/ESA Symposiums on Small Satellite Programmes for Sustainable Development in Graz, Austria from 2009 to 2011. Starting from 2012, the Office has organized international symposiums on basic space technology under BSTI in the regions that correspond to the UN Economic Commissions for Africa, Asia and the Pacific, Latin America and the Caribbean, and Western Asia.

The first Symposium was held as the United Nations/Japan Nano-Satellite Symposium, hosted by the University of Tokyo and the University Space Engineering Consortium (UNISEC) in Nagoya, Japan, on 10-13 October 2012. The second Symposium was held as the United Nations/United Arab Emirates Symposium on Basic Space Technology, hosted by the Emirates Institution for Advanced Science and Technology (EIAST) in Dubai, United Arab Emirates, on 20-23 October 2013. The third Symposium was held as the United Nations/Mexico Symposium on Basic Space Technology hosted by the Center for Scientific Research and Higher Education (CICESE) and the Mexican Space Agency in Ensenada, Baja California, Mexico, on 20-23 October 2014. The fourth Symposium was held in Stellenbosch, South Africa on 11-15 December 2017 as the United Nations/South Africa Symposium on Basic Space Technology hosted by the Stellenbosch University, organized in cooperation with the Department of Science and Technology and the Department of Trade and Industry on behalf of the Government of the Republic of South Africa, and co-sponsored by the European Space Agency.

The present and fifth Symposium will be held as the United Nations/Brazil Symposium on Basic Space Technology in Natal, Brazil with a special focus on the Latin America and the Caribbean region. It is organized by the United Nations Office for Outer Space Affairs in cooperation with the National

Institute for Space Research (INPE), the Federal Institute of Education, Science and Technology of Rio Grande do Norte (IFRN) and the Brazilian Space Agency (AEB), on behalf of the Government of Brazil.

2. Symposium Objectives

The objectives of the UN/Brazil Symposium will be to:

1. Review the status of capacity-building in basic space technology for small satellites including lessons learned from the past and on-going development activities with focus on regional and international collaboration opportunities, in particular for countries in Latin America and Caribbean;
2. Examine issues relevant to the implementation of small satellite programmes, such as organizational capacity-building, development, testing infrastructure and launch opportunities;
3. Review evolving capabilities and state-of-the-art applications of small satellite programmes and technological developments associated with them, with particular focus on applications for agriculture, environment and urban monitoring, and education that support sustainable growth, in line with the 2030 Agenda for Sustainable Development;
4. Elaborate on regulatory issues related to space technology development programmes, such as frequency allocation, space debris mitigation measures and other issues that may arise with the newly emerging trend of small satellite constellations;
5. Elaborate on legal issues and responsibilities related to space technology development programmes, such as those that arise from the sources of international space law;
6. Discuss the way forward for the Basic Space Technology Initiative (BSTI), and its capacity-building and international cooperation activities in support of UNISPACE+50.

3. Expected Outcome and Contributions to Implementation of UNISPACE+50

The year 2018 will mark the 50th anniversary of the first United Nations Conference on the Exploration and Peaceful Uses of Outer Space as the first United Nations space summit of the twenty-first century - UNISPACE+50. This symposium will be one of the first activity organized by the Office for Outer Space Affairs after the celebration of UNISPACE+50 in June 2018 and as such will have a particular importance in defining long-term opportunities in basic space technology.

Building upon the basis of the work carried out in respect of the thematic priority 7 “Capacity building for the twenty-first century” (A/AC.105/1174) of UNISPACE+50, UNOOSA organizes symposiums aimed at developing the specific capabilities of countries, as part of its existing capacity-building efforts. For additional information on thematic priority 7 “Capacity building for the twenty-first century” of UNISPACE+50:

http://www.unoosa.org/oosa/oesadoc/data/documents/2018/aac.105/aac.1051174_0.html

BSTI and its associated series of symposiums that are dedicated to reviewing different capacity-building initiatives in the small satellite missions domain support the actions towards progressively increasing countries’ access to space and their use of space assets. The Symposium objectives, while focusing on capacity-building, through dissemination of lessons learnt from past and ongoing activities, provide manifold contributions to the implementation of UNISPACE+50.

At a higher level, observations and recommendations of the Symposium related to building indigenous capacity in space technology and its applications, and therefore reducing the “Space Divide”, directly contributes to “Goal 10: Reduced Inequalities” and “Goal 4: Quality Education” in the context of the 2030 Agenda of Sustainable Development. Moreover, development of entry-level space technologies, through providing an affordable entry point, also supports the acquisition of technical

capabilities and know-how, which in turn paves the way for potential spin-offs to other industrial sectors, establishment of commercial businesses (Goal 9: Industry, Innovation and Infrastructure) and new opportunities for international cooperation (Goal 17: Partnerships for the Goals).

4. Symposium Programme

The Symposium programme will be structured around a series of dedicated topical sessions. **Presentations will be solicited through a Call for Papers.** In addition, renowned experts in the field will be invited to make some of the presentations. The participants will consider specific topics and discuss observations and recommendations for consideration by COPUOS. Appropriate time will be set aside for discussions and for short presentations by the participants on their own relevant activities.

The following topics will be considered in dedicated sessions:

- **Small Satellites and Capacity-Building in Basic Space Technology with a Focus on Latin America and the Caribbean**

Space technology has a huge potential to contribute to the development of Latin America and the Caribbean. This session will address space technology development and capacity-building activities, including know-how transfer programmes and opportunities for regional and international cooperation with a focus on, but not limited to, activities in Latin America and the Caribbean region. Moreover, this session will provide a review of small satellite projects worldwide in support of capacity building and engineering education. Challenges such as testing facilities and launching opportunities will also be discussed from a capacity-building and education perspective.

- **Evolving Capabilities and Operational Applications of Small Satellite Missions**

Small satellites have been developed for a wide range of applications, including telecommunication, navigation, earth observation services and scientific missions. They can offer cost-efficient solutions to replace or complement more expensive, larger satellite missions, and even realize an increased level of temporal resolution that was not feasible with their larger counterparts. This session will consider both advances and challenges that have a determining role on the extent of operational and commercially viable services that can be provided by small satellites and their constellations (i.e. standards, infrastructures, development costs, specialized launch services, reliability issues, etc.).

- **Legal and Regulatory Issues**

Legal and regulatory considerations play an important role in the conduct of outer space activities. The session will cover registration, space debris and issues that may arise with the newly emerging trend of small satellite constellations, in addition to the relevant national and international legal and regulatory frameworks. Furthermore, the session will include a workshop on frequency coordination offered by the [International Telecommunications Union \(ITU\)](#).

In addition to the topics described above, there will be panel discussions to share experiences and lessons learned through capacity-building activities in space technology development as well as to promote opportunities for international and regional collaborations among the participants. The sessions will be supplemented by a poster session as well as by an exhibition, demonstrations of relevant software tools, technical visits and practical hands-on exercises.

The co-sponsors will also organize an attractive programme of side-events for all Symposium participants. The detailed Symposium programme will be made available on the Symposium website at

http://www.unoosa.org/oosa/en/ourwork/psa/schedule/2018/symposium_brazil_bsti.html

5. Optional Field Trip

In addition to the Symposium programme, there will be an optional field trip to the Hell's Barrier Launch Site and the Space Visitor Center. The field trip will be organized on September 14th.

6. Location and Date

The Symposium will be held from 11-14 September 2018 in Natal, Brazil. Invited participants will receive a formal invitation letter with further information on available accommodation, logistics and other local arrangements prior to the Symposium. The venue will be the Federal Institution for Education, Science and Technology of the State of Rio Grande do Norte (IFRN) Natal Central Campus.

7. Language of the Symposium

Applicants must have a good working knowledge of English, which will be the official working language of the Symposium.

8. Participants

Symposium participants should be involved in the planning or implementation of space technology development activities in international or national space agencies, governmental or non-governmental organizations, research institutions, industry, universities or other academic institutions. Participants are expected to have obtained university degrees in relevant fields of study or should be enrolled in relevant studies. Professional working experience in one of the fields related to the theme of the Symposium is desirable. Applications from qualified female applicants are particularly encouraged.

9. Support to Qualified Applicants

Applicants and their nominating organizations are strongly encouraged to find their own sources of sponsorship to participate in the Symposium. However, within the limited financial resources available to the co-sponsors, **a number of qualified applicants from developing and emerging economies expressing the need for financial support will be offered financial support to attend the Symposium.**

Support may include the provision of a round-trip air ticket between Natal Airport and the applicant's international airport of departure and/or room and board for the duration of the Symposium. En-route and other expenses or any changes made to an air ticket provided by the co-sponsors must be borne by the participants. Selected applicants will be notified in June-July 2018.

10. Life and Health Insurance

Life and major health insurance is the responsibility of each selected participant or his/her nominating institution or government. The co-sponsors will not assume any responsibility for life and health insurance, nor for any expenses related to medical treatment or accidents.

11. Deadline for Submission of Applications

Complete applications and abstracts shall be submitted to the Office for Outer Space Affairs through the online registration page at:

http://www.unoosa.org/oosa/en/ourwork/psa/schedule/2018/symposium_brazil_bsti.html

Applications for participation must be received by the Office for Outer Space Affairs no later than **15 May 2018** from applicants seeking funding support and no later than **1 August 2018** from self-funded applicants. Only complete applications received by these deadlines will be considered.

12. Contact Information

For questions related to the Symposium programme in general and international applications:

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Office for Outer Space Affairs

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For information regarding the local logistics, accommodation and exhibition sponsorship:

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For latest information and updates, please frequently visit the Symposium web page at:

http://www.unoosa.org/oosa/en/ourwork/psa/schedule/2018/symposium_brazil_bsti.html