



UNITED NATIONS
Office for Outer Space Affairs

United Nations/Italy Workshop on the Open Universe Initiative

Programme rev.18

Organized by

The United Nations Office for Outer Space Affairs and
The Government of Italy

Hosted by

The United Nations Office for Outer Space Affairs

With the support of



**United Nations Office at Vienna
Vienna International Centre,
Wagramerstrasse 5, A-1220 Vienna**

Vienna, Austria, 20-22 November 2017

Honorary Committee (in alphabetical order):

| | |
|--------------|---|
| M. A. Accili | Ambassador, Permanent Mission of Italy to the International Organizations in Vienna |
| R. Battiston | President, Italian Space Agency |
| S. Di Pippo | Director, United Nations Office for Outer Space Affairs |
| J.D. Wörner | Director General, European Space Agency |

Programme Committee (in alphabetical order):

| | |
|-----------------------|---|
| R. de Arellano y Haro | Incoming COPUOS chair |
| C. Arviset | European Space Agency (ESA) |
| C. Asero | European Commission (EC); DG Research and Innovation |
| U. Barres de Almeida | Brazilian Science Data Center (BSDC); Brazilian Center for Research in Physics (CBPF) |
| C. Decoopman | Space Generation Advisory Council (SGAC) |
| G. Fabbiano | International Virtual Observatory Alliance (IVOA) |
| S. Ferretti | European Space Policy Institute (ESPI) |
| D. García Yárnoz | United Nations Office for Outer Space Affairs (UNOOSA) |
| P. Giommi | Italian Space Agency (ASI) |
| S. Iacovoni | Italian Space Agency (ASI) |
| I. Molotov | International Scientific Optical Network (ISON) / Russian Academy of Science (RAS) |
| A. M. T. Pollock | University of Sheffield |
| D. Schade | Canadian Astronomy Data Centre (CADAC) / National Research Council (NRC) |
| P. Ubertini | International Astronomical Union (IAU); Committee on Space Research (COSPAR) |
| A. Williams | European Southern Observatory (ESO) |

Local Organizing Committee (in alphabetical order):

| | |
|-------------------|---------------------------|
| D. García Yárnoz | UNOOSA, Programme Officer |
| K. Maniyanourathu | UNOOSA, Team Assistant |

Focal Point UNOOSA:

Daniel García Yárnoz
Office for Outer Space Affairs
United Nations Office at Vienna
P.O. Box 500, A-1400 Vienna, Austria
Email: Daniel.Garcia-Yarnoz@unoosa.org

Focal Point ASI:

Paolo Giommi
Senior Scientist
Italian Space Agency
Tel: +39 068567939
Email: paolo.giommi@asi.it

Monday, 20 November 2017

Morning

- 08:15 *Arrival, Registration (allow time for collection of badges at the UN Pass Office)*
- 09:00 **Opening Remarks and Welcome Address** *M. A. Accili, Ambassador PM of Italy
S. Di Pippo, Director of UNOOSA
Prof. R. Battiston, President of ASI*
- 09:30 **Keynote: “Status of the Open Universe Initiative”** *P. Giommi, ASI
A. Pollock, University of Sheffield*
- 10:00 **Workshop Introduction** *D. García Yárnoz, UNOOSA*
- 10:10 **Session 1: Current status and perspectives in space science data** *Room: C2
Co-Chair(s): A. Pollock, University of Sheffield and P. Ubertini, COSPAR / IAU
Rapporteur: P. Giommi, ASI*
- 10:15 *Space Science Data at ESA* *C. Arviset, ESA-ESAC*
- 10:30 *Astronomical Data in Russia* *O. Malkov, Inst. Astronomy, RAS*
- 10:45 *Introduction to China's deep space exploration science achievements and its data and sample policy* *R. Yang, CNSA*
- 11:00 *Morning Break / Poster Setup C6*
- 11:15 *IVOA: the standards organization for data interoperability in astronomy* *G. Fabbiano, IVOA / SAO*
- 11:30 *The ESO Science Archives* *F. Stoehr, ESO*
- 11:45 *The Space Science Data Center of the Italian Space Agency* *L. A. Antonelli, SSDC, ASI*
- 12:00 *The Experience of the Brazilian Science Data Center in the context of the Open Universe Initiative* *U. Barres de Almeida, BSDC, CBPF*
- 12:15 *Chandra Source Catalog: A new view of the Xray Sky accessible through the Virtual Observatory (VO)* *J. Evans, SAO*
- 12.30 *Lunch*

Afternoon

- 13:30 **Session 2: International cooperation, policy and legal aspects** *Room: C2
Co-Chair(s): R. de Arellano y Haro, incoming COPUOS chair, and J.J. Tortora, ESPI
Rapporteur: A. Williams, ESO*
- 13:35 *The European Open Science Cloud as an enabler for data driven science* *C. Asero, European Commission*
- 13:50 *The FAIR paradigm as a key to Open Astronomical Data* *F. Pasian, INAF*
- 14:05 *Space Science in Argentina - CONAE's experience and international cooperation* *M. Colazo, CONAE*







| | | |
|--------------|--|--|
| 14:20 | Freedom of Access to Scientific Data: Legal Aspects | <i>S. Marchisio</i> , Sapienza University of Rome |
| 14:35 | The Virtual Observatory. A new open-data based framework for new science | <i>E. Solano Márquez</i> , INTA-CSIC / SVO |
| 14:50 | Astronomy in the Open Science context | <i>F. Genova</i> , CNRS |
| 15:05 | The Square Kilometer Array: An example of International Cooperation | <i>A. Chrysostomou</i> , SKA Organization |
| 15:20 | [session 4 advance] Citizen-science in the Naturhistorisches Museum, Asteroid Day and protection of the night sky | <i>C. Köberl</i> , Naturhistorisches Museum Wien (NHM) |
| 15:35 | <i>Afternoon Break</i> | |
| 16:00 | <u>Software and platform demos</u> | <i>Rooms: C2, C5 and C6</i> |
| | ASI Open Universe: a one-stop-shop to the cosmos and Prototypal AGILE-LV3 web tool | <i>C2 P. Giommi, ASI C. Pittori, ASI</i> |
| | CDS Portal (+Euro-VO and ASTERICS - contributing to the interoperable Virtual Observatory framework for astronomy) | <i>C5 M. Allen and S. Derriere, CDS / Euro-VO</i> |
| | ESASky: all the skies in your browser | <i>C6 B. Merin, ESA</i> |
| | Rotation of ~30-35 min (demos will be repeated 3 times at 16:00, 16:40 and 17:20, participants move between rooms) | |
| 18:00 | <i>Evening Reception sponsored by PM of Italy</i> | <i>VIC</i> |

Tuesday, 21 November 2017

Morning

09:00 *Arrival*

| | | |
|--------------|---|---|
| 09:10 | <u>Session 3: Educational, social and economic benefits of open data</u> | <i>Room: C2</i> |
| | <i>Open access as an enabler of education, capacity-building and knowledge-based economic development</i> | |
| | <i>Co-Chair(s): S. Ferretti, ESPI and M. Allen, CDS/IVOA</i> | |
| | <i>Rapporteur: S. Di Ciaccio, ASI</i> | |
| 09:15 | AVO as a learning tool in the IAU sponsored educational activities | <i>P. Benvenuti, IAU</i> |
| 09:30 | The Virtual Observatory for Education | <i>M. Ramella, INAF</i> |
| 09:45 | Open Data in Space Science in the UAE | <i>F. Arneodo, NYU Abu Dhabi</i> |
| 10:00 | How the Virtual Observatory Has Influenced Data Discovery, Access, and Re-Use in Other Disciplines | <i>R. Hanisch, National Institute of Standards and Technology</i> |
| 10:15 | The establishment and work of ROAD-Andina (node of the Office of Astronomy for Development) | <i>R. Joya Olarte, Sergio Arboleda U.</i> |
| 10.30 | Making Astronomy & Astrophysics data more accessible to universities in India - the IUCAA model | <i>S. Dhurde, IUCAA</i> |
| 10:45 | The evaluation of socio-economic benefits of open data: methodological issues | <i>M. Florio, Università degli Studi di Milano</i> |

- 11:00 *Morning Break and Poster Session C6*
- 11:25 Session 4: Outreach and space citizen-science projects** *Room: C2*
Chair(s): R. Albrecht, ÖWF, C. Decoopman, SGAC
Rapporteur: M. Stasko, UNOOSA
- 11:30 Spectacular successes in open data and citizen-science: ASTERICS and the Open Science Laboratory *S. Serjeant, The Open University*
- 11:45 Astronomy Outreach and Education in India: The steps to the future *P. Shah, Maulana Azad National Urdu University*
- 12:00 Space Academy in Bulgaria / A children's educational and inspirational space program in "Muzeiko" *T. Dimitrov, Muzeiko*
- 12:15 OpenSpace: open source interactive visualization software to visualize the entire known universe *C. Emmart, American Museum of Natural History*
- 12:30 Development of Astro Tourism in Shamakha Astrophysical Observatory *J. Rustamov, Shamakhy Astrophysical Observatory*
- 12:45 *Lunch*
- Afternoon*
- 13:45 Splinter discussions (1 hour)** *Rooms: C2, C5, C6* *Moderators:*
- | | | | |
|------------------------------------|---|----|---|
| Topic 1 – Increasing transparency |  | C2 | <i>M. De Angelis, ASI</i> |
| Topic 2 – Broadening the user-base |  | C5 | <i>A. Ávila, PM Costa Rica</i> |
| Topic 3 – Resurfacing data |  | C6 | <i>U. Barres de Almeida, BSDC, CBPF</i> |
- Task: can the group come up or refine 1-2 recommendations for the Open Universe Initiative and UNOOSA in the selected topic
- 14:50 Poster Lightning Round:** *Room C2*
2 min, one slide per poster presenter
- 15:20 *Afternoon Break and continued Poster Session C6*
- 15:50 Discussions outcomes** *Room: C2*
Chair: D. García Yárnoz, UNOOSA. Rapporteur: A. Williams, ESO.
- | | | | |
|-------|-----------------------|---|-----------------------------------|
| 15:50 | Discussion 1 outcomes |  | <i>Discussion Group Appointee</i> |
| 16:10 | Discussion 2 outcomes |  | <i>Discussion Group Appointee</i> |
| 16:30 | Discussion 3 outcomes |  | <i>Discussion Group Appointee</i> |
- 16:50 Open floor for comments – plenary discussion**
- 17:40 *Adjourn*
- 20:10-
21:10 **Night at the Museum (optional by sign-up sheet)** [*Naturhistorisches Museum Planetarium*](#)
20:30-21:00 Planetarium show (50pp max) with Carter Emmart and [*OpenSpace*](#)
Visit of the [*meteorite hall*](#), the largest meteorite display in the world.
(no refreshments are provided)

Wednesday, 22 November 2017

Morning

09:15 *Arrival*

09:30 Session 5: Beyond the current paradigm - new initiatives and services Room: C2

Chair(s): P. Giommi, ASI and F. Stoehr, ESO

Rapporteur: C. Asero, EC

- 09:35 Developing International Infrastructure for Data-Intensive Science *D. Schade, CADC/NRC*
- 09:50 Contribution of the ISON project to the Open Universe Initiative in developing countries *I. Molotov, ISON / RAS*
- 10:05 Astronomical archive in the era of the Virtual Observatory: promoting data sharing in all communities *R. D'Abrusco, SAO*
- 10:20 Providing access to space science does not end with the data *R. Walter, ISDC / U. de Genève*
- 10:35 Open Universe Consolidated Archive Obligations - a draft *A. Pollock, U. Sheffield*

10:50 *Morning Break and Poster Session C5*

11:20 Discussion: Plan of Action and Project Proposals Room: C2

Moderator: D. García Yárnoz, UNOOSA

Rapporteur: H. Mirahmetoglu, SpaceAgenda

12:30 *Lunch*

Afternoon

13:30 Observations and Recommendations for UNISPACE+50 Room: C2

Chairs/Moderators: N. Hedman, UNOOSA and A. Pollock, U. Sheffield

Rapporteur: D. García Yárnoz, UNOOSA

Round-table: Towards a Roadmap

The round-table will link the Workshop and the Open Universe Initiative to the preparations for UNISPACE+50 and the future use of space data and solutions to contribute to addressing the World's challenges.

Participants:

- *R.M. de Arellano, incoming COPUOS chair*
- *C. Arviset, Division Head, ESA*
- *P. Benvenuti, General Secretary, IAU*
- *G. Fabbiano, Chair IVOA*
- *R. Yang, Int. Coop. Manager, CNSA*

14:30 Open floor for further discussion and consolidation of recommendations

15:30 Closing Remarks

S. Di Pippo, UNOOSA

P. Giommi, ASI

POSTER SESSION (in alphabetical order)

- SGAC: A global network for data dissemination, *C. Decoopman, SGAC, Austria*
- Radio Telescope at UON-WILSON Airport and Longonot Ground Stations for Astronomical Studies, *R. Gathoni, Kenya Space Agency*
- Sharing the university CubeSat data for the future space exploration, *H. Huang, Northwestern Polytechnical University, China*
- Prospects for Leveraging on 3D-Printing and Local Materials for Space Education Development in Africa: A Case of IrawoScope -Africa's first 3D-Printed Affordable Telescope, *H. Ibitolu, SGAC, Nigeria*
- Space Academy - passion and space education for the children of Bulgaria, *D. Ivanova, Space Academy, Bulgaria*
- SpaceAgenda: A social media tool for global space-related events, *H. Mirahmetoglu, SpaceAgenda, Turkey*
- Easy on-line gamma-ray analysis: legacy archives and the prototypal AGILE-LV3 web tool, *C. Pittori, ASI, Italy*
- Gamma-ray data analysis, *N. Sahakyan, ICRANET-Armenia*
- Using the Hubble Space Telescope database to monitor the cosmic ray flux, *G. Tancredi, Depto. Astronomía, Uni. de la República, Uruguay*
- The GenNext Astronomers: role of IIST, *A. Tej, Indian Institute of Space Science and Technology*
- The privileged astronomical position of Ecuador Known from the time of the aboriginal Quito Cara culture, and how this can stimulate young people to study astronomy. *G. Vásquez, Escuela Politécnica Nacional, Ecuador*

ACRONYMS

| | |
|----------|--|
| AEM | Agencia Espacial Mexicana |
| ASI | Agenzia Spaziale Italiana |
| ASTERICS | Astronomy ESFRI and Research Infrastructure Cluster |
| BSDC | Brazilian Science Data Center |
| CADC | Canadian Astronomy Data Centre |
| CBPF | Centro Brasileiro de Pesquisas Físicas |
| CDS | Centre de Données astronomiques de Strasbourg |
| CNRS | Centre National de la Recherche Scientifique (France) |
| CONAE | Comisión Nacional de Actividades Espaciales (Argentina) |
| COPUOS | Committee on the Peaceful Uses of Outer Space |
| COSPAR | Committee on Space Research |
| CSIC | Consejo Superior de Investigaciones Científicas (Spain) |
| EC | European Commission |
| EOSC | European Open Science Cloud |
| ESA | European Space Agency |
| ESAC | European Space Astronomy Centre |
| ESFRI | European Strategy Forum on Research Infrastructures |
| ESO | European Southern Observatory |
| ESPI | European Space Policy Institute |
| Euro-VO | European Virtual Observatory |
| IAU | International Astronomical Union |
| ICRANet | International Center for Relativistic Astrophysics Network |
| IIST | Indian Institute of Space Science and Technology |
| INAF | Istituto Nazionale di Astrofisica (Italy) |
| INTA | Instituto Nacional de Técnica Aeroespacial (Spain) |

| | |
|---------|---|
| ISDC | Integral Space Data Centre (Data Centre for Astrophysics, Genève) |
| ISON | International Scientific Optical Network |
| IUCAA | Inter-University Centre for Astronomy & Astrophysics (India) |
| IVOA | International Virtual Observatory Alliance |
| NHM | Naturhistorisches Museum Wien |
| NIST | National Institute of Standards and Technology (USA) |
| NRC | National Research Council (Canada) |
| NYU | New York University |
| OAD | Office of Astronomy for Development |
| ÖWF | Österreichisches Weltraum Forum |
| PM | Permanent Mission |
| RAS | Russian Academy of Sciences |
| ROAD | Regional node of the Office of Astronomy for Development |
| SAO | Smithsonian Astrophysical Observatory (USA) |
| SGAC | Space Generation Advisory Council |
| SKA | Square Kilometer Array |
| SSDC | Space Science Data Centre (ASI, Italy) |
| SUPARCO | Space and Upper Atmosphere Research Commission (Pakistan) |
| SVO | Spanish Virtual Observatory |
| UAE | United Arab Emirates |
| UNOOSA | United Nations Office for Outer Space Affairs |
| UNOV | United Nations Office in Vienna |
| VIC | Vienna International Centre |
| VO | Virtual Observatory |