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UNISPACE+50: SHARED VISION, COMMON ACTION

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**Abstract**

UNISPACE+50 marks the fiftieth anniversary of the first UNISPACE conference, held in 1968. In June 2018, the international space community will be together in Vienna to articulate a new long-term vision for space around four pillars (space economy, space society, space accessibility, and space diplomacy), which will serve as a guide in shaping the future of space and in driving space investments. As a product of UNISPACE III, the Space Generation Advisory Council (SGAC) attaches great importance to this conference series and aims to contribute to the wider strategic reflection promoted by UNOOSA in the lead-up to UNISPACE+50, by bringing into the process the views of the future generation of space leaders.

Building on both the conclusions of a working group on UNISPACE+50 by SGAC and the Dubai Declaration, the objective of this paper is three-fold. First, it proposes a new long-term vision for space, as envisioned by UNISPACE+50. Second, it offers concrete ideas for action in support of such a vision. Third, it identifies the role that the young professionals space community can play in the UNISPACE+50 process and ensuing debates, including through the action of SGAC.

The paper argues that the pursuit of the proposed vision statement requires work along six areas of action. These include strengthening the outer space regime and global space governance, by elaborating ethical principles and norms of responsible behaviour in outer space and ensuring compliance with international agreements; making international cooperation the norm for future space activities, recognizing it as a long-term investment for all parties involved; conducting space activities to generate tangible societal and economic benefits for all humankind; building capacity across space markets and value chains; placing outer space topics on as many national political agendas as possible; making the space sector a leading force in major technology development.

The paper concludes that the young professionals space community is well placed to inform these actions and the means with which to accomplish them, as well as to engage and liaise more closely with both the wider space and non-space communities to ensure future buy-in and active collaboration. Not only could these actions contribute to nurturing the strategic reflection promoted by UNOOSA in the framework of the UNISPACE+50 process, but they could also offer organizations, such as SGAC, potential avenues for the future and ideas about how to evolve and move forward in partnership with their own stakeholders.

**Keywords:** UNISPACE+50, space governance, space diplomacy, international cooperation, socio-economic benefits

***Disclaimer***

The views and opinions expressed in this article are those of the authors and do not reflect the official policy or position of the organizations to which they are or were affiliated.

## 1. Introduction

Over the last 60 years, space activities have increased both in number and importance. In contrast to the Cold War era, today's space environment involves a growing number of actors across the sector, including governments and space agencies, international and intergovernmental organisations, universities and NGOs, and corporations and start-ups. More than 1,500 operational satellites, owned and/or operated by around 80 countries and commercial entities, provide a wealth of services and benefits for billions of people on Earth [1]. Private actors are becoming a major driver in the global space economy, estimated to amount up to 330 billion US Dollars, the outlook of which is expected to increase further due to the development of mega-constellations for global internet broadband service and low-cost launch capabilities [2]. All this has contributed to making outer space increasingly congested, contested and competitive [3]. It is a limited resource that needs to be protected through a shared vision and a common action. In this context, the United Nations has organised a global conference on the exploration and peaceful uses of outer space - the UNISPACE+50 which will be held in Vienna in June 2018.

## 2. UNISPACE+50

UNISPACE+50 is the fourth conference of the UNISPACE conference series and will mark the fiftieth anniversary of the first conference. Taking stock of the accomplishments of, and lessons learned from, the three previous conferences (UNISPACE I in 1968, UNISPACE II in 1982, and UNISPACE III in 1999), UNISPACE+50 aims to articulate a new long-term vision for space around four main pillars (see Figure 1), investigating challenges and responses to global space governance. The conference, along with the wider strategic reflection that it brings, is also expected to become a milestone for the long-term development of the United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS) (including its subsidiary bodies and secretariat) and related stakeholders, and offers a unique opportunity to strengthen unified efforts in shaping the future of space<sup>1</sup>.

The UNISPACE+50 process can be summarised as shown in Figure 1. The 2030 UN agenda for sustainable development<sup>2</sup> – consisting of 17 sustainable development goals (SDGs) and 169 related targets, and

<sup>1</sup> For more information on UNISPACE+50, see <http://www.unoosa.org/oosa/en/ourwork/unispaceplus50/index.html> and the documents therein.

<sup>2</sup> For additional information on the 2030 UN agenda for sustainable development and the SDGs, see <https://sustainabledevelopment.un.org/post2015/transformingourworld>

aimed at stimulating action over the next 15 years in five critical areas (people, planet, prosperity, peace, and partnership) – infuses the five cross-cutting areas, on which the seven thematic priorities are based<sup>3</sup>. These thematic priorities will enable UNISPACE+50 to take actions and produce concrete deliverables under the four pillars for socio-economic sustainable development which, in turn, are expected to foster and facilitate the implementation of the 2030 UN agenda for sustainable development.

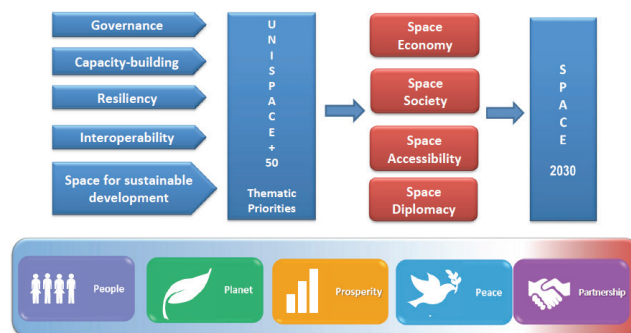


Figure 1. The UNISPACE+50 Process (source: Di Pippo et al. – Presentation by UNOOSA of the paper IAC-16,E3,4,1,x34407 [4]).

As a result of UNISPACE III, the Space Generation Advisory Council (SGAC) attributes heightened importance to this conference series and is expected to play an important role in nurturing the dialogue pertaining to UNISPACE+50 and the wider strategic review promoted by UNOOSA. Over the past 17 years, SGAC has continually contributed to COPUOS, and has recently seen its recommendations quoted by a number of delegations. In this light, SGAC continues to achieve its goal, set out at UNISPACE III, to share the views of the future generation of space leaders, focusing on their long-term visions for space and the tools with which to act.

## 3. Scope

Against this backdrop, the aim of this paper is three-fold:

- First, it proposes a new long-term vision for space in a manner consistent with the UNISPACE+50 principles;
- Second, it offers concrete ideas for action in support of such a vision;
- Third, it identifies the role that the young professional space community can play in the UNISPACE+50 process and ensuing debates, including through the action of SGAC.

<sup>3</sup> For more detailed information on the seven thematic priorities, see A/AC.105/2016/CRP.3

#### 4. Methodology

Building on both the conclusions of a working group on UNISPACE+50 by SGAC and the Dubai Declaration<sup>4</sup>, a unified vision for the exploration and uses of outer space was created. From there, six objectives were derived in order to be able to reach such a vision, and a number of concrete ideas for actions were offered to enable the completion of the objectives.

#### 5. Vision

UNISPACE+50 brings together a broad range of stakeholders, often with divergent priorities. However, all of these actors know that they can pursue collective goals through a shared vision and common action. In the light of potential evolutions and future scenarios regarding the exploration and uses of outer space – such as the growing number and internationalisation of space actors, greater competition and involvement of private actors, growing accessibility to space, increasing congestion of earth orbits and saturation of the radio-frequency spectrum, cyber-attacks to space systems, in-orbit servicing, asteroid mining, and big data – the proposed vision for the future of space is:

*‘To ensure the ethical, sustainable, and peaceful access to – and use and exploitation of – terrestrial and outer space environments for generating tangible societal benefits, in a manner that is consistent with the international legal framework and that enhances international cooperation’.*

#### 6. Goals

In order to reach such a long-term vision for space, six objectives have been identified and a number of actions in support of these have been proposed. Not only could these actions contribute to nurturing the strategic reflection promoted by UNOOSA in the framework of the UNISPACE+50 process, but they could also offer young professionals space organizations, such as SGAC, potential avenues for the future and ideas about how to evolve in partnership with its stakeholder.

##### 6.1 Strengthening the outer space regime

With the number of actors interested in space capabilities growing, outer space risks being exposed to additional strategic competition, with concerns ranging from the proliferation of space debris and increased crowding of Earth orbits, to the management of orbital resources and radio-frequency spectrum, to the weaponisation of outer space and other deliberate

<sup>4</sup> [http://www.unoosa.org/documents/pdf/hlf/1st\\_hlf\\_Dubai/Dubai\\_Declaration.pdf](http://www.unoosa.org/documents/pdf/hlf/1st_hlf_Dubai/Dubai_Declaration.pdf)

threats to space systems [5]. The attempts being made to introduce further measures to complement the outer space regime show that the existing legal regime applicable to outer space needs to be consolidated and reinforced<sup>5</sup>. New architectures and approaches that go beyond those envisioned even a few years ago would therefore be welcome. Given the lack of shared values among space actors with respect to the secure and sustainable access to and use of space, working toward shared interests and goals could form the basis for future consensus [6].

##### 6.1.1 Defining ethical principles and norms of responsible behaviour in outer space activities

The international space community has long pursued efforts to preserve access to and use of outer space for the benefit of mankind. This includes multilateral initiatives to improve global space governance, both in terms of mechanisms for international cooperation and instruments for regulating space activities.

One option for moving forward in this domain is to create an inclusive process aimed at identifying and defining widely agreed-upon ethical principles and norms of responsible behaviour in outer space to which states voluntarily commit themselves. There will be great value if such a process takes place under the UN umbrella, notably in the framework of UNCOPUOS – the main multilateral forum for the development of space regulations.

As a COPUOS permanent observer, SGAC is willing to stimulate and be an active part of this process, and is open to provide inputs that can help foster the development of these ethical principles and norms for responsible space behaviour. This work can best be pursued if complemented by a specific SGAC project group focused on investigating such principles and carried out in cooperation with other COPUOS delegations and observers interested in the matter upfront. Effectiveness in pushing forward this agenda can also be enhanced if the United Nations General Assembly (UNGA) either starts working on a resolution for principles and norms of responsible behaviour in outer space [6] or reintroduces the most innovative provisions of the draft International Code of Conduct for Outer Space Activities as part of an open-ended negotiation<sup>6</sup> [1].

<sup>5</sup> For an official expression of this assessment, see point 2 of the widely-supported UN General Assembly resolution (A/RES/71/31) on the Prevention of an Arms Race in Outer Space (PAROS) [http://www.un.org/en/ga/search/view\\_doc.asp?symbol=A/RES/71/31](http://www.un.org/en/ga/search/view_doc.asp?symbol=A/RES/71/31).

<sup>6</sup> See also the remarks by Paul Meyer before 2017 UNIDIR Space Security Conference, ‘Celebrating the Outer Space Treaty: 50 Years of Space Governance and

### *6.1.2 Improving multilateral cooperation and ensuring compliance with international agreements*

While global space governance will not be easily rationalised into any common model soon, the work of the UNGA (notably the Group of Governmental Experts on Transparency and Confidence-Building Measures in Outer Space Activities) and of the COPUOS (notably the Working Group on the Long-Term Sustainability of Outer Space Activities) shows that some progress can still be made even in the presence of clashing priorities. It is thus of utmost importance to continue work on and push forward existing initiatives, as well as ensure compliance with those proposals for which diplomatic support has been already expressed. While it still appears premature, a review of how principles and recommendations of major diplomatic initiatives have been or are being applied can help ensure compliance and set the path for others to follow [6].

SGAC is willing to support and be involved in any of these potential reviews, especially if this exercise is conducted under the UN umbrella. Where compliance with international agreement is slowed by national laws, SGAC can play a crucial role in raising awareness of the benefits that the development of mechanisms of national law would have in fostering voluntary measures for enhancing confidence and preventing mistrust amongst space actors. SGAC national and regional points of contact, with the support of the Executive Office, can organise activities to sensitise policy makers and legislators. Additional efforts from the UN, including the development of reports on the implementation of recommendations and guidelines from already existing initiatives, would facilitate compliance with international agreements and strengthen the outer space regime<sup>7</sup> [6].

### *6.1.3 Engaging in multiple multilateral forums*

No single venue addresses all aspects pertaining to the exploration and uses of space. While the UN is the main forum for discussing these issues, talks take place in multiple UN bodies. These include the UN General Assembly, particularly its First Committee and Fourth Committee, as well as the Conference on Disarmament (CD), the UN Committee on the Peaceful Uses of Outer

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Stability' (UNIDIR, Secure World Foundation, The Simons Foundation Canada), Geneva, 20–21 April 2017, <http://www.unidir.ch/files/conferences/pdfs/the-outer-space-treaty-and-the-future-of-space-security-diplomacy-en-1-1246.pdf>

<sup>7</sup> The work of UNOOSA and the Office for Disarmament Affairs (UNODA) on the implementation of outer space TCBMs can be seen as a first positive step in this direction. For more information, see A/AC.105/1116 (<http://undocs.org/en/A/AC.105/1116>) and A/72/65 (<http://undocs.org/A/72/65>).

Space (COPUOS), and the International Telecommunication Union (ITU). Each of these has its own governance arrangements, memberships and rationale, highlighting the opportunities that can be created with active engagement in all of them.

Where allowed by law and regulations, SGAC can undertake a reflection on the possibility of joining all of these forums as an observer (or any appropriate status depending on the specific forum) and submit a formal request when the conditions permit.

### *6.1.4 Enhancing bilateral cooperation*

Effectiveness in strengthening the outer space regime can be enhanced via bilateral cooperation. There will be great value in establishing appropriate relations with like-minded partners, especially within the framework of the UN. In shaping this bilateral cooperation, it makes more sense to build on existing initiatives and prioritise action with long-standing partners. Within the COPUOS, for example, a number of delegations and observers (e.g. SWF, IAA, IISL, IAASS<sup>8</sup>) are pursuing efforts to ensure the long-term sustainable use of outer space. In particular, SWF is currently developing a Handbook for New Actors in Space, the aim of which is to provide them with a broad overview of the fundamental principles, laws, norms, and best practices for peaceful, safe, and responsible activities in space<sup>9</sup>.

SGAC can engage and liaise more closely with such delegations and help spread their initiatives through its internal and external networks. This can be done, among other things, by developing appropriate project and/or working groups to provide analysis on specific topics of interest.

### *6.1.5 Linking global space governance with the 2030 agenda for sustainable development*

Space activities of any kind leave footprints on the ground, which render the outer space and terrestrial environments deeply intertwined. Both environments need to be protected and preserved, and this should not come at the cost of the other's sustainability. In light of lowering the environmental impact of outer space activities on Earth, additional sustainable development practices are needed. The UNISPACE+50 strategic reflection, of which the 2030 agenda for sustainable development is one of the main inputs, offers the right opportunity to address this issue at the intergovernmental level.

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<sup>8</sup> Secure World Foundation (SWF), International Academy of Astronautics (IAA), International Institute of Space Law (IISL), International Association for the Advancement of Space Safety (IAASS).

<sup>9</sup> See <https://swfound.org/handbook/>

One idea for moving forward in this area is to include the UN sustainable development agenda, with particular regard to the topic of terrestrial sustainable development, as a new agenda item of COPUOS in 2018. The aim of this new agenda item will be to motivate space actors to display a high degree of care in conducting terrestrial space-related activities.

While the formal submission of a proposal for a new agenda item is up to UN member states' delegations in COPUOS, SGAC can advocate for the creation of such an agenda item, either by partnering with other delegations sharing the same concern or by means of a technical presentation on the topic in next COPUOS sessions. This can be complemented by an ad-hoc study on the environmental benefits that this new approach brings. ESA, for example, would be a suitable partner to engage, as it is pursuing the Clean Space initiative<sup>10</sup>, for which additional synergies would be welcome.

#### *6.1.6 Shaping data policy for ethical uses of space data*

While the proliferation of commercial space actors will contribute to lowering the price of space-related products and data, not all communities will have the resources necessary to benefit from them. Satellite data obtained from governmental programmes can thus be made freely accessible to support the pursuit of the sustainable development goals, notably in the fields of education, global health or emergency response.

SGAC can act as a bridge between the relevant user communities and those governmental agencies providing data. In addition to this, through its working groups, SGAC can undertake further studies to identify potential data policy sharing models and mechanisms for sustainable development and ethical uses, especially if this matters to a number of COPUOS delegations and other observers.

#### *6.2 Making international cooperation the norm for future space activities, recognising it as a long-term investment for all parties involved*

There will be great value if space activities, including the creation of the necessary knowledge and expertise, are accomplished via international cooperation, with the inclusion and consultation of the largest number of stakeholders.

Fostering and promoting the inclusion of developing countries and aspiring space-faring nations in space projects and programmes, within the limit of their own capabilities, can be an avenue for maximising benefits for all parties involved. To win support from established space actors in including those with limited capabilities, international cooperation in space needs to be approached as a long-term investment. While this may

<sup>10</sup> [http://www.esa.int/Our\\_Activities/Space\\_Engineering\\_Technology/Clean\\_Space](http://www.esa.int/Our_Activities/Space_Engineering_Technology/Clean_Space)

not provide immediate returns (except for a cost-effective workforce), it can help build trust and confidence amongst space actors and ensure support from newcomers for other initiatives, not necessarily in the field of space. This approach will also ensure that international cooperation is not seen from new space actors as a one-way provision for space products and services.

Establishing effective international cooperation also requires diversity, both in terms of nationality and type of the players involved. In order to realise this goal, SGAC can advocate for greater inclusion and diversity of actors while making statements on the occasion of COPUOS sessions. In addition to this, in order to act as a model and set the path for others to follow, SGAC can further promote and organise activities in aspiring space nations, ensure diversity in each project it undertakes (for example, by guaranteeing at least one representative per geographic region), and seek additional support from these regions by acting as a bridge between their own space-related entities and personnel eager to be engaged in SGAC activities.

#### *6.3 Making space activities a significant source of socio-economic benefits for all humankind and informing the general public of the ensuing opportunities*

Although modern societies are heavily reliant on space systems, the vast majority of people are still not aware of how, and to what extent, outer space impacts our daily lives.

Public outreach will prove beneficial to raise awareness amongst governmental and commercial actors, and the general public alike, of the benefits and opportunities that space brings. Effectiveness in pushing forward a public outreach agenda and enriching the space community can be enhanced when a clear vision and appropriate synergies have been identified, including through cross-sectoral collaboration.

Besides the numerous workshops and congresses that SGAC already organises to inspire young generations, it will be important if SGAC can also organise local events to specifically sensitise national governments and related agencies about the socio-economic benefits of space activities. This will also contribute to expanding SGAC's presence in countries having little to no space tradition.

There will also be great value if SGAC could address and liaise with non-space organisations, such as associations of industries active in those domains where the use of space products and data is envisaged. This cross-sectoral cooperation can take the format of either dedicated joint workshops aimed at informing these communities of the benefits offered by the use of space services and applications in their own industrial sector, or more structured cooperation that foresees SGAC's

involvement in support of specific projects, including public outreach campaigns. SGAC could also respond, on its own or as a member of a consortium, to public or private calls for the development of communication plans pertaining to the use of space services and applications, such as those advertised in the European R&D programmes (e.g. Horizon 2020)<sup>11</sup>.

Public outreach and diversification of the space community will prove more beneficial (and credible) if national governments increase transparency of budget allocation and provide the public with efficient access to databases and educational tools that facilitate involvement in space endeavours.

Finally, it is necessary that nations actively promote and support the development of space activities, with a special focus on domains where socio-economic benefits are higher. This can best be pursued if returns on space investments are appropriately communicated and quantified by means of independent impact assessments and socio-economic studies. Not only do these analyses need to include earth observation, navigation, and telecommunications, but also domains which have not been traditionally taken into consideration, such as launchers, human spaceflights, and space exploration.

#### *6.4 Encouraging capability development and capacity building, and placing space topics on national political agendas*

Building capacity across space markets and placing space on national political agendas can best be pursued if policy makers and legislators are properly informed of the benefits resulting from space investments.

In order to facilitate this goal, SGAC can act as a force to raise awareness amongst governmental actors of the benefits that space investments have on both the society and economy. Within the US there are events such as ‘take the Hill’, where students and young professionals can meet with politicians who work on ‘The Hill’ (for or with the federal government) to advocate for the advancement of space on their agendas. SGAC can play a role in spreading this kind of action to other countries, along with lessons learned on the most effective ways to market and sell space as a positive political action item.

Another option to move forward in this area is to increase knowledge-sharing of space technology and policy between different nations at all levels of experience. This includes linking spacefaring nations with those that aspire to become established space actors, and newcomers into space to one another. This capacity-building approach will have two major benefits. First, the experienced nations will be able to set the developing ones up for success by advising on

topics such as the development of a national space policy. This will prevent the less experienced actors from having to re-learn lessons which have already been understood on the global scale and also prevent re-inventing the wheel. Second, by linking aspiring spacefaring nations to one another, for example by providing them an appropriate network or forum for discussion, they will be able to collaborate among themselves and with the main international actors on major projects which may be unfeasible or impractical for them to conduct alone, but by working together, and gaining advice from experienced nations, they will have a far higher likelihood of success. The UNCOPUOS is a suitable platform for facilitating such exchanges and making the debate large enough to increase likelihood of success.

SGAC can facilitate these goals through both encouraging the sharing of best practices by highlighting the benefits it brings and conducting space capacity building activities on its own. These may include fostering collaborations across nations, sectors and disciplines, providing opportunities to participate in a variety of missions, multiplying student opportunities and encouraging nations (and the UN) to do the same, including through competitions, internships and scholarships for higher education, and of course, building upon the current SGAC project groups. Throughout all of this, an increased awareness of space will be developed throughout the nations to the point where it will be necessary for them to become a main part of the political agenda.

#### *6.5 Advancing the space sector so as to be a leading force in major technology development*

It is beyond reasonable doubt that military research and expenditures have traditionally led advances in technology development. At the same time, it is indisputable that modern societies have largely benefited from the exploration and use of outer space. For example, today the United States’ space and technological leadership still benefits from the efforts made 50 years ago in the field of manned space missions.

In order to raise awareness of the existing links between advancements in the space sector and technology development, and to make space a leading force in major technology development, work can be done around three main pillars.

Firstly, the establishment of multidisciplinary bodies to pursue technology transfer and develop spin-off technologies will prove to be beneficial. This can be performed at both the national and international level. At the international level, Centres of Excellence (perhaps modelled on the existing NATO centres) may be created to generate space knowledge that will be shared with other nations afterwards. This will allow a

<sup>11</sup> See <https://ec.europa.eu/programmes/horizon2020/>

base of knowledge to be built within these and other countries. At the national level, dedicated space offices can then use this new knowledge to address and solve local issues, for instance the assistance of satellite technology to agricultural communities. SGAC could support these initiatives by organising global forums and workshops on technology transfer and spin-offs, as well as establishing multidisciplinary project/working groups to analyse the impact of such initiatives and to think of potential spin-off technologies.

Secondly, increasing awareness of the commercial and high-tech benefits from investing in space technology and exploration will contribute to defining a pillar around which governments and industries can articulate and calibrate their own visions, policies, activities and priorities, connecting ideas to the capabilities and resources available. This will enable governments to channel investments in the space sector, as decision makers will be better informed about the potential avenues for space research and development. Additionally, the creation and enhancement of financial mechanisms for public and private investment in space will further this objective, since it will provide additional funding and support which is needed to effectively push forward. SGAC is well placed to inform and support both public authorities and industry.

Thirdly, the development of a strategy for sharing patented space technologies that are developed with public funding is envisioned. Patented space technologies that are developed through the use of public funding should also be made available for public benefit. Through this mechanism, there will be increased understanding of the benefits of space technology and it will act as a catalyst for innovation from the higher availability of the patents.

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