United Nations Basic Space Technology Initiative

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Mission Statement

The core business of the Office is to promote international cooperation in the use of outer space to achieve development goals.

Vision

Bringing the benefits of space to humankind

* Space technology helps address global challenges and supports the 2030 Agenda for Sustainable Development
Structure of the UN Office for Outer Space Affairs (UNOOSA)

Director

Committee, Policy and Legal Affairs Section

Space Applications Section

Programme on Space Applications

Office of the Director

UN-SPIDER

ICG

Beijing

Vienna

Bonn
Basic Space Technology Initiative (BSTI)

I. Respond to the growing interest in establishing indigenous space technology development capacities

II. Support capacity-building in space technology development, in particular through small-satellite activities

Mission:
Enhance access to space application tools for sustainable development through building capacity in basic space technology

III. Promote relevant standards and adherence to legal and regulatory frameworks

IV. Promote international cooperation and information exchange
Roles of UNOOSA

CAPACITY-BUILDER: Brings the benefits of space to humankind and supports sustainable development through advancement of basic space science and technology.

GLOBAL FACILITATOR: Plays a leading and facilitating role in the promotion of the peaceful uses of outer space.

GATEWAY TO SPACE: Facilitates the coordination of UN activities with space-based technology to support sustainable development on earth globally.
Benefits of Small Satellite Development (1/2)

➢ Benefits derived from the actual operational use of small satellites

➢ Affordable approach to establish a capacity for space technology development

➢ Limited infrastructure and development cost

➢ Stepping-stone in developing and enhancing a country’s space capacity
Benefits of Small Satellite Development (2/2)

- Train and educate engineers and project managers with transferable skills
- Acquisition of technical capabilities, with potential spin-offs into other industrial sectors
- Establishment of commercial businesses
- Opportunities for international space cooperation
Basic Activities: UN/Austria/ESA

➢ Series of three Symposiums held in Graz, Austria
➢ Co-sponsored by the Austrian Government and the European Space Agency

- **2009**: “Small Satellite Programmes for Sustainable Development” (A/AC.105/966)
- **2010**: “Payloads for Small Satellite Programmes” (A/AC.105/983)

International Symposiums on Basic Space Technology Development

2017
United Nations/South Africa Symposium on Basic Space Technology
11-15 December 2017
Stellenbosch, South Africa
Report A/AC.105/.../CRP.9

2014
United Nations/Mexico Symposium on Basic Space Technology
20-24 October 2014
Ensenada, Mexico
Report A/AC.105/1086

2013
United Nations/United Arab Emirates Symposium on Basic Space Technology
20-23 October 2013
Dubai, United Arab Emirates
Report A/AC.105/1052

2012
United Nations/Japan Nano-Satellite Symposium
10-13 October 2012
Nagoya, Japan
Report A/AC.105/1032

2018 marked the 50th anniversary of the first United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE), held in Vienna in 1968. The BSTI Symposiums provided manifold contributions to TP 7: “Capacity-building for the 21st Century” by:

1. **Reviewing** different capacity-building initiatives in the small satellite missions domain
2. **Dissemination** of lessons learnt from past and ongoing activities
3. **Recommended** actions towards progressively increasing countries’ access to space and their use of space assets
BSII symposiums provided valuable inputs to three other Thematic Priorities of UNISPACE+50:

**TP 1:** Global partnership in space exploration and innovation

**TP 2:** Legal regime of outer space and global space governance: current and future perspectives

**TP 3:** Enhanced information exchange on space objects and events
International Symposia on Basic Space Technology Development

United Nations/Brazil Symposium on Basic Space Technology
"Creating Novel Opportunities with Small Satellite Space Missions”
11-14 September 2018 Natal, Brazil
Basic Activities: Technical Assistance

➢ BSTI organized special sessions on Capacity Building in Space Technology Development at the

➢ Fourth African Leadership Conference on Space Science and Technology for Sustainable Development  Mombasa, Kenya, 26-28 September 2011

➢ VI Space Conference of the Americas, held in Pachuca, Mexico, 15-19 November 2010
Basic Activities: Technical Assistance

- BSTI is providing technical assistance to Member States on related issues such as
  - Registration of Space Objects
    - Session 3.2: Natercia Rodrigues
  - Frequency Coordination (International Telecommunications Union)
    - Session 3.1: Xiuqi Wang
Fellowship Programmes

United Nations/Japan Long-term Fellowship Programme (hosted by the Kyushu Institute of Technology)

➢ Post-graduate study on Nano-Satellite Technologies (PNST)
➢ 3-year PhD and 2-years Masters programme, up to 6 students/year
➢ All cost (tuition, living cost, travel) covered

Basic understanding of space law and policy is required for small satellite developers.

A course on "The International Dimension of Space Activities: Space Law and Policy for Engineers" was developed, with support from UNOOSA.

2-credit course (16x90 minutes), including practical exercises on developing and drafting national space law and policy.

Taught to 38 MSc and PhD Students participating in the UN/Japan PNST long-term fellowship programme and in Kyutech‘s Space Engineering International Course (SEIC).

Course will be further developed and offered at Kyutech.
Hands-on Workshops

HEPTA Workshop 2017

- Organized by Nihon University and UNISEC-Global
- Hosted by Stellenbosch University (South Africa)
- 18 participants (%50 intl.)
Hands-on Workshops

CTEE / PG-ETE / INPE Workshop 2018

- 9-10 September 2018
- Organized by CTEE / PG-ETE / INPE
- Hosted by Brazilian Space Agency
- 25 participants (13 international)
UNOOSA & Access to Space

Ground facilities

Teachers’ guides
ZGIP
2013-2016

DropTES
2013-2016

KiboCUBE
2016-2019

LEO

CMSA Station
2016-2019

SNC Dreamchaser
2016-

Beyond LEO?

High Schools
Universities and Academics
Research Centres / Institutions
Space Agencies
Governments and IGOs
KiboCUBE

➢ OOSA and JAXA provide access to space to non-space fairing member states
➢ Free deployments of 1U Cubesats from the Japanese ISS Kibo Module
➢ **First round**: University of Nairobi, Kenya
➢ **Second round**: Universidad del Valle de Guatemala
➢ **Third Round**: Mauritius Research Council, Mauritius
UN / China Cooperation on Utilization of China Space Station

➢ Flight opportunities for experiments and space technology applications for Member States of the UN

➢ Flight opportunities for astronauts /payload engineers from other countries to conduct hands-on experiments

➢ Promote capacity building in human space technologies through facilities and resources from China’s Manned Space Programme

UN / SNC Orbital Space Mission

➢ Collaboration agreement 2016
➢ Baseline: Two week free-flyer flight for 2022
➢ Experiments onboard DreamChaser in support of SDGs
➢ Use standard Middeck Locker (MDL) experiment racks from ISS/Shuttle
➢ Call for Interest (CFI) ✓
➢ Next Step: Announcement of Opportunity (AO)

Objectives of the Symposium

➢ Review capacity-building related best practices
➢ Examine issues relevant to the implementation of capacity-building programs (such as testing infrastructure, launch opportunities, etc.)
➢ Review evolving capabilities and state-of-the-art applications of small satellite programmes
➢ Elaborate on legal and regulatory issues, such as frequency allocation, registration and space debris mitigation, in conjunction with emerging trends
Symposium Programme (1/2)

➢ Small Satellites and Capacity-Building in Basic Space Technology with a Focus on Latin America and the Caribbean (Sessions 1.1, 1.2 and 1.3, Panel)

➢ Evolving Capabilities and Operational Applications of Small Satellite Missions (Sessions 2.1, 2.2 and 2.3, Panel)

➢ Legal and Regulatory Issues (Sessions 3.1 and 3.2)
Symposium Programme (2/2)

➢ Evolution of a Local Data Collection System into an International Initiative (Session 4)

➢ Final Session: Review and Way Forward

➢ Poster Sessions
  ➢ Starting from first day afternoon, during all coffee breaks
  ➢ Check the programme for the designated times that you will have the chance to interact with the poster presenters.
Optional Social Activities

➢ 11th September: Welcome Reception – Cocktail  
   Venue: Imira Plaza Hotel

➢ 12th September: Symposium Dinner and Folk Show  
   Venue: Tábua de Carne - Via Costeira Restaurant

➢ 14th September: Field Trip to Hell’s Barrier Launch Site  
   Only for a limited number of participants who have fulfilled security requirements
We wish you all a productive Symposium and good time in Natal.
Thank you for your participation and contributions!