UNITED NATIONS
Office for Outer Space Affairs

Status of the Basic Space Technology Initiative (BSTI)

of the United Nations Programme on Space Applications

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February 2012
Vienna, Austria

Basic Space Technology Initiative (BSTI)

- Launched in 2009 under the mandate of the United Nations Programme on Space Applications
- **Mission**
  - To enhance access to space application tools for sustainable development through building capacity in basic space technology
- **Objectives**
  - Respond to the growing **interest in many countries to establish indigenous capacities in basic space technology**
  - Address the **growing role of small (nano-) satellites** for education, basic space science and for operational applications
  - Assist countries to assure **adherence to the relevant regulatory frameworks** and promote the **use of standards**
  - Promote **international cooperation and information exchange** in capacity building in basic space technology

Small Satellite Development Activities

- Affordable and in reach to countries and institutions with limited resources for space activities
- Size- and scalable to specific needs and objectives
- Establish a sustainable space programme
- Train, educate and motivate systems engineers and project managers with spin-offs into other industry sectors
- Acquire and develop capabilities in high-technology development, microelectronics and micro-manufacturing
- Opportunities to establish commercial space businesses
- Join an active community of small satellite developers and contribute to international space cooperation
- Benefit from the actual applications of small satellites

BSTI Work Programme

I. Basic Activities

- UN/Austria/ESA Symposiums on Small Satellite Programmes
- Regulatory aspects (registration, frequencies, space debris…)
- Open Standards and Standardization
- Launch opportunities

II. International Workshops on Capacity Building in Space Technology Development

- Workshops in the regions that correspond to the United Nations Economic Commissions for Africa, Asia and the Pacific, Latin America and the Caribbean, and Western Asia

III. Space Technology Education Curriculum

- Basic Space Technology Education Directory
- Development of a Space Technology Education Curriculum

IV. Long-term Fellowship Programme

V. BSTI Projects

I. Basic Activities: UN/Austria/ESA Symposiums

- 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/SAP/bsti/fundamentals.html

I. 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
  - Frequency coordination (in cooperation with International Telecommunications Union)

http://www.unoosa.org/oosa/en/SAP/bsti/news.html

II. International Workshops

- Workshops will be held in the regions that correspond to the United Nations Economic Commissions:
  - Africa
  - Asia and the Pacific
  - Latin America and the Caribbean
  - Western Asia
- Workshop 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
- These conferences will build on the recommendations of the UN/Austria/ESA series of Symposiums 2009-2011

II. International Workshops

- 2012 Workshop will be hosted by the University of Tokyo and held in Nagoya, Japan, in connection with
  - 2nd Mission Idea Contest
  - 4th Nano-Satellite Symposium
  - Japan Aerospace 2012
- 2013 Workshop: Offer from United Arab Emirates
- 2014 Workshop: Offer from Mexico
- 2015 Workshop: African Region (host country tbc)

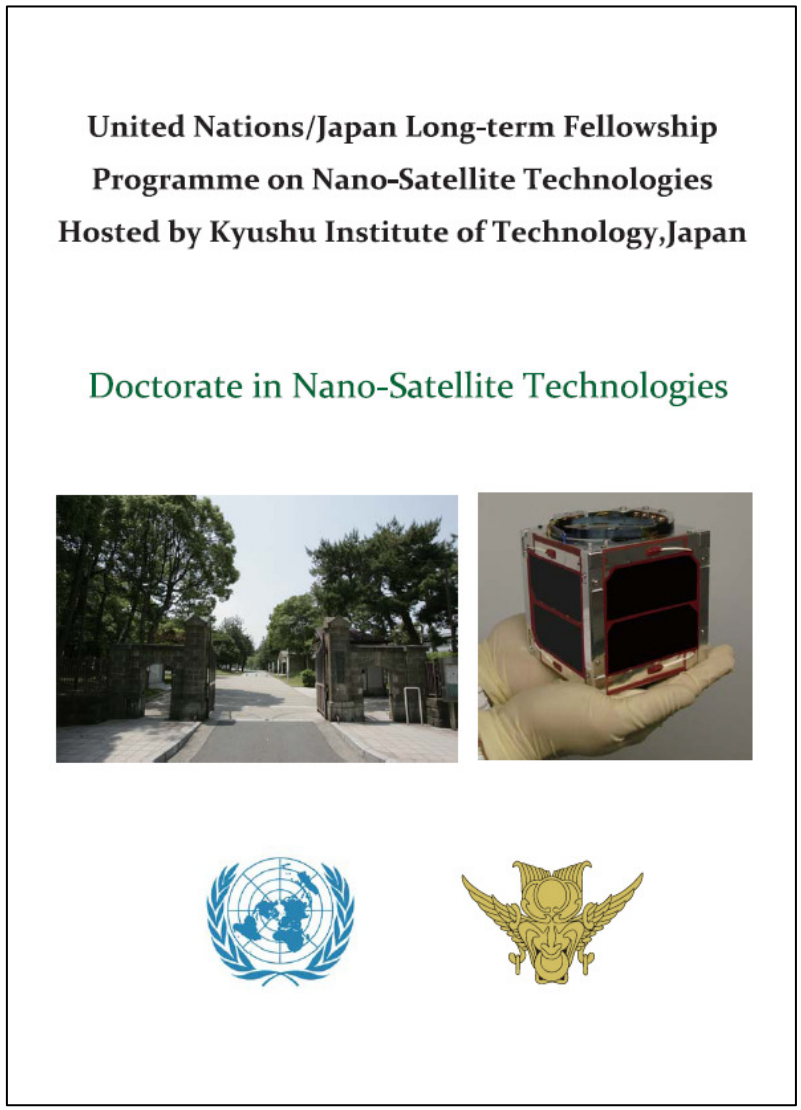
III. Space Technology Education Curriculum

- Development of a Space Technology Education Curriculum for use in academic institutions, such as the Regional Centres for Space Science and Technology Education, affiliated to the United Nations
- As a first step, BSTI conducted a survey of world-wide academic programmes in aerospace engineering and small satellite development (ST/SPACE/53)
- Meetings of educators to develop the Space Technology Education Curriculum will be held alongside the international workshops

III. Space Technology Education Curriculum

- United Nations education curricula and education modules have been and are being developed for
  - Remote Sensing and Geographical Information Systems
  - Satellite Communications
  - Satellite Meteorology and Global Climate
  - Space and Atmospheric Sciences as well as data management
  - In preparation: Space Law, GNSS

IV. Fellowship Programmes

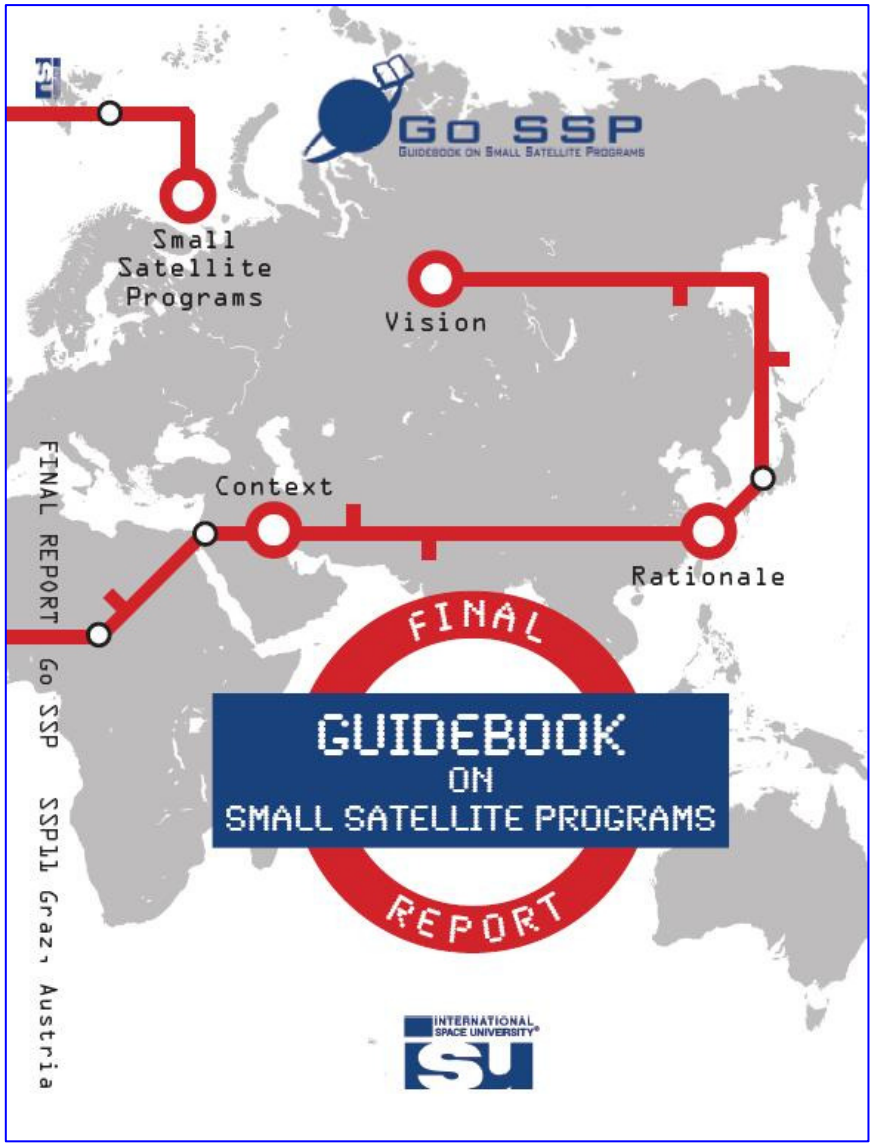


- United Nations/Japan Long-term Fellowship Programme, hosted by the Kyushu Institute of Technology at its Center for Nanosatellite Testing
- 3-year PhD programme concluding with a doctorate degree in Nano-satellite Technologies (Doctor of Engineering) following successful thesis defense
- All cost (tuition, living cost, travel) covered by KIT and UN
- Application package available from http://www.unoosa.org/oosa/en/SAP/bsti/fellowship.html
- Application deadline: 30 April 2012

V. BSTI Projects

- BSTI is also used as a framework to implement regional or international projects related to capacity building in space technology
- Examples of projects being implemented:
  - Support to the HUMSAT Constellation Project led by the University of Vigo, Spain. 1st launch 13 February, see http://www.humsat.org/
  - Development of a Best Practices Handbook for Small Satellite Programmes in cooperation with the International Space University

Guidebook on Small Satellite Programmes



- Developed by participants of the 2011 Space Studies Programme of the International Space University, held in Graz, Austria
- Project conducted as part of the Basic Space Technology Initiative
- Project background and presentations see http://www.unoosa.org/oosa/en/SAP/bsti/isu-ssp2011.html
- Final report and executive summary http://gossp.isunet.edu
- Considerations to develop a comprehensive guidebook under the Basic Space Technology Initiative

Thank you for your attention!

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BSTI Resources

- BSTI Website http://www.unoosa.org/oosa/en/SAP/bsti/index.html
- Basic Space Technology Initiative (BSTI) - Activities in 2009-2011 and plans for 2012 and beyond, A/AC.105/2011/CRP.14, 30 May 2011
- M.Cho and W.Balogh, “UN/Japan Long Term Fellowship Programme on Nanosatellite Technologies”, Proceedings of the 3rd Nano-Satellite Symposium, Kitakyushu, Japan, 12-14 December 2011
- W.Balogh, “Capacity Building in Space Technology Development: A New Initiative within the United Nations Programme on Space Applications”, Space Policy 27, Elsevier, p. 180-183, 10.1016/j.spacepol.2011.04.014, August 2011
- W.Balogh and H.Haubold, “Proposal for a United Nations Basic Space Technology Initiative”, Advances in Space Research 43, Elsevier, p. 1847-1853, 10.1016/j.asr.2009.01.035, 15 June 2009