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English only

**Committee on the Peaceful
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**Report of the Scientific and Technical
Subcommittee on its sixtieth session**

Report on the Access to Space for All Initiative First Expert Meeting

Conference room paper by the Office for Outer Space Affairs

I. Introduction

1. The Access to Space for All initiative is one of the flagship activities of the Office for Outer Space Affairs under the United Nations Programme on Space Applications.
2. The first Expert Meeting included three half-days of presentations and discussions. Partners and awardees of the initiative were invited to present success stories, challenges, and lessons learned from their experience in taking part in the various opportunities of the initiative.
3. The Expert Meeting was held entirely online from 15 to 17 May 2023.
4. The present report describes the objectives of the Expert Meeting, provides attendance details, and summarizes the activities carried out.

II. Background and objectives

5. The Office for Outer Space Affairs disseminates knowledge with respect to the added value of space applications in addressing societal issues, notably through events of the Programme on Space Applications held at the request of member States and organized jointly.
6. The Access to Space for All initiative was launched in 2018 aiming at developing technical know-how, including engineering processes, and infrastructure of the United Nations Member States in the areas of hypergravity and microgravity research, satellite development and space exploration. It provides research and orbital opportunities to member States to develop their capabilities to access space and to

¹ [A/AC.105/L.333](#).



ensure that the benefits of space, in particular for sustainable development, are truly accessible to everyone.

7. With 11 governmental, intergovernmental, and industry partners, the initiative provides nine hands-on opportunities and one annual fellowship programme where, so far, 32 awardees have been selected, involving 44 entities from 32 countries. Five CubeSats have been launched, seven microgravity experiments have been conducted, and 68 scholarships have been granted with 20 projects currently in the pipeline for development. More details information can be found on the dedicated awardee pages of the initiative.²

8. The first Expert Meeting invited all the above, the related government, applicants that were not selected, and anyone who was interested in applying to the opportunities of partnering with the Office for Outer Space Affairs. The Expert Meeting had the following objectives:

(a) To share success stories and challenges on capacity-building activities and effective outreach;

(b) To discuss how to strengthen the Access to Space for All initiative;

(c) To bring together partners, awardees, supporting governments, and potential future partners and applicants of the initiative to build new partnerships; and

(d) To raise awareness of the Access to Space for All initiative.

III. Attendance

9. A total of 596 individuals registered to attend the Expert Meeting and were granted access to the web-based communication platform.

10. The following 89 countries were represented: Algeria, Argentina, Armenia, Australia, Austria, Bahrain, Bangladesh, Belgium, Bhutan, Bolivia (Plurinational State of), Brazil, Bulgaria, Burkina Faso, Cambodia, Cameroon, Canada, Central African Republic, Chile, China, Colombia, Cote d'Ivoire, Ecuador, Egypt, Ethiopia, France, Gambia, Germany, Ghana, Greece, Guatemala, Honduras, Hungary, Iceland, India, Indonesia, Iran (Islamic Republic of), Italy, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Lao People's Democratic Republic, Libya, Lithuania, Malawi, Malaysia, Mauritius, Mexico, Morocco, Namibia, Nepal, Netherlands (Kingdom of the), Nicaragua, Niger, Nigeria, Pakistan, Paraguay, Peru, Philippines, Poland, Portugal, Republic of Korea, Romania, Russian Federation, Rwanda, Saudi Arabia, Senegal, Singapore, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Syrian Arab Republic, Thailand, Trinidad and Tobago, Tunisia, Türkiye, Uganda, Ukraine, United Kingdom of Great Britain and Northern Ireland, United Republic of Tanzania, United States of America, Uzbekistan, Venezuela (Bolivarian Republic of), Zambia and Zimbabwe.

11. The number of attendees online varied throughout the Expert Meeting, with a maximum of 140 attendees connected simultaneously.

IV. Programme

12. The programme was structured as follows:

(a) Session 1: Hypergravity and Microgravity Track;

(b) Session 2: Satellite Development Track;

(c) Session 3: Space Exploration Track;

(d) Session 4: Effective Outreach; and

(e) Session 5: Lessons Learnt and Way Forward.

² www.unoosa.org/oosa/en/ourwork/access2space4all/Awardees.html.

13. Sessions 1 to 4 were open to the general public, while Session 5 was restricted to partners, awardees and past applicants of the initiative to discuss the processes they had followed and exchange on possible improvements.

14. The Office for Outer Space Affairs prepared a feedback form for partners, awardees and past applicants who were encouraged to submit their answers before the event. This feedback made it possible for the Office for Outer Space Affairs to prepare the exchanges by highlighting recommendations received.

15. Attendees were encouraged to submit questions to speakers in writing using the online communication platform throughout the event, while the moderator used that function to highlight relevant initiatives. Questions to speakers conveyed via the communication platform were read out loud by the moderator at the end of each presentation and session, providing an interactive exchange.

16. In total, the event lasted for nine hours; it included 27 speakers comprising 10 women and 17 men.

17. Presentations from the open sessions were made available on the website of the Office for Outer Space Affairs before the event, to enable attendees who might have limited bandwidth during the event to download the content in advance. The video recordings were uploaded to the YouTube channel of the Office after the event. Presentations remain available on the website.³

18. In his welcome address, the Acting Director of the Office for Outer Space Affairs said that the impacts of the initiative had been larger than anticipated, with more partnerships, opportunities, visibility through media coverage, and the development of new infrastructures for some of the awardees. It is not only about providing capacity-building opportunities but becoming a tool to engage more people in STEM. Gender empowerment is among the key priorities of the initiative and one of the aspects where the Office aspires to keep on improving.

19. In his opening remarks, the Minister of the Permanent Mission of Japan to the United Nations in Vienna said that Japan recognizes the need for developing nations to access space technology and its applications. He pointed out that the Access to Space for All initiative is very useful to support capacity-building for those nations to benefit from space assets and to achieve the Sustainable Development Goals. Japan is a proud partner of the initiative through the KiboCUBE programme and Post-graduate study on Nano-Satellite Technologies (PNST) Fellowship programme.

20. In her opening remarks, the Ambassador Extraordinary and Plenipotentiary of the Permanent Mission of the Republic of Kenya to the United Nations in Vienna said that Kenya has benefited greatly from participation in the initiative. Kenya has been awarded various opportunities under the initiative such as KiboCUBE, Bartolomeo, ISONscope and Vega C; they have been instrumental in the growth of their space sector. It was highlighted that the first satellite of the nation had been developed and deployed into space through KiboCUBE. She thanked the Office for Outer Space Affairs for the strong partnership and support that the nation has gained through the initiative.

21. In an overview of the initiative, the Office for Outer Space Affairs presented the goal, core values, impact, structure, programmes of the initiative and partnerships that the Office is interested in pursuing.

22. Session 1 started with presentations from the partners and awardees of the programmes under the Hypergravity and Microgravity Track. The representative of the Center of Applied Space Technology and Microgravity presented the DropTES programme, which is an opportunity to conduct microgravity experiments at the Bremen Drop Tower and GraviTower Bremen Pro facilities in Germany. This was followed by a representative of Universidad de Antioquia, Colombia, an awardee of the eighth round of DropTES programme. She highlighted the motives of the team to

³ www.unoosa.org/oosa/en/ourwork/psa/schedule/2023/accspace4all-expert-meeting.html.

participate in DropTES, the main objectives of their experiment, and its relevance to the Sustainable Development Goals, especially promoting women's participation in STEM, as the team is formed of four females.

23. The representative of the European Space Agency presented the HyperGES programme, which is an opportunity to conduct hypergravity experiments at the Large Diameter Centrifuge facility located at the European Space Technology Centre (ESTEC) in the Kingdom of the Netherlands. This was followed by the representative of Mahidol University, Thailand, the first-round awardee of the HyperGES programme. He introduced the status of their project on researching the effects of hypergravity on watermeal, which they hope could become a future food source for space exploration. He emphasized the impact it has had on engaging the young generation in space activities in Thailand.

24. The representative of the China Manned Space Agency presented the China Space Station programme, with the opportunity to conduct experiments onboard and outside of the China Space Station, which was completed in 2022. This was followed by a representative of the National Institute of Astrophysics Optics and Electronics, Mexico, an awardee of the first-round of the China Space Station programme. He explained the current development status of the infrared platform for Earth observation and the benefits of participating in the programme such as acquiring the hands-on experience to develop an instrument that will operate in space, the various applications the results of the project will bring, and the effective impact it has had on promoting STEM education.

25. The representative of Airbus Defence and Space GmbH presented the Bartolomeo programme, which is an opportunity to have a maximum 3U-sized payload to be hosted on the Bartolomeo platform aboard the ISS. This was followed by the representative of the Egyptian Space Agency, the first-round awardee of the Bartolomeo programme. He introduced the ClimCam project, which is a joint endeavour between Egypt, Kenya, and Uganda, to develop a payload to monitor climate change. He highlighted the benefits of the international cooperation experience within the team and the role of the Egyptian Space Agency.

26. Session 2 started with presentations from the partners and awardees of the programmes under the Satellite Development Track. The representative of Kyushu Institute of Technology presented the Post-graduate study on Nano-Satellite Technologies (PNST) Fellowship programme, which is an opportunity for students from developing nations to achieve a Master's degree and/or a Doctoral degree on space technology development. A fellow that participated in the PNST programme from Bhutan explained her experience and how it has opened opportunities for her afterwards. She emphasized how international and interdisciplinary PNST is and encouraged people who are interested to apply.

27. The representative of the Mohammed Bin Rashid Space Centre presented the Payload Hosting Initiative (PHI) programme, which is an opportunity that offers a payload hosting capacity, launch into space, and access to the ground station as part of the PHI mission. This was followed by the representatives of the National Space Science Agency of Bahrain and Antarikchya Pratisthan Nepal, which are the two teams awarded the first-round for the PHI programme. Both teams gave an overview of their project; Bahrain to demonstrate technology to secure satellite data and Nepal to demonstrate the operation of a middleware for drones in space.

28. The representative of the Japan Aerospace Exploration Agency presented the KiboCUBE programme, which is an opportunity to launch and deploy 1U CubeSats from the International Space Station Japanese module "Kibo" and briefly introduced the Kibo Robot Programming Challenge (Kibo-RPC). This was followed by the representative of Surya University, Indonesia, the third-round awardee of the KiboCUBE programme. The team had just successfully deployed their CubeSat into space earlier in the year. He described the project timeline from 2016 when their project was established, early operation status of their CubeSat, and how the stories have positively impacted the community and young generation in Indonesia.

29. The representative of Avio S.p.A. presented the Vega C programme, which is an opportunity to launch and deploy 3U CubeSats using the Vega C launch vehicle. This was followed by the representative of the University of Nairobi, Kenya, the first-round awardee of the Vega C programme and also the first-round awardee of the KiboCUBE programme. He explained how the team has evolved and is building on their experience with KiboCUBE to Vega C. He also highlighted how international cooperations with universities and non-profit organizations in developing nations have supported and expanded the possibilities of their CubeSat mission.

30. Session 3 had one presentation from the partner of the programme under the Space Exploration Track. The representative of Keldysh Institute of Applied Mathematics presented the ISONscope programme, which provides telescopes, necessary software for astronomy, and training for the operation and data processing to developing nations.

31. Session 4 started with a presentation from the Office for Outer Space Affairs that highlighted the various outreach activities conducted by the Office. It was followed by presentations from the representatives of Universidad del Valle de Guatemala and Mauritius Research and Innovation Council, which are both KiboCUBE awardees. Universidad del Valle de Guatemala highlighted their successful efforts in outreach; they carried out plenty of activities towards the public and scientific community through social media, press conferences, workshops, newspaper article series, competitions to engage the public, the publication of a memoir book, and the release of the hardware designs of the CubeSat. Mauritius Research and Innovation Council explained their efforts to incentivize the young generation to consider space as a future career path through their various workshops and international cooperation activities. In the discussions, both awardees explained how crucial it is to gain understanding and support for their activities from the general public, especially governments and the young generation.

32. Session 5 started with a presentation from the representative of the Kenya Space Agency, the first-round awardee of the Bartolomeo and ISONscope programme. He explained their experience of participating in the opportunities of the initiative, the benefits that Kenya Space Agency has gained out of it and provided recommendations for future capacity-building activities. It was followed by a presentation from the Office for Outer Space Affairs that summarized the outcomes of the feedback received from the partners, awardees and past applicants. The topics covered included the application process and related documents, webinars and preliminary information to applicants, support from the applying organizations, support provided by the Office and the partners, outreach, partnerships, impact, lessons learned, recommendations for improvement, and what future capacity-building activities would be desirable.

33. In his closing remarks, the Chief of the Space Applications Section of the Office for Outer Space Affairs noted that some research entities that benefited from a first opportunity have been able to develop proposals for other more complex opportunities. This increase in their capabilities to undertake more advanced projects was one of the successes of the initiative. He also invited interested parties to take advantage of the increasing volume of technical and scientific resources made available. He thanked the partners for their substantial in-kind contributions to the initiative and hope these partnerships will bring even more opportunities to further facilitate access to space.

V. Recommendations for improvement of the initiative

34. Participants of Session 5 discussed the following topics and gave their recommendations for improvement as follows:

(a) Application process and application documents: all of the participants who answered the feedback form answered that the process and documents were clear. The participants shared the view that a sample answer for the application form could be helpful to understand what kind of information is necessary;

(b) Webinars and preliminary information: according to the feedback form, more than 90 per cent answered that the contents of the webinars had been useful to clarify specific points about the application;

(c) Support from their organizations: the feedback form results showed that one of the most difficult parts of the preparation was to obtain the funding necessary for the projects. The Office for Outer Space Affairs has been conducting technical consultation sessions with teams during the application phase and there was a comment that this consultation session was useful for the applying teams to justify their activities and convince their own organization of providing support;

(d) Support from the Office for Outer Space Affairs and the partners of each of the opportunities: the results of the feedback showed that the awardees are satisfied with the current support, highlighting that both the Office and partners had been closely following the progress of the project and answered the questions from the participating teams in a timely and efficient manner;

(e) Outreach: it was recommended that the Office for Outer Space Affairs should use a wider variety of social media channels to promote to a larger audience, especially to the young generation and in other languages than English. It was also highlighted that further cooperation between the partners, awardees, and other organizations for social media should be explored. The Office for Outer Space Affairs asked for information and contact points within student associations, teacher associations, research groups, regional groups, etc. that would include people who could be interested in the activities of the initiative. Direct communication to these types of entities would be helpful to enlarge the pool of potential applicants to the initiative;

(f) Partnerships: the Office for Outer Space Affairs explained that partnerships are seen positively to realize the various projects proposed by applicants. As partnerships often result from previous relationships formed through networking, it was noted that the Office could provide more opportunities for people from developing nations to meet and network;

(g) Impacts: according to the results from the feedback form, the main impacts of the initiative could be divided into future opportunities, partnerships and more outreach. It was emphasized that the initiative gives significant visibility and credibility to the awardees;

(h) Lessons learned: according to the results from the feedback form, teams learned useful lessons about project team organization, including human resources and project management, and on funding, especially that the project needs to be planned carefully and in advance. Regarding the funding, a two-step application process might help the teams secure funding more easily than a single-step process. The Office for Outer Space Affairs took note of the comment and noted that such a two-step process had been implemented for KiboCUBE;

(i) Recommendations for improvement: it was recommended to publish an annual plan of the schedule of the initiative, so that applicants could prepare accordingly, including securing in due time the internal resources required. There was also a need raised for more training or information-sharing on legal issues related to the implementation of the projects; this will be particularly useful both to the team and also to the relevant authorities of the country, especially for the CubeSat missions which require specific steps to comply with international law and guidelines;

(j) Future capacity-building activities: there was a strong need and interest for educational activities such as providing more content on hypergravity and microgravity experimentation, more scholarships, and internship opportunities for students and educators in countries with limited space education programmes. There were requests for more hands-on activities such as microgravity experiment opportunities onboard space stations, launching opportunities for CubeSats, access to laboratories for experimentation and for integrating and testing spacecraft. Requests were also made regarding the development of ground station infrastructure to access

and utilize data, space exploration-related activities such as payload hosting on Moon missions, and small satellite development for interplanetary missions. The participants agreed that the educational activities to support the theoretical knowledge in developing nations should be prioritized.

35. The Office for Outer Space Affairs closed the session by highlighting that all the feedback would be taken into consideration when the Office and its partners open a new round of applications, and whenever the Office is looking for new partnerships for new opportunities. The Office mentioned that the findings and the outcomes of the Expert Meeting would be summarized and presented to the Committee on the Peaceful Uses of Outer Space (COPUOS).

VI. Conclusions and way forward

36. The Expert Meeting provided a wide-ranging overview of the various opportunities of the initiative focusing on the success stories and challenges for capacity-building and for effective outreach. It presented information from successful awardees that could be adapted by others and useful advice for future applicants to consider. It has raised awareness of the different opportunities of the initiative and has given a platform for the awardees to explain their own space activities.

37. The Expert Meeting also provided the Office for Outer Space Affairs with a great amount of detailed feedback from the partners, awardees, and past applicants of the initiative. The recommendations raised in this feedback will be carefully considered and discussed with the partners of the initiative.

38. Participants were encouraged to provide written feedback about the Expert Meeting itself, using a dedicated online form and the feedback received was overwhelmingly positive: participants rated the event 4.43 out of a maximum rating of 5. Words of appreciation were received about the concrete examples provided by awardees, and the provision of such a platform to discuss possible improvements. The Expert Meeting showed that the initiative was developing in the right direction and has the capacity to evolve further.

39. All the presentations and recordings of the Expert Meeting remain available at [unoosa.org](https://www.unoosa.org).

40. Remote attendance had provided an opportunity for a much larger number of participants than would have been the case with a physical event in Vienna; it had also decoupled the selection of participants from any financial limitations and made it possible to provide everyone with an opportunity to contribute to the event. The use of such an online format, or a hybrid format, would continue to be considered for future events.

41. The Office for Outer Space Affairs and its partners will open new rounds for the existing opportunities during 2023 as follows:

- (a) DropTES: end of May 2023;
- (b) HyperGES: end of May 2023;
- (c) KiboCUBE: beginning of June 2023;
- (d) PHI: Q4 2023; and
- (e) PNST: Q4 2023.

42. The next rounds of other opportunities are currently under discussion with the respective partners.

43. Partnerships are a distinctive feature of the initiative and the Office for Outer Space Affairs welcomes interest from new entities. Contributions from space agencies, research institutions, universities, and industry would be particularly welcome to provide capacity-building opportunities and to address the Sustainable Development Goals.