UN Basic Space Technology Initiative

Objectives of the 2017 Symposium and Practical Arrangements

27.09.2017

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UNITED NATIONS
Office for Outer Space Affairs

UNOOSA's Mission Statement

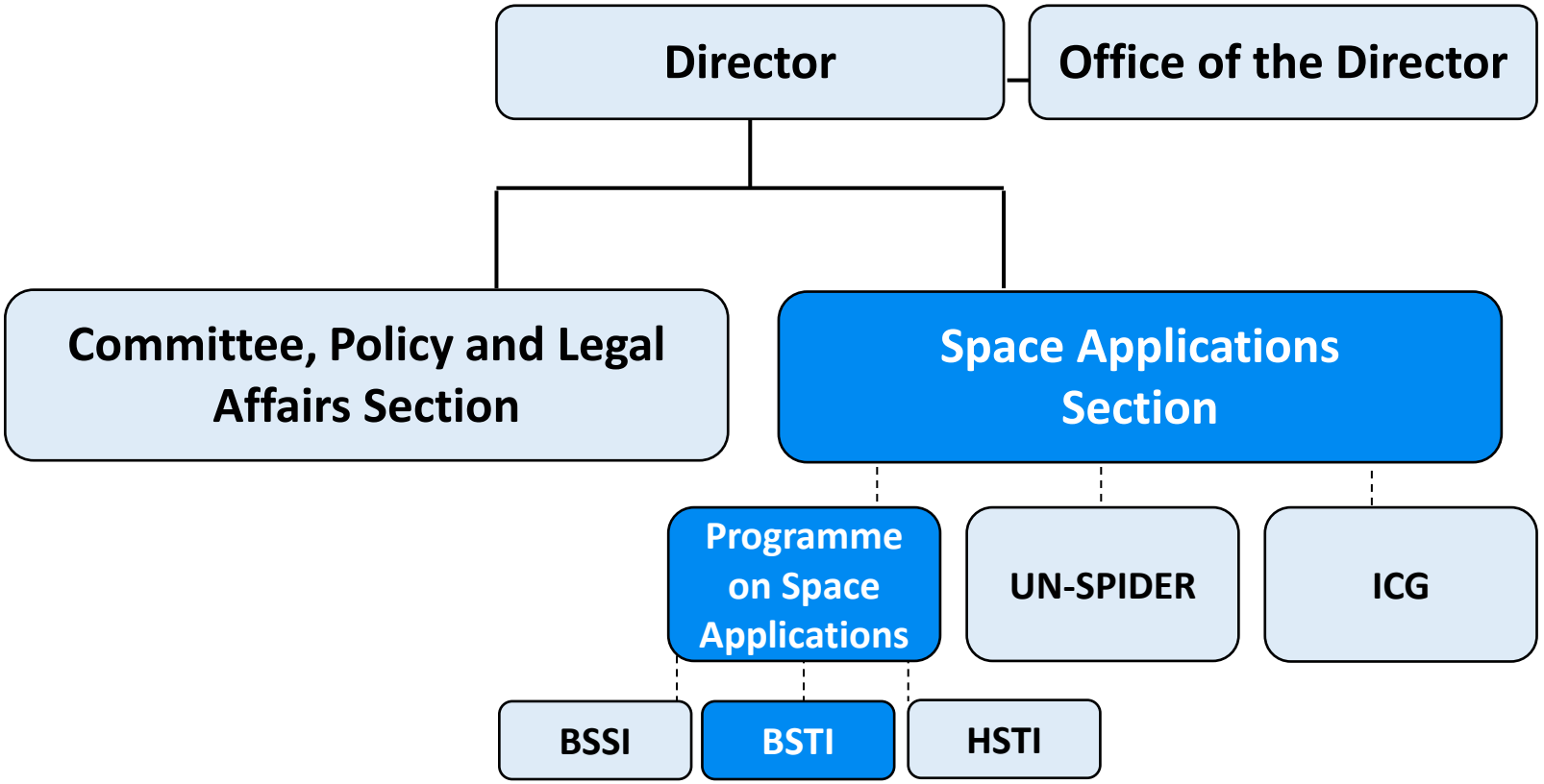
The core business of the Office is to promote international cooperation in the use of outer space to achieve development goals

UNOOSA's Vision

Bringing the benefits of space to humankind

Space technology helps address global challenges and supports the **2030 Agenda for Sustainable Development**

UNOOSA: Organization



Roles of UNOOSA

CAPACITY-BUILDER: UNOOSA brings the benefits of space to humankind by building space capacity of non-space-faring countries

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

GATEWAY TO SPACE: UNOOSA is the main UN agency on space matters and facilitates the coordination of UN activities using space-related technology to improve the human condition globally.

UNISPACE+50: its Thematic Priorities

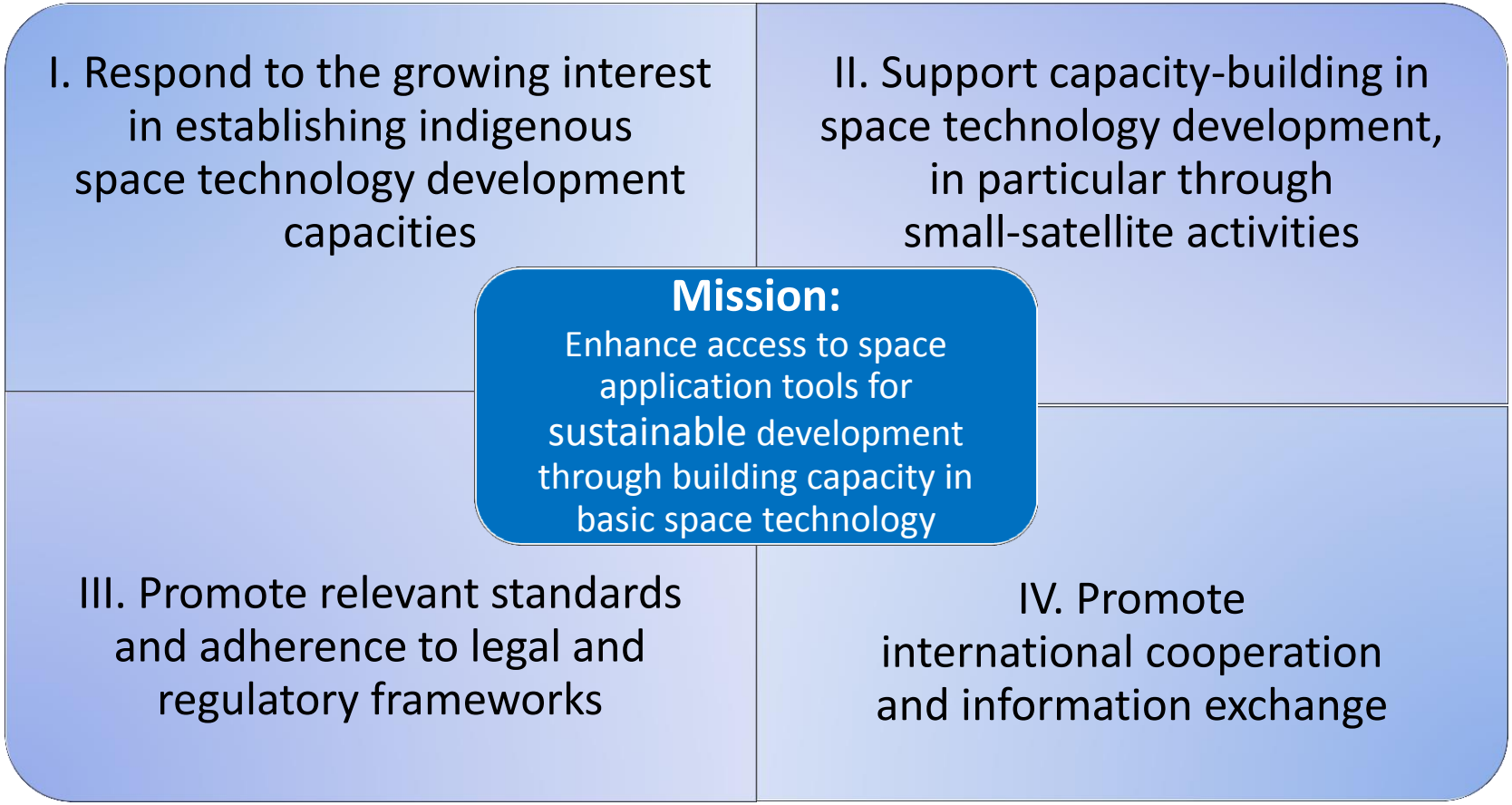
2018 marks the **50th anniversary** of the first **UN Conference on the Exploration and Peaceful Uses of Outer Space** (**UNISPACE**), held in Vienna in 1968.

1. **Global partnership in space exploration and innovation**
2. **Legal regime of outer space and global space governance: current and future perspectives** → Session 5: Hedman, Okumura, Martinez…
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.**

Benefits of Small Satellite Development

- Affordable approach to establish capacity for space technology development;
- 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.

Basic Space Technology Initiative (BSTI)



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)
  - **2011:** "Implementing Small Satellite Programmes - Technical, Managerial, Regulatory and Legal Issues" (A/AC.105/1005)

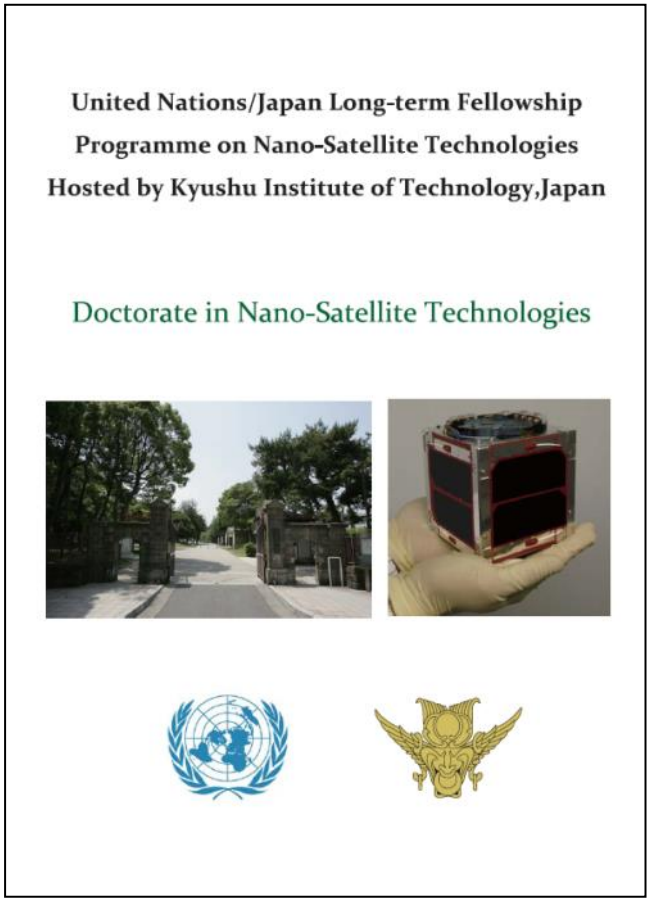
http://www.unoosa.org/oosa/en/ourwork/psa/bsti/events_activities.html

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
- BSTI is providing technical assistance to Member States on issues such as
  - Registration of space objects → Session 5: Okumura
  - Frequency coordination (in cooperation with International Telecommunications Union)

→ Session 5: Loo

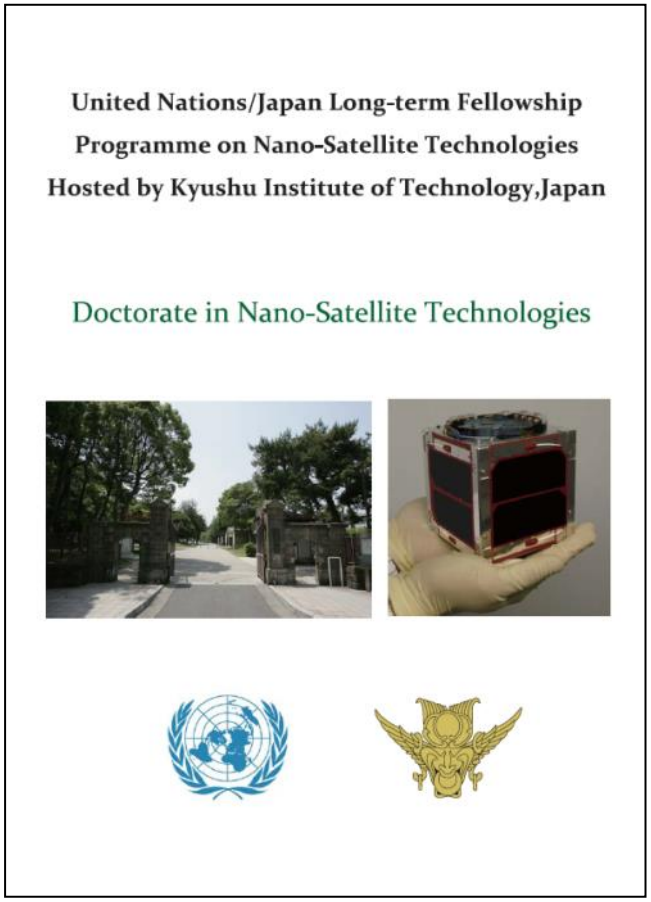
Fellowship Programmes



- 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 (tuition, living cost, travel) covered
- More information on: http://www.unoosa.org/oosa/en/ourwork/psa/bsti/fellowships.html
- 5 year PNST Symposium: 4-5 Dec 2017

→ YASE Panel and Session 7: Tejumola

Space Law and Policy for Engineers



- Small Satellite developers require a basic understanding of space law and policy
- To meet this capacity building need, 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

Course Syllabus

#	Lecture Content
1	**Introduction –** why space engineers need to know about space law and policy.
2	**History of space activities –** how space activities evolved in the context of space law and policy.
3	**Importance of space activities –** why they are essential for humankind.
4	**United Nations and space activities –** the role of the United Nations and other international organizations.
5	**Essentials of international space law, Part I –** fundamentals of international law, outer space treaty.
6	**Essentials of international space law, Part II –** space objects, liability and registration, Moon treaty.
7	**Long-term sustainability of outer space activities –** space debris, frequency coordination, orbital positions.
8	**Developing a national space policy and strategy for your country** – team exercise.
9	**National space law –** importance of developing and implementing national space law.
10	**International space cooperation –** why and how to cooperate, space cooperation examples.
11	**Developing national space law for your country –** team exercise.
12	**Space in support of sustainable development –** how space activities contribute to Agenda 2030 implementation.
13	**Future of space governance –** UNISPACE conferences, UNISPACE+50 and Space 2030.

Hand-on Workshops

HEPTA Workshop

- Organized by Nihon University and UNISEC-Global, hosted by Stellenbosch University
- Back to back with current Symposium: 9-10 December
- 18 participants: 9 international + 9 local
- Kits displayed at exhibition

→ Session 4: Yamazaki

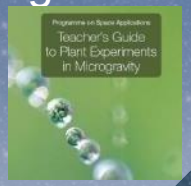
→ Session 7: Kawashima

Pilot extended to future Symposiums??

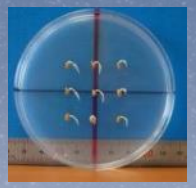
UNOOSA & Access to Space

Ground facilities **LEO** **Beyond LEO?**

Teachers' guides



ZGIP



2013-2016

DropTES

2013-2016
-… 2019

KiboCUBE

2016-2018

CMSA Station

2016?-

SNC Dreamchaser

2016?-

20??-

High Schools

Universities and Academics

Research Centres / Institutions

Space Agencies

Governments and IGOs

BSTI and HSTI: KiboCUBE

- OOSA and JAXA provide access to space to non space fairing member states
  → Session 7: Tsuji
- One free deployment per year of a 1U Cubesat from the Japanese ISS Kibo module
- **First round**: University of Nairobi, Kenya → Session 1: Mwangi
- **Second round**: The Universidad del Valle de Guatemala, Guatemala

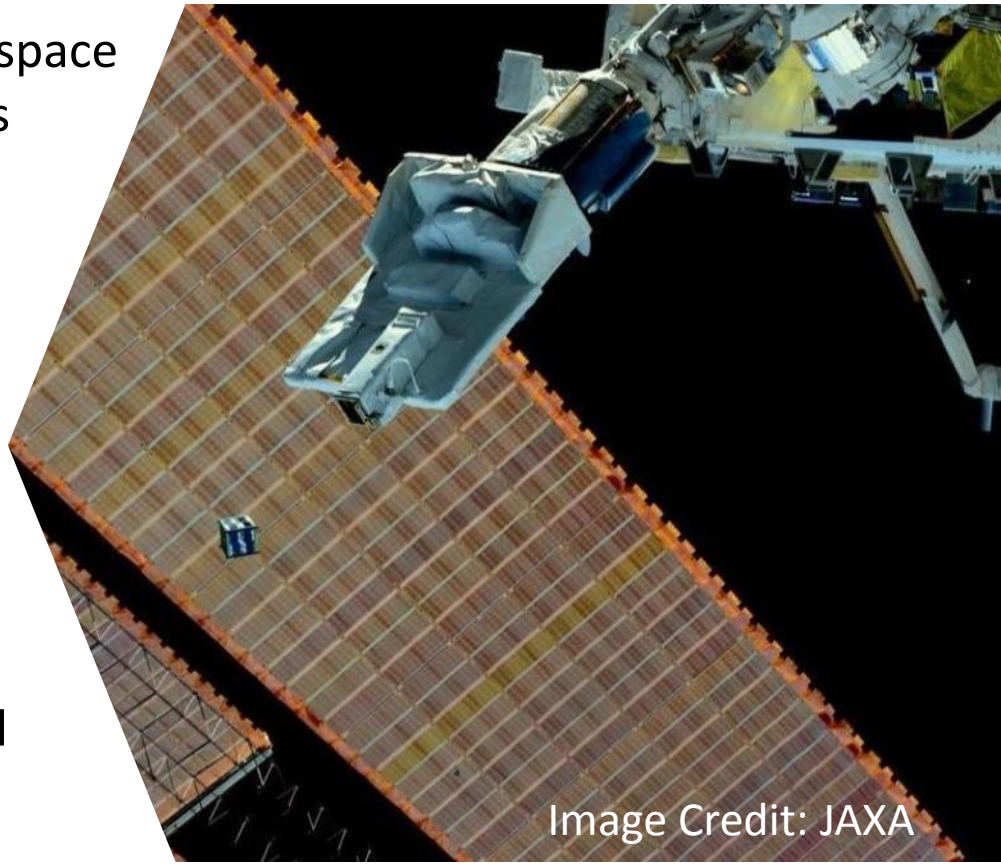


Image Credit: JAXA

HSTI – Sierra Nevada Corporation

- Planned two-week free-flyer flight for 2021
- Call for Interest Nov 2017
  - 150 responses received
- Briefing (online/in person) January 2018
- Announcement of Opportunity tentatively March 2018
- Configuration based on final user requirements

Complements HSTI efforts, strategy and timeline
Provides further access to LEO Experiments on DreamChaser

International Space Technology Symposiums

- Symposiums are being held in the regions that correspond to the United Nations Economic Commissions:
  - Africa
  - Asia and the Pacific
  - Latin America and the Caribbean
  - Western Asia
- Symposium Objectives:
  - Address international and regional aspects of small satellite programmes and capacity-building in basic space technology
  - (Develop a United Nations Space Technology Education Curriculum in cooperation with educators and experts)
  - Launch and implement BSTI Projects
- The Symposiums build on the recommendations of the UN/Austria/ESA series of Symposiums 2009-2011

International Space Technology Symposiums

2014
United Nations/Mexico Symposium on Basic Space Technology

20-24 October 2014
Ensenada, Baja California, 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

International Space Technology Symposiums: South Africa

United Nations/South Africa Symposium on Basic Space Technology
10-14 December 2017
Stellenbosch, South Africa

UN/South Africa Symposium on BSTI

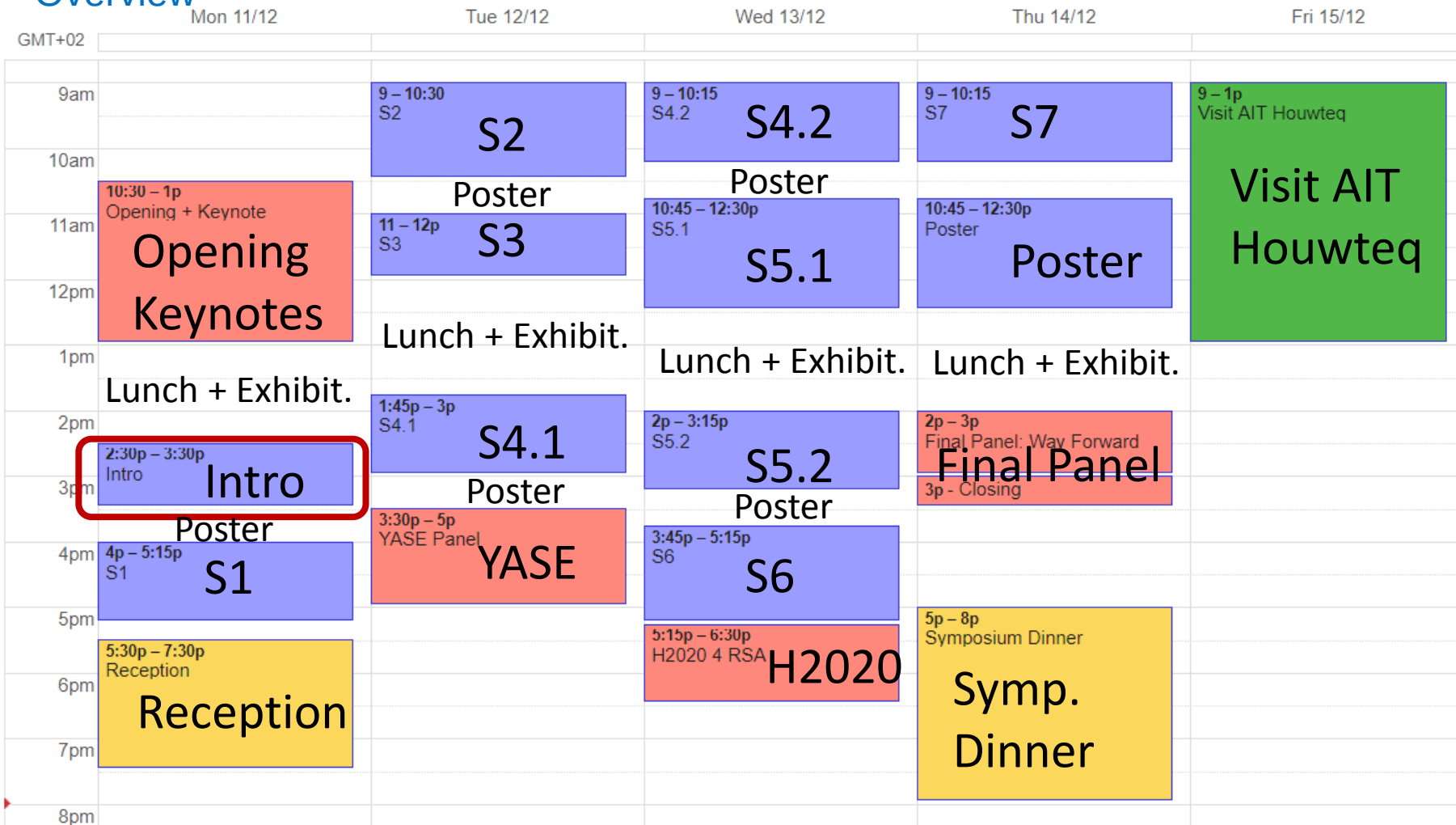
Small Satellite Missions for Scientific and Technological Advancement

Objectives:

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 a focus on regional and international collaboration opportunities, in particular for countries in Africa;
2. Examine issues relevant to the implementation of small satellite programmes, such as organizational capacity-building, development and testing infrastructure and launch opportunities;
3. Review state-of-the-art scientific applications of small satellite programmes and their associated supporting technological developments, in particular with focus on applications for agriculture, environment and city monitoring, and education to promote a sustainable growth, in line with the 2030 Agenda for Sustainable Development;
4. Elaborate on regulatory issues of space technology development programmes, such as frequency allocation and space debris mitigation measures for enhancing the long-term sustainability of outer space activities as well as import/export controls;
5. Elaborate on legal issues and responsibilities related to space technology development programmes, such as those that are raised from the relevant provisions in international space law;
6. Discuss the way forward for the Basic Space Technology Initiative (BSTI), and its capacity-building and international cooperation activities in preparation of UNISPACE+50.

UN/South Africa Symposium on BSTI

Overview



Organizational Issues

Sessions, Panel Discussions

- Sessions are chaired by a chairperson, supported by rapporteurs. Panel discussions are moderated by a moderator
- Speakers are recommended to meet with their chairperson/moderator prior to their session/panel
- Chairpersons/rapporteurs will summarize the findings of their sessions (input for UN report)
- Time for presentations is indicated in the programme and includes time for questions and answers. Q&A time at the end of the session might be used for further questions
- Please ensure that your presentation file is uploaded to the presentation computer
- All presentation materials will be made available online

Organizational Issues

Poster Session

- Posters will be displayed from ~~Monday afternoon~~ now
- Dedicated poster session on Thursday

Exhibition

- Lunch and breaks, interact with exhibitors

Internet (Wireless): Stias2 Stellenbosch2016!

Updates to the participants / speakers list

- Notify organizers, make sure presentation uploaded

Announcements to be made at the end of each session

Closing Remarks

- Use opportunities to get to know each others work
- Symposium CRP is a unique opportunity to convey a message to decision makers in your own country
- 2018 Symposium to be held in Brazil
- We are looking for host countries for the BSTI Symposiums 2019 and beyond

→ Session 2: Durão
→Session 6: Prado, Souto
→ Session 8: Mafra de Carvalho

Wishing us all a productive Symposium
and a good time in Stellenbosch.

Thank you for your participation and contributions!

UNISPACE +50

THANK YOU

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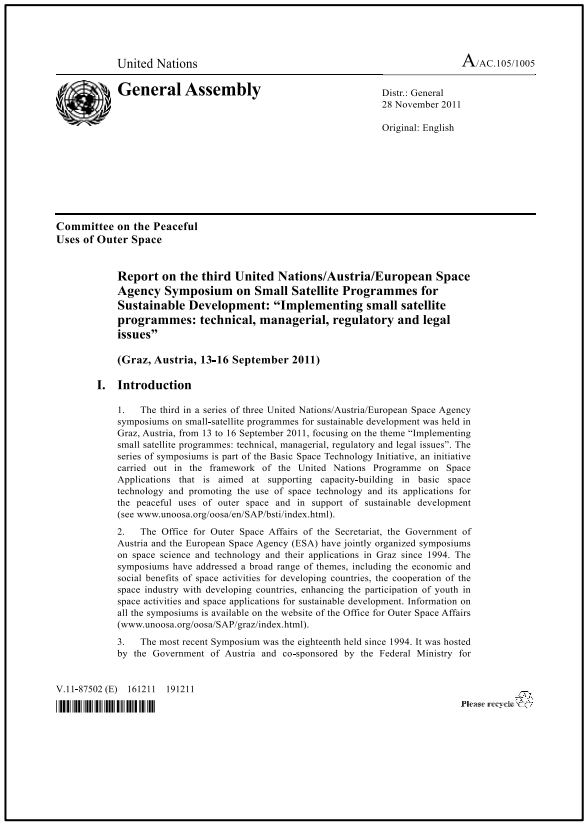
Backup Slides

CRP for STSC on the Symposium



United Nations A/AC.105/1005

General Assembly

Distr.: General
28 November 2011

Original: English

Committee on the Peaceful
Uses of Outer Space

Report on the third United Nations/Austria/European Space Agency Symposium on Small Satellite Programmes for Sustainable Development: "Implementing small satellite programmes: technical, managerial, regulatory and legal issues"

(Graz, Austria, 13-16 September 2011)

I. Introduction

1. The third in a series of three United Nations/Austria/European Space Agency symposiums on small-satellite programmes for sustainable development was held in Graz, Austria, from 13 to 16 September 2011, focusing on the theme "Implementing small satellite programmes: technical, managerial, regulatory and legal issues". The series of symposiums is part of the Basic Space Technology Initiative, an initiative carried out in the framework of the United Nations Programme on Space Applications that is aimed at supporting capacity-building in basic space technology and promoting the use of space technology and its applications for the peaceful uses of outer space and in support of sustainable development (see www.unoosa.org/oosa/en/SAP/bsti/index.html).

2. The Office for Outer Space Affairs of the Secretariat, the Government of Austria and the European Space Agency (ESA) have jointly organized symposiums on space science and technology and their applications in Graz since 1994. The symposiums have addressed a broad range of themes, including the economic and social benefits of space activities for developing countries, the cooperation of the space industry with developing countries, enhancing the participation of youth in space activities and space applications for sustainable development. Information on all the symposiums is available on the website of the Office for Outer Space Affairs (www.unoosa.org/oosa/SAP/graz/index.html).

3. The most recent Symposium was the eighteenth held since 1994. It was hosted by the Government of Austria and co-sponsored by the Federal Ministry for

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Please recycle

- Prepared by UNOOSA with the help of the session chairs/rapporteurs
- Report will reflect discussions and include observations and recommendations made by participants


SMART-1
esa
SPACE WEEK
OCTOBER 4-10
PROJECT