UNITED NATIONS
Office for Outer Space Affairs

4th UNISEC–Global Meeting
23 October 2016 | Kamchia, Bulgaria

United Nations Basic Space Technology Initiative

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United Nations Office for Outer Space Affairs
United Nations Office at Vienna
www.unoosa.org

Overview

I. The United Nations and Outer Space

II. Basic Space Technology Initiative

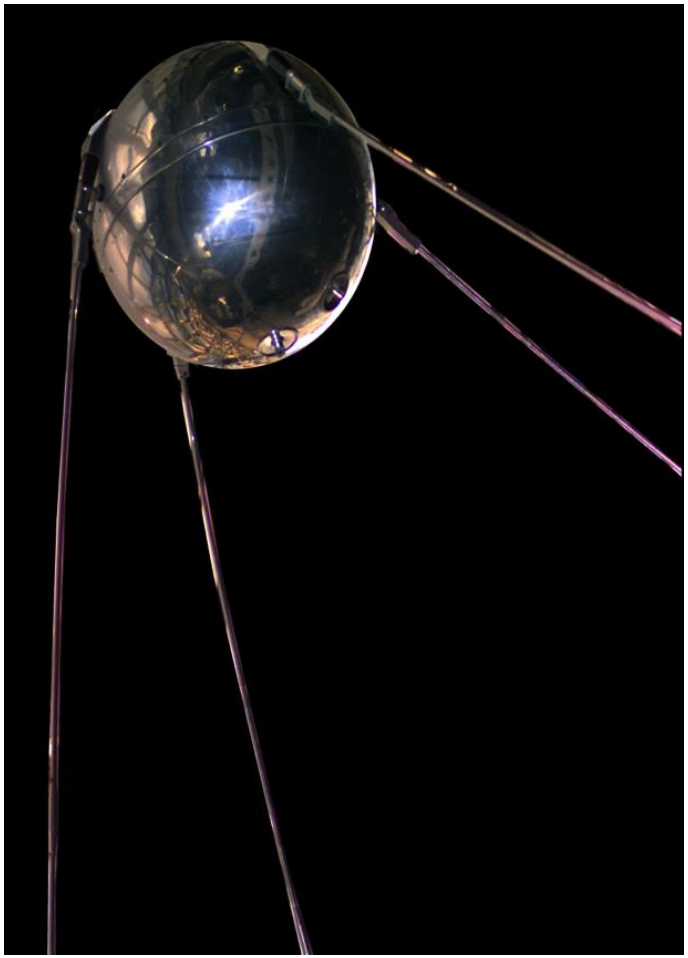
III. Agenda 2030 and UNISPACE+50

Note: United Nations documents quoted in this paper are available from the website of the Office for Outer Space Affairs at www.unoosa.org and from the Official Document System of the United Nations at documents.un.org.

Disclaimer: The views expressed in this paper are purely those of the author and do not necessarily reflect the position of the United Nations and its Office for Outer Space Affairs.

Beginning of the Space Age

- The **Space Age** began with the successful launch of Sputnik I on 4 October 1957
- It raised several questions
  - How to prevent the extension of the cold war arms race into outer space?
  - Who should define rules and regulations for activities in outer space?
  - How to ensure that space activities benefit all humankind?
- Agreement that these questions should be addressed by the United Nations



Committee on the Peaceful Uses of Outer Space

- **1958 UN General Assembly resolution 1348(XIII)**
  - Outer space to be used for peaceful purposes only and to be exploited to the benefit of mankind
  - Established an ad-hoc Committee on the Peaceful Uses of Outer Space (COPUOS) as an appropriate body for international cooperation

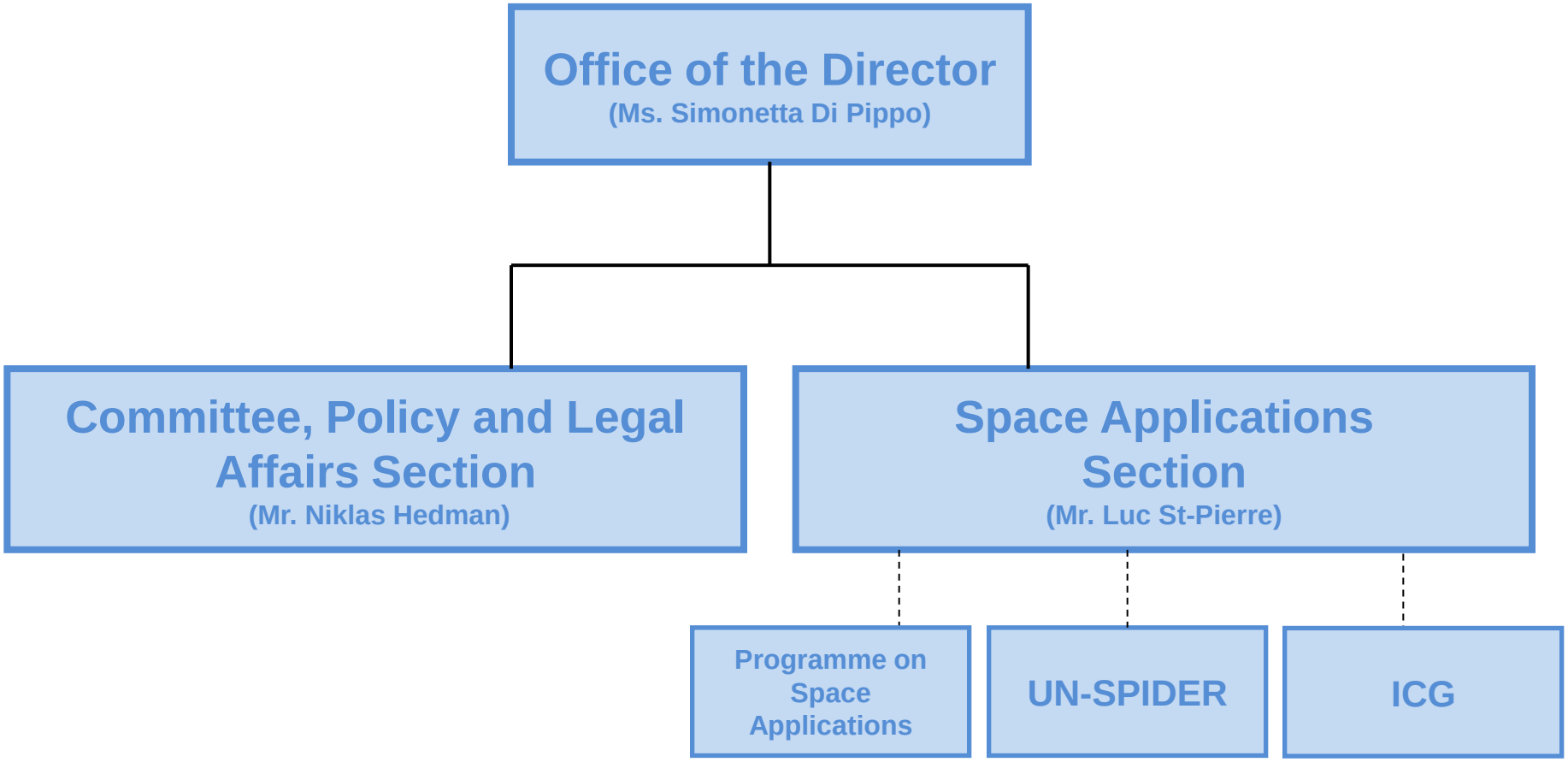
- **1959: UN General Assembly resolution 1472 (XIV)** reaffirmed the role of COPUOS and mandated the Committee to:
  - Review international co-operation
  - Study space-related activities that could be undertaken under United Nations auspices
  - Encourage and assist with national space research programmes
  - Study legal problems which may arise from the exploration of outer space

United Nations Office for Outer Space Affairs

- Originated as a small expert unit in the UN Secretariat to service the Ad Hoc COPUOS meeting
- 25 staff members (scientists, lawyers, political scientists), plus several seconded staff and interns

The United Nations Office for Outer Space Affairs (OOSA) is responsible for promoting international cooperation in the peaceful uses of outer space and for assisting Member States, in particular the developing countries, in using space science, technology and its applications

United Nations Office for Outer Space Affairs




Vienna

Vision

Bringing the benefits of space to humankind

Mission Statement

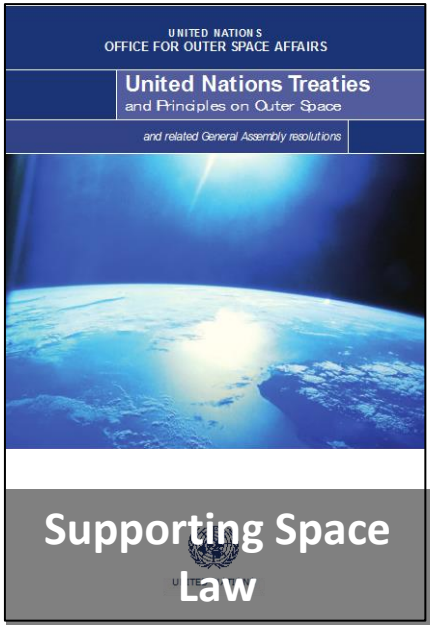
The core business of the Office is to promote

International Cooperation

in the use of outer space to achieve development goals for the benefit of humankind


Servicing UNCOPUOS


Organizing UNISPACE Conferences


UNITED NATIONS
OFFICE FOR OUTER SPACE AFFAIRS
United Nations Treaties
and Principles on Outer Space
and related General Assembly resolutions
Supporting Space Law


UNITED NATIONS
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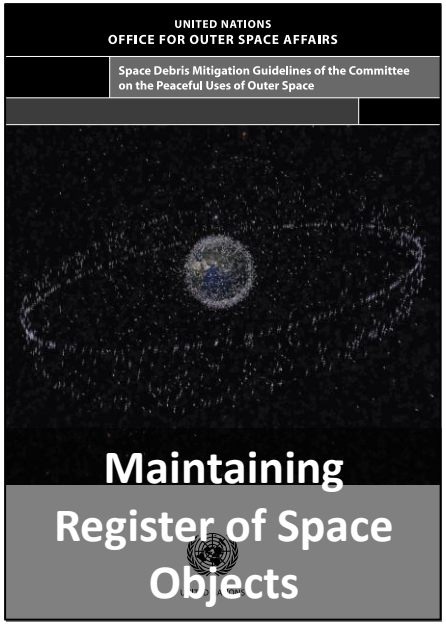
Space solutions
for the world's problems
How the United Nations family uses space technology to achieve development goals
space solutions
Secretariat of UN-Space


UNITED NATIONS
OFFICE FOR OUTER SPACE AFFAIRS
Space Debris Mitigation Guidelines of the Committee on the Peaceful Uses of Outer Space
Maintaining Register of Space Objects


UNITED NATIONS
OFFICE FOR OUTER SPACE AFFAIRS
United Nations Programme on Space Applications
Implementing Programme on Space Applications, ICG and UN-SPIDER

What We Do

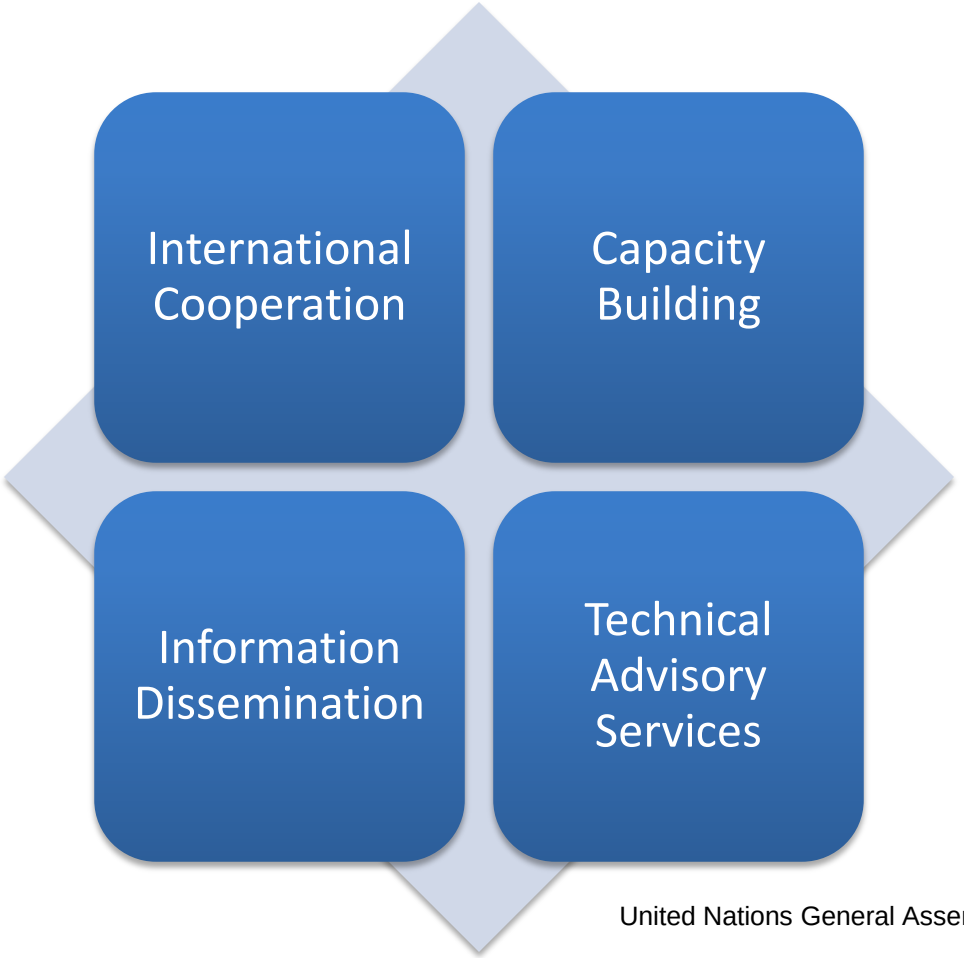
- Assist United Nations Member States to establish **legal and regulatory frameworks**
- **Strengthen capacity of developing countries** to use space technology for development by helping to integrate space capabilities into national development programmes
- Implement the **United Nations Programme on Space Application**
- Maintain, on behalf of the United Nations Secretary-General, the **Register of Objects Launched into Outer Space**

- Serve as **Secretariat** of the General Assembly's only committee dealing with international cooperation on the peaceful uses of outer space: **COPUOS**
- Lead the UN Inter-Agency coordination mechanisms on Outer Space Activities (**UN-Space**)
- Pursue **coordination/cooperation** with space agencies, IGOs & NGOs, private sector, academia, involved in space-related activities
- Serve as Executive Secretariat for the International Committee on Global Navigation Satellite Systems (**ICG**)
- Implement the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (**UN-SPIDER**) programme

Programme on Space Applications

- Supports capacity building in space science, technology and its applications
- Established in response to recommendations of the first UNISPACE conference in 1968
- Operational from 1971 and implemented by UNOOSA
- Strengthened mandates as a result of the discussions at the UNISPACE conferences held in 1982 and 1999

Programme Mandate



United Nations General Assembly Resolution 37/90, para. 7

Programme Implementation

Thematic priorities:

- Biodiversity/Ecosystems
- Climate Change
- Disaster Management
- Environmental Monitoring and Natural Resource Management
- Global Health
- Global Navigation Satellite Systems
- Satellite Communications

Basic Space Science Initiative (BSSI)

Basic Space Technology Initiative (BSTI)

Human Space Technology Initiative (HSTI)

Regional Centres for Space Science and Technology Education, affiliated to the United Nations

Long-Term Fellowship Programmes

Programme Activities 2016

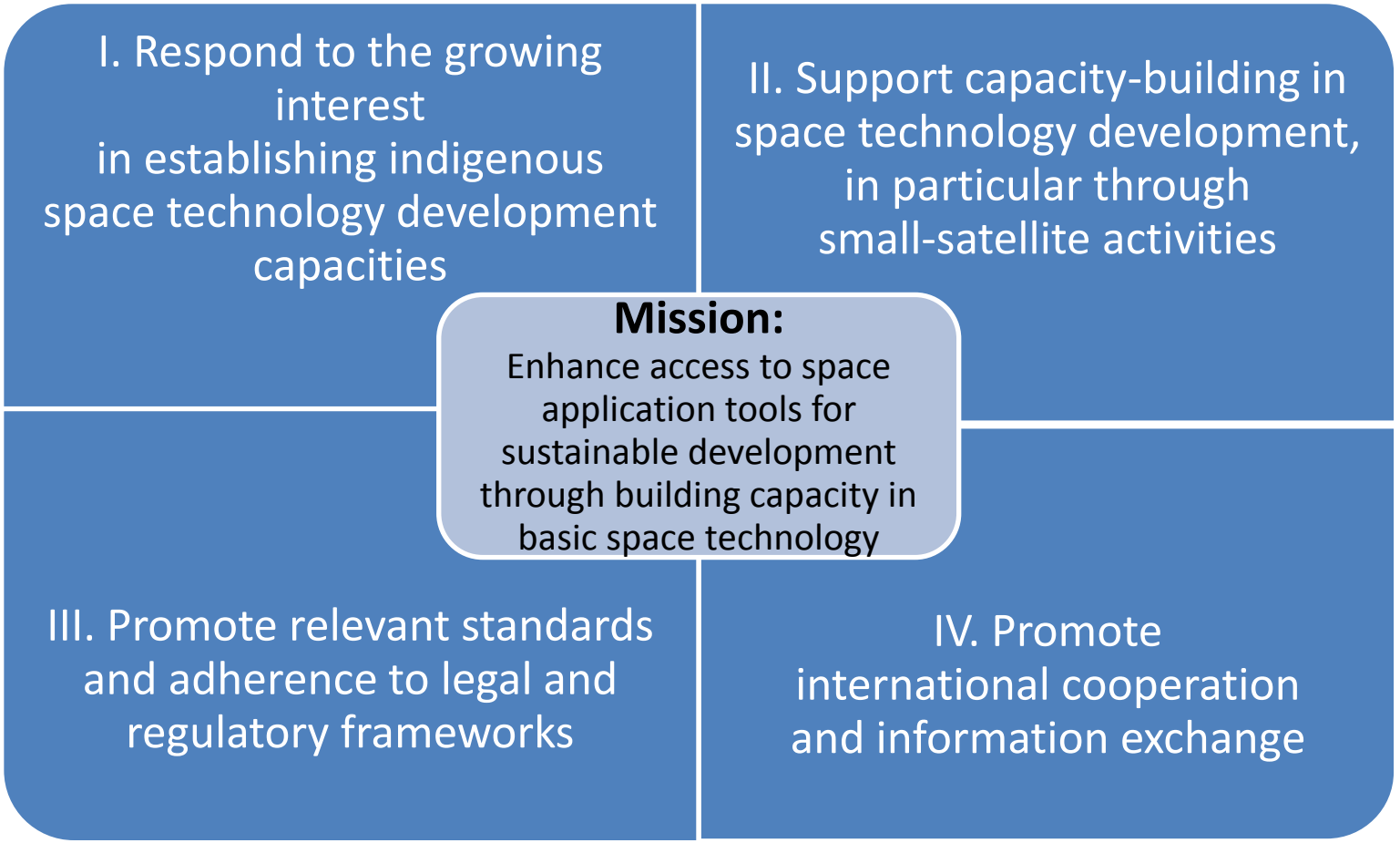
Activity	Location, Date
UN/Costa Rica Workshop on Human Space Technology	San José, Costa Rica 7-11 March 2016
UN/India Workshop on the Use of Earth Observation Data in Disaster Management and Risk Reduction; Sharing the Asian Experience	Hyderabad, India 8-11 March 2016
UN/Kenya Workshop on Space Technology and Applications for Wildlife Management and Protecting Biodiversity	Nairobi, Kenya 27-30 June 2016
UN/Austria Symposium on Integrated Space Technology Applications for Sustainable Development in Mountain Regions	Graz, Austria 12-14 September 2016
UN/International Astronautical Federation Workshop on Space Technology for Socio-Economic Benefits	Guadalajara, Mexico 23-25 September 2016
UN/Islamic Republic of Iran Workshop on the Use of Space Technology for Dust Storm and Drought Monitoring in the Middle East Region	Tehran, Iran 5-9 November 2016
UN/Nepal Workshop on the Applications of Global Navigation Satellite Systems	Kathmandu, Nepal 5-9 December 2016

Benefits of Small Satellite Development

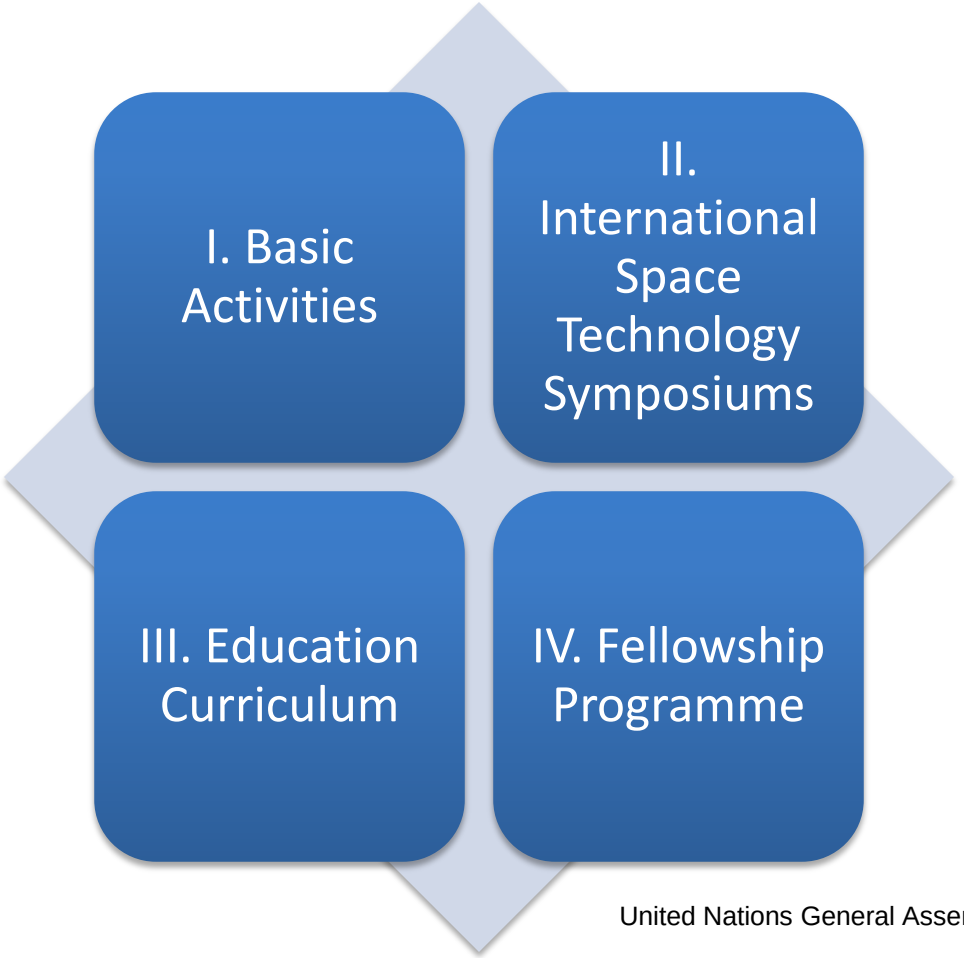
- Affordable approach to establish a capacity for space technology development with limited infrastructure and development cost;
- Train and educate engineers and project managers with transferable skills;
- Acquisition of technical capabilities, with potential spin-offs into other industrial sectors;
- Establishment of commercial businesses;
- Opportunities for international space cooperation;
- Stepping-stone in developing and enhancing a country's space capacity;
- Benefits accruing from the actual operational use of small satellites.

Launch of the Basic Space Technology Initiative (BSTI) in 2009

BSTI Mission and Objectives



BSTI Workplan

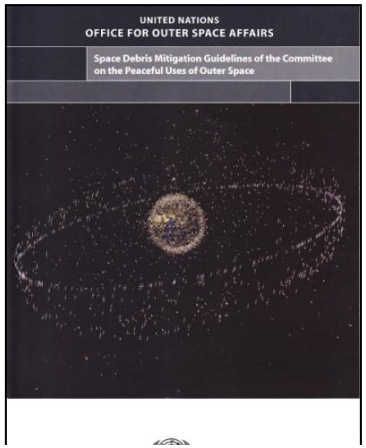


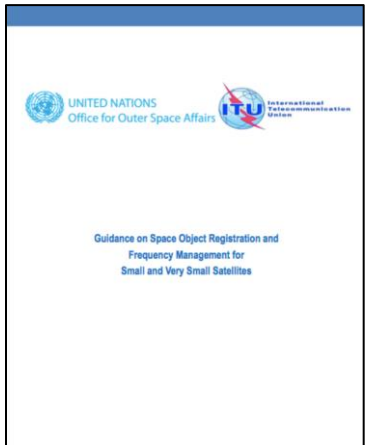
United Nations General Assembly Resolution 37/90, para. 7

I. Basic Activities

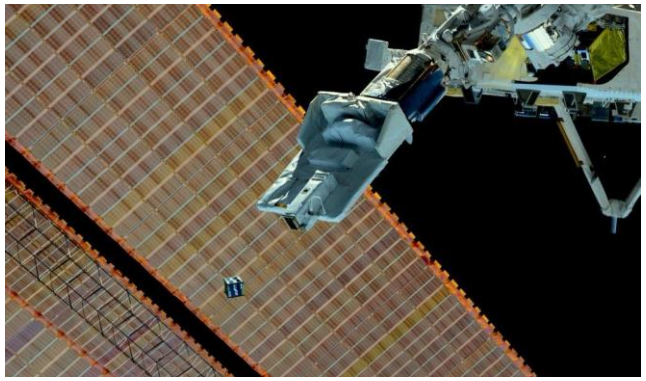
BSTI Symposiums 2009-2011, Austria

Technical Assistance Missions



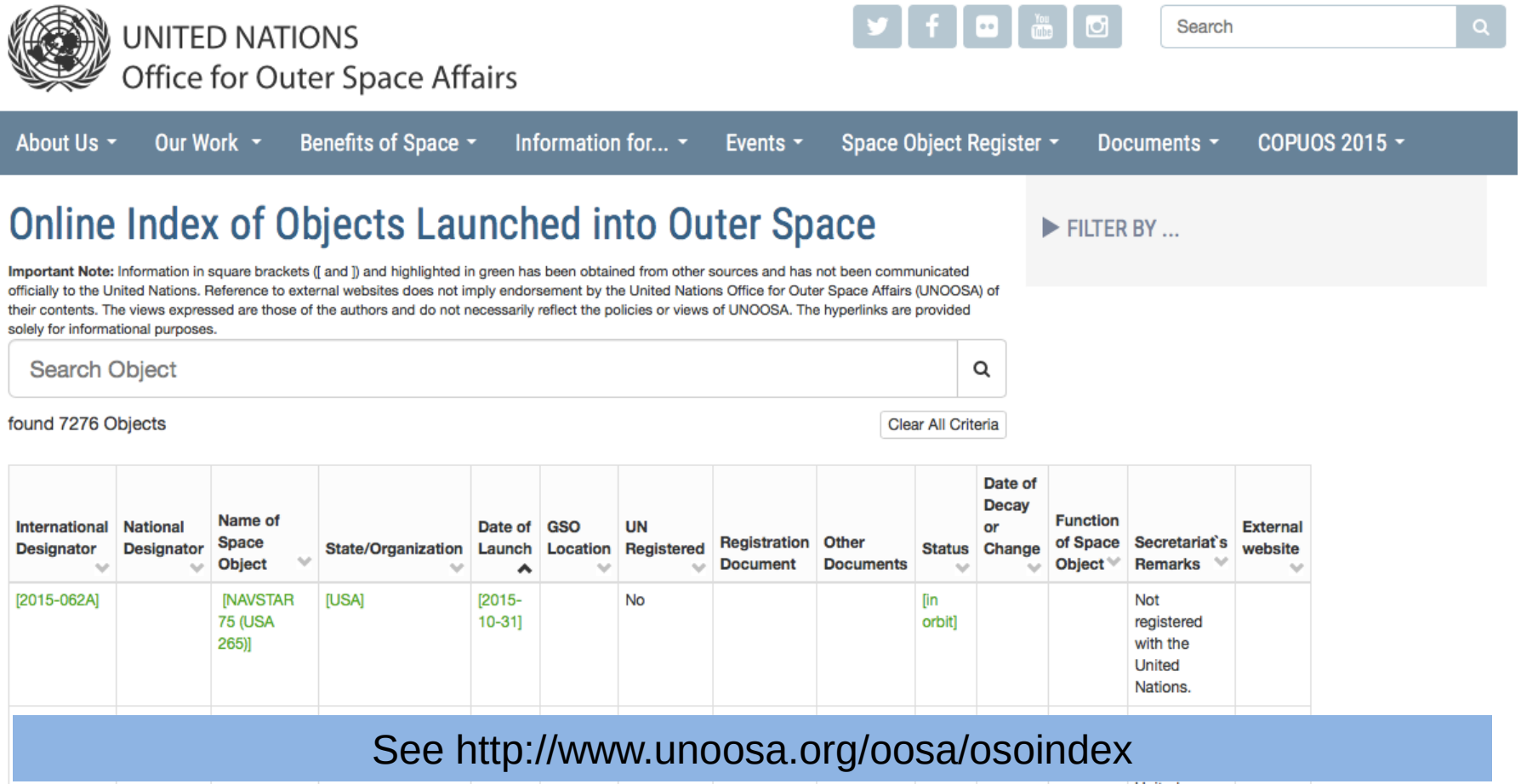


Debris Mitigation/Frequency Coordination



Launch Opportunities (KiboCube)

Online Index of Objects Launched into Outer Space



See http://www.unoosa.org/oosa/osoindex

II. UN/Japan Nano-Satellite Symposium 2012

- Held in Nagoya, Japan, 10-13 October 2012
- Report on the United Nations/Japan Nanosatellite Symposium: "Paradigm Shift — Changing Architecture, Technologies and Players" (A/AC.105/1032)
- http://www.unoosa.org/oosa/en/ourwork/psa/schedule/2012/symposium_japan_nanosatellites.html

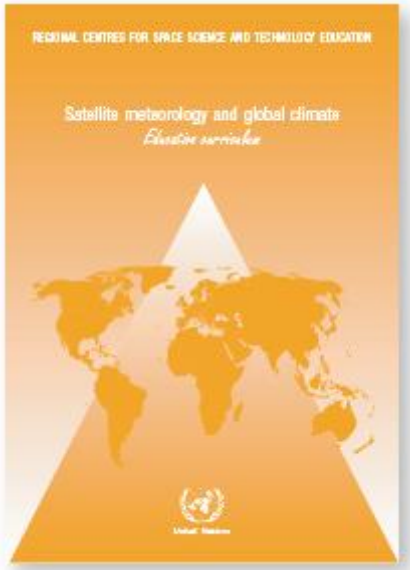
II. UN/UAE Symposium 2013

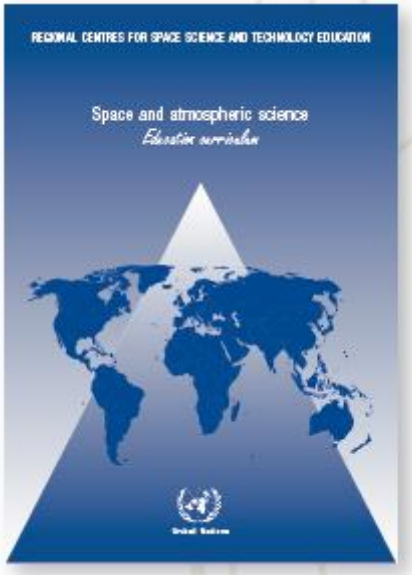
- Held in Dubai, United Arab Emirates, 20-23 October 2013
- Report on the United Nations/United Arab Emirates Symposium on Basic Space Technology: Small-Satellite Missions for Developing Space Nations (A/AC.105/1052)
- http://www.unoosa.org/oosa/en/ourwork/psa/schedule/2013/symposium_uae_basic_space_technology.html

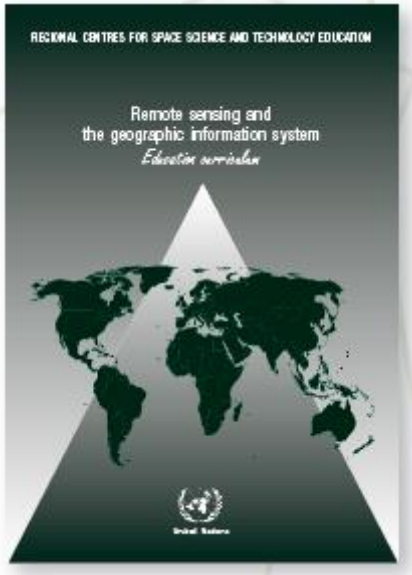
II. UN/Mexico Symposium 2014

- Held in Ensenada, Baja California, Mexico, 20-23 October 2014
- Report on the United Nations/Mexico Symposium on Basic Space Technology: Making Space Technology Accessible and Affordable (A/AC.105/1087)
- http://www.unoosa.org/oosa/en/ourwork/psa/schedule/2014/symposium_mexico_basic_space_technology.html

III. Education Curriculum

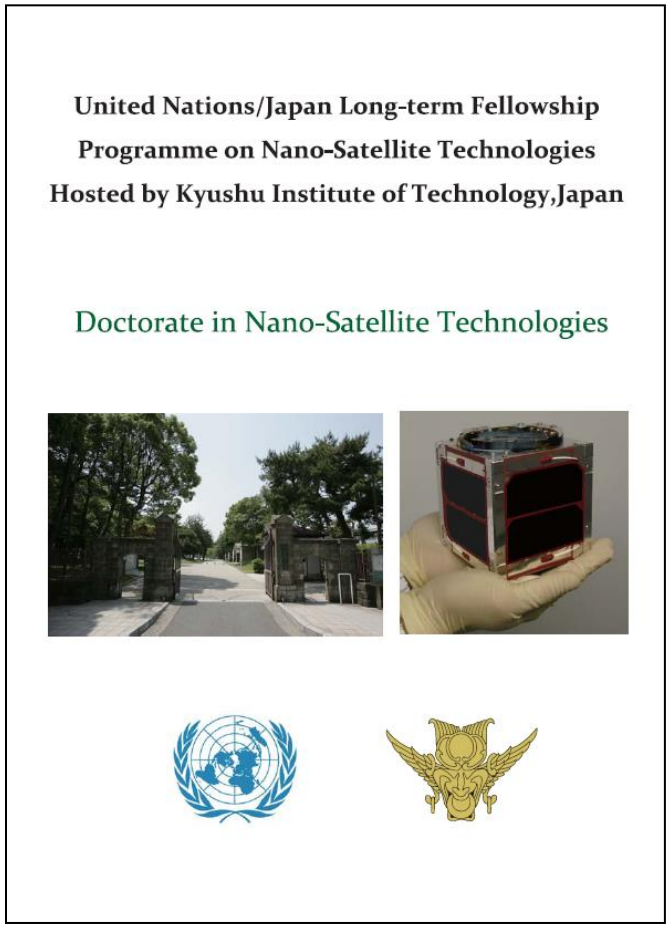






- Remote Sensing and Geographical Information Systems
- Satellite Communications
- Satellite Meteorology and Global Climate
- Space and Atmospheric Sciences
- Space Law, GNSS
- In preparation: Basic Space Technology

IV. Fellowship Programme



- United Nations/Japan Long-term Fellowship Programme, hosted by the Kyushu Institute of Technology at its Center for Nanosatellite Testing
- Post-graduate study on Nano-Satellite Technologies (PNST)
- 3-year PhD and 2-years Masters programme, up to 6 students/year
- All cost covered
- Presently accepting applications for 2017 (application deadline 22 January 2017)
- Application package available from http://www.unoosa.org/oosa/en/SAP/bsti/fellowship.html

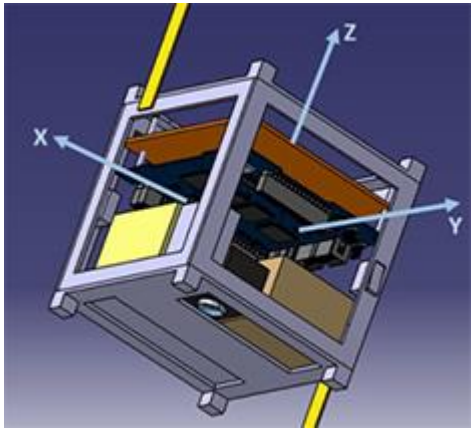
KiboCUBE

- KiboCUBE
- UN/JAXA Cooperation Programme
- 1-Cube CubeSat Launch Opportunity
- For satellite developers in developing countries
- Second round has just started
- Application deadline is 31 March 2017

See http://www.unoosa.org/oosa/en/ourwork/psa/hsti/kibocube.html

KiboCUBE Implementation

- UNOOSA and JAXA selected a team from the **University of Nairobi** to be given the deployment opportunity.
- 1KUNS-PF (1st Kenyan University NanoSatellite-Precursor Flight) will be launched in JFY 2017.
- The mission of 1KUNS-PF is to test technologies it has developed for the future launch of a larger earth observation satellite
- OOSA and JAXA have decided to extend KiboCUBE to the second round.
- The call for proposals has been announced on OOSA's website at http://www.unoosa.org/oosa/en/ourwork/psa/hsti/kibocube.html



1KUNS-PF
The University of Nairobi

Agenda 2030


1 NO POVERTY
2 ZERO HUNGER
3 GOOD HEALTH AND WELL-BEING
4 QUALITY EDUCATION
5 GENDER EQUALITY
6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
8 DECENT WORK AND ECONOMIC GROWTH
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
10 REDUCED INEQUALITIES
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND
16 PEACE, JUSTICE AND STRONG INSTITUTIONS
17 PARTNERSHIPS FOR THE GOALS
SUSTAINABLE DEVELOPMENT GOALS

Space Contributions to Agenda 2030

Towards UNISPACE+50

- 2018 marks the **50th** anniversary of the first **UN Conference on the Exploration and Peaceful Uses of Outer Space** (**UNISPACE**), held in Vienna in 1968.
- The **Committee on the Peaceful Uses of Outer Space (COPOUS)** decided in June 2015 to organize in 2015 the UNISPACE+50 conference.
- **UNISPACE+50 will articulate a long-term vision for space**

UNISPACE+50

Thematic Priorities

1. ***Global partnership in space exploration and innovation***
2. ***Legal regime of outer space and global space governance: current and future perspectives***
3. ***Enhanced information exchange on space objects and events***
4. ***International framework for space weather services***
5. ***Strengthened space cooperation for global health***
6. ***International cooperation towards low-emission and resilient societies***
7. ***Capacity-building for the 21st Century***

Concluding Remarks

- Small satellites are high-tech and are becoming increasingly capable, including for operational missions
- A growing number of stakeholders are joining and actively participating in space technology development activities
- We need to address issues of long-term sustainability of outer space, frequency coordination and registration
- Increased interest at the policy level (COPUOS): long-term sustainability of outer space activities, small satellite agenda item in COPUOS Legal Subcommittee
- The United Nations Office for Outer Space Affairs will continue to support Member States in their ambitions towards the exploration and peaceful uses of outer space
- Next BSTI Symposium is planned to be held in South Africa and/or Brazil in 2017

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