United Nations / Austria / European Space Agency Symposium on
Small Satellite Programmes for Sustainable Development
"Payloads for Small Satellite Programmes"

Programme

Austrian Academy of Sciences, Institute for Space Research
Schmiedlstrasse 6, Graz, Austria

Hosted by the Austrian Federal Ministry for European and International Affairs,

Federal Ministry for Transport, Innovation and Technology,

State of Styria and City of Graz

and co-sponsored by the European Space Agency

21 - 24 September 2010

Honorary Committee (in alphabetical order):

H. Böck	Federal Ministry for European and International Affairs, Austria
C. De Cooker	European Space Agency, France
K. Edlinger-Ploder	Member of the Government, State of Styria, Austria
S. Nagl	Mayor, City of Graz, Austria
M. Othman	Director, Office for Outer Space Affairs, United Nations
F. Voves	Governor, State of Styria, Austria

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Tuesday, 21 September 2010

Morning
08:00   **Registration**

09:00   **Opening Ceremony**
Master of Ceremony: Willibald Riedler, Austrian Academy of Sciences

09:10   Welcome / Opening Remarks
- *Wolfgang Baumjohann, Austrian Academy of Sciences*
- *Chris De Cooker, European Space Agency*
- *Peter Piffl-Percevic, City of Graz*
- *State of Styria*
- *Roberto Thym, Austrian Federal Ministry for European and International Affairs*
- *Mazlan Othman, United Nations Office for Outer Space Affairs*

10:00   **Keynote Addresses**
Chairperson: Mazlan Othman, United Nations Office for Outer Space Affairs

10:00   Microsatellites – Moving from Research to Real Operational Missions   *Martin Sweeting Surrey Ltd., United Kingdom*

10:30   Experiences with Capacity Building in Small Satellites   *Hyon Sock Chang SatrecI, Republic of Korea*

11:00   *Coffee/Tea Break*

11:00-12:30 *Press Conference*   *(by invitation)*

11:30   United Nations Basic Space Technology Initiative and Objectives of the 2010 Symposium   *Werner Balogh United Nations Office for Outer Space Affairs*

12:00   *Lunch*

Afternoon
13:30   **Session 1: Small Satellite Programmes**
Chairperson: Johannes Ortner, EURISY, Austria

13:30   Small Satellite Payloads – An Introduction   *Felix Boehringer Institut für Raumfahrtsysteme Universität Stuttgart, Germany*

14:15   Cubesats: Cost-Effective Science and Technology Platforms for Emerging and Developing Nations   *Kirk Woellert Space Policy Institute George Washington University, United States*

15:05   Mission Idea Contest for Nano-satellite Constellation   *Rei Kawashima AXELSPACE Corporation, Japan*

15:25	*Coffee/Tea Break*	
15:45	Status of GENSO – Small Satellite Activities of the ESA Education Office	*Piero Galeone* *ESA*
16:05	Cooperation on Small-satellite activities in Africa: Towards an African Resource Management Constellation	*Matlou Mabokano* *Ministry of Science and Technology* *South Africa*
16:25	The Promise of Scientific CubeSat Missions: A new program at the US National Science Foundation	*Therese Moretto Jorgensen* *National Science Foundation* *United States*
	Short presentations on national programmes	
16:45	Small Satellite Activities in the United Arab Emirates	*Salem Al Marri* *EIAST, United Arab Emirates*
17:00	Canadian Small Satellite Activities	*David Kendall* *Canadian Space Agency*
17:15	COSPAR PEX – International Cubesat Programme / NASA Cubesat Activities	*Pascale Ehrenfreund* *Space Policy Institute* *George Washington University, United States*
17:30	*Transfer to the hotel*	
19:00	*Transfer from the hotel to the "Burgring"* *(center of Graz)*	
19:30	*Reception by the Governor of the State of Styria F. Voves* *(Weisser Saal at the Grazer Burg)*	

Wednesday, 22 September 2010

Morning

09:00 **<u>Session 2: Payloads for Small Satellites – State of the Art, Design, Integration</u>**
Chairperson: Rainer Sandau, International Academy of Astronautics, France

09:00	Networked Pico-Satellites: small satellites for an interesting performance	*Klaus Schilling* *Julius-Maximilians-Universität Würzburg* *Germany*
09:20	Innovative Satellite (InnoSAT)	*Aziz Yusoff* *ATSB, Malaysia*
09:40	Introduction of the Small Satellite System Development Architecture Innovation Activity in Japan and its Application for the Payload/Mission Development	*Koichi Ijichi* *Institute for Unmanned Space Experiment* *Free Flyer (USEF), Japan*

10:00	Proba Spacecraft Family: Small Mission Solutions for Earth Observation and Science Applications	*Jo Bermyn* *QinetiQ Space nv, Belgium*
10:20	*Coffee/Tea Break*	
10:40	Small Satellite Projects: Learning Opportunities for Satellite Systems Engineering Tools	*Danielle Wood* *Massachusetts Institute of Technology (MIT)* *United States*
11:00	Concurrent design of small satellites: the experience of the ESA education office	*Piero Galeone* *European Space Agency*
11:20	SATEDU	*Esaú Vicente Vivas* *UNAM, Mexico*
11:40	Presentations by Participants on their Small Satellite Activities (approx. 5 min each, 8 slots)	*Symposium Participants (a sign-up list will be made available at the Symposium)*
12:30	*Lunch*	

Afternoon

13:30   **Session 3: Payloads for Small Satellites – Examples**
        Chairperson: Otto Koudelka, Technical University of Graz, Austria

13:30	Payloads for CubeSat Satellite Platforms	*Jordi Puig-Suari* *Cal Poly, United States*
13:50	The HUMSAT Constellation	*Fernando Aguado Agelet* *University of Vigo, Spain*
14:10	The QB50 Mission	*Cem O. Asma* *von Karman Institute, Belgium*
14:30	Astronomical Payloads for BRITE	*Otto Koudelka, Technical University of Graz* *Werner Weiss, University of Vienna, Austria*
14:50	*Coffee/Tea Break*	
15:10	CANEUS Shared Small Satellites for Collective Safety, Security and Prosperity	*Milind Pimprikar* *CANEUS International, Canada*
15:30	Utilizing Miniaturized Satellite Formation Flying for Technology, Science and Education	*Jian Guo* *Delft University of Technology, The Netherlands*
15:50	Bringing Big Performance to Small Satellites	*Johan Leijtens* *TNO, The Netherlands*
16:10	Off-the-shelf Parts for CubeSat Platforms	*Ritchie Logan* *Clyde Space Limited, United Kingdom*
16:30	Presentations by Participants on their Small Satellite Activities (approx. 5 min each, 4 slots)	*Symposium Participants (a sign-up list will be made available at the Symposium)*

17:00	*Transfer from the hotel to the "Andreas-Hofer-Platz" (center of Graz)*
17:30	*Guided tour through the City*
19:00	*Reception by the Mayor of the City of Graz S. Nagl (Rathaus)*

Thursday, 23 September 2010

Morning
9:00   <u>**Session 4: Workshop/Working Group Session**</u>

9:00	**Parallel Session 1:** CubeSat Design Challenges - Workshop *Aziz Yusoff* *ATSB, Malaysia*	**Parallel Session 2:** HUMSAT: Nanosatellite Constellation Requirements and Development Solutions *Fernando Aguado Agelet* *University of Vigo, Spain*
11:00	*Coffee/Tea Break*	
11:30	Working Group Meetings or Presentations by Participants on their Small Satellite Activities	
12:30	*Lunch*	

Afternoon
13:30   <u>**Session 5: Standardization and Regulatory Issues (Frequency, Debris, Registration, …)**</u>
Chairperson: Jordi Puig-Suari, Cal Poly, United States

13:30	Workshop: Frequency Registration for Small Satellite Missions	*Attila Matas* *International Telecommunications Unions*
14:30	Satellite Registration and Space Debris Mitigation Guidelines	*Werner Balogh,* *United Nations Office for Outer Space Affairs*
14:50	PW-Sat - Tests of New Concept for Deorbiting Satellites from the LEO	*Maciej Urbanowicz* *Warsaw University of Technology, Poland*
15:10	*Coffee/Tea Break*	
15:30	Review of Status of Launch Opportunities for Small Satellites	*Freddy Pranajaya* *University of Toronto* *Institute of Aerospace Studies, Canada*

15:50	NanoLauncher: An Affordable and Dedicated Air-Launch Transportation Service for Nanosatellites	*A.C. Charania* *SpaceWorks Commercial, United States*
16:10	Presentations by Participants on their Small Satellite Activities (approx. 5 min each, 12 slots)	*Symposium Participants (a sign-up list will be made available at the Symposium)*
17:30	*Transfer to the City of Graz*	
18:00	*Dinner at the "Landhauskeller"*	

Friday, 24 September 2010

Morning

9:00   Session 6: Working Group Session
  Chairperson: United Nations Office for Outer Space Affairs

9:00	Discussion on the observations and recommendations to be included in the report to the United Nations Committee on the Peaceful Uses of Outer Space	*All Symposium Participants*
	Presentations by Participants on their Small Satellite Activities (time permitting)	*Symposium Participants (a sign-up list will be made available at the Symposium*
12:00	*Lunch*	

Afternoon

13:30   Session 7: Wrap Up

13:30	Symposium Review and discussion of future activities of the United Nations Basic Space Technology Initiative	*All Symposium Participants*
15:00	*Coffee/Tea Break*	

15:30   Closing Session

Master of Ceremony: Willibald Riedler, Austrian Academy of Sciences

	Distribution of Certificates and Closing Remarks	○ *Austrian Academy of Sciences* ○ *Austrian Federal Ministry for European and International Affairs* ○ *United Nations Office for Outer Space Affairs*
16.30	*Transfer to the hotel and end of the Symposium*	