SPACE GENERATION
ADVISORY COUNCIL

In Support of the United Nations
Programme on Space Applications

SGAC Origins

Conceived at the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) in Vienna in 1999

> *To create, within the framework of the Committee on the Peaceful Uses of Outer Space, a consultative mechanism to facilitate the continued participation of young people from all over the world, especially young people from developing countries and young women, in cooperative space-related activities…*

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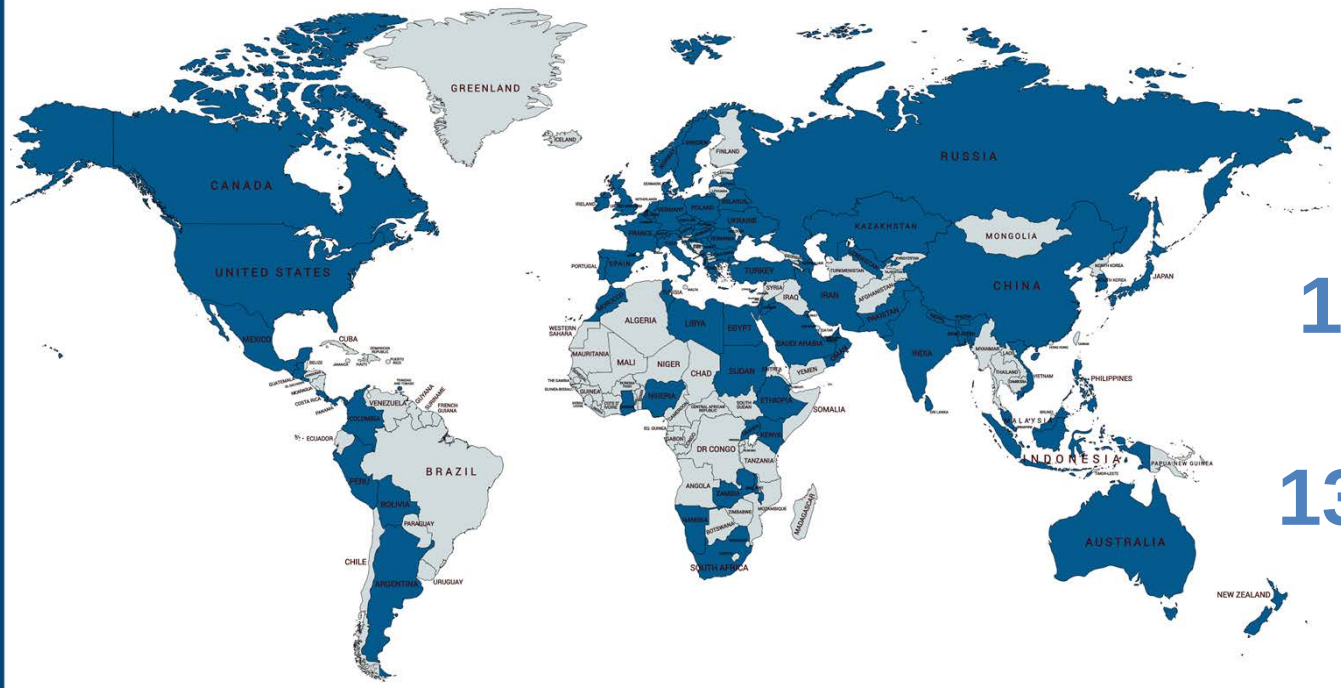
SGAC Network



6 Regions

150+ Countries

13,000 Members

and Alumni

Space Generation Congress

The 16th Edition of the Space Generation Congress was held (21 - 23rd September 2017) in Adelaide, Australia

- Held in conjunction with the **International Astronautical Congress**
- 150 delegates from 43 countries
- 12 speakers, and 10 subject matter experts (SME)
- 82 scholarships and awards (>50% of the participants)
- 6 working groups

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SPACE GENERATION CONGRESS 2017

WORKING GROUPS RECOMMENDATIONS

SGC 2017
Adelaide, Australia

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SPACE EXPLORATION

Supported by:

30 Delegates
21 Countries represented

NASA Advanced Exploration Systems

Objectives:

Identify compelling activities in cislunar space and the lunar surface that will:

- be mutually beneficial to all partners by contributing to multiple national and organization objectives
- leverage the DSG (Deep Space Gateway) systems and capabilities
- emphasize focus economic expansion and partnerships

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RECOMMENDATIONS

The DSG provides many opportunities for science and commercial utilisation:

1. *DSG Service & Support Hub architecture accommodates many users and services by providing:*
    - *Transportation*
    - *Maintenance and Manufacturing*
    - *Communications*
    - *Space Garage*

1. *Establish a framework for partnership governance to enable access to as many actors as feasible*

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SPACE TRANSPORTATION

Supported by:

23 Delegates
19 Countries represented

Objectives:

A. Identify the potential future stakeholders within the space transportation sector
B. Define the potential solutions the sector may offer in the future and how do these differ from traditional solutions and customer needs
C. Identify the challenges which the sector and its stakeholders might face in meeting these new needs

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RECOMMENDATIONS

1) ***Governments*** *should facilitate innovation by providing* ***market support*** *while* ***managing risk*** *responsibly through effective regulation.*
2) *Cultivate* ***global collaboration*** *in the space transport industry by* ***reducing barriers*** *to international technology exchange, supporting further commercialisation and emulating the architecture of civil aviation.*
3) *Encourage more intimate* ***collaboration*** *between* ***space agencies*** *to limit duplication and increase efficiency in the creation of a next-generation space transport technology.*
4) ***Education*** *for international export regulations should be provided through an NGO, helping the launch industry to facilitate* ***international trade and cooperation****.*

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SPACE INNOVATION

Supported by:

27 Delegates
19 Countries represented

Objectives:

A. Building a future on another celestial body requires bold and innovative ideas.
B. Identifying near to mid term commercial lunar development opportunities and activities enabled by getting to the lunar surface, setting the stage for a potential lunar settlement after the end-of-ISS operations in the mid-2020s.

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RECOMMENDATIONS

1) *Global inclusiveness through engagement (emerging space countries, non-space companies) and initiate central Moon Village coordination group*
2) *Communicate Moon Village benefits and opportunities to wider audiences and use of professional marketing agency*
3) *Formulation of a clear and relatable goal and support Moon exploration initiatives with potential to strengthen benefits available (science/technology)*
4) *Offer an environment for companies, labs and universities to conduct research and provide shared, centralised, standardised power & data infrastructure and services first*

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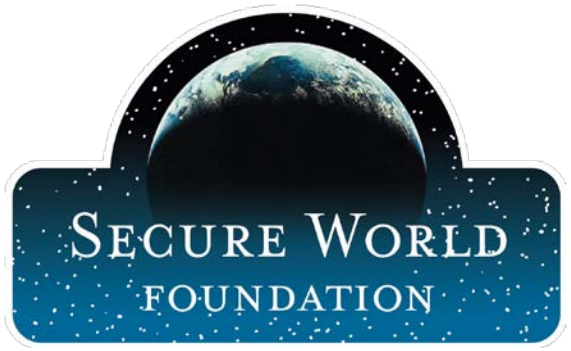
SPACE DIPLOMACY

Supported by:



20 Delegates
12 Countries represented

Objectives:

A. Identify the factors that the international community should consider in formulating policy responses to the issues under the four broad building blocks

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RECOMMENDATIONS

1) *Drafting of **guidelines**, including inbuilt risk controls and minimum standards for operations and commercial ventures, coordinated with general UN-COPUOS space operations guidelines*
2) *Private entities should demonstrate to their respective State, through a **regulatory** and **licensing** scheme, that they meet required guidelines*
3) ***Clarification** between "non-appropriation" and "freedom of use" is to be developed by a UN working group, which considers the acquisition and **ownership** of space resources.*
4) *Setting up a UN working group to investigate the establishment of an international regulatory body for space resources.*

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SPACE LAW

Supported by:

Australian Government
Department of Defence

SHOAL
Complexity mastered.

20 Delegates
7 Countries represented

Objectives:

A. Identify the principles needed to avert a tragedy of the commons caused by space debris
B. Find out how to balance intergenerational equity in the benefits of space with commercial imperatives and innovation?
C. Define if the legal regime for outer space should seek to prevent further militarisation, or if we must accept it as inevitable and seek only to regulate it

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RECOMMENDATIONS

Based on the Outer Space Treaty:

1) *Safety of any space activity, either commercial or governmental, involving human component must be ensured with reasonable efforts.*
2) *International regulatory board for equitable sharing of resources and protection of commercial assets*
3) *Clarify the meaning of appropriation in Article II*

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SPACE TECHNOLOGIES

Supported by:

NASA Space Communications and Navigation

22 Delegates
11 Countries represented

Objectives:

A. Brainstorm about the wide range of link scenarios/applications for laser communications technology.
B. Consider the challenges in finding a “common” interoperable Free Space Optical Communication (FSOC) mode, akin to standards agreed to by the telecommunications industry.
C. Provide recommendations about how to achieve a common industry position on FSOC system interoperability to enable the level of cross support required by international space agencies

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RECOMMENDATIONS

Challenges:

1. *Cost in development and operation*
   - *Collaborate and create joint projects between agencies, researchers, and industry partners*
   - *Share information (e.g. weather data)*
1. *Technical complexity (compatibility)*
   - *Allow some flexibility*
   - *Define functional interfaces in detail*
   - *Research established standards from other technologies*
   - *Integrate new standards with established ones*
1. *Complexity of negotiation*
   - *Distribute a living document generated by all stakeholders during the development process*
   - *Agree and commit to standards*

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SGAC REGIONAL EVENTS

Space Generation Workshops 2017

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SGAC SGWs

SGAC is committed to enable the secure and sustainable access to, and use of, space for socio-economic benefits and sustainable development in every region, especially in developing countries and emerging space nations.

4 Space Generation Workshops in 2017:

- 2nd E-SGW | Paris, France | Mars 2017
- 4th AP-SGW | Bengaluru, India | November 2017
- 1st AF-SGW | Akure City, Nigeria | November 2017
- 3rd SA-SGW | São José dos Campos, Brazil | November 2017

EUROPEAN - SGW

2nd E-SGW | Paris, France | 24th and 25th of March 2017:

Objectives:

- **To strengthen the regional network of the students and young professionals in the European region;**
- **To examine and consider key questions in the European region that the regional space community is facing and to provide inputs from the next generation of space professionals**
- **To allow tomorrow's space sector leaders in the European region to have the opportunity to interact with today's space leaders in the region through cooperation with ESA.**

Working Groups:

- **SPACE ECONOMY**
- **SPACE ACCESSIBILITY**
- **SPACE DIPLOMACY**
- **SPACE EXPLORATION**

2ND EUROPEAN-SGW 24/25TH MARCH 2017 PARIS

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ASIA-PACIFIC - SGW

4th AP-SGW | Bangalore, India | of November 2017:

Objectives:

- **To strengthen the regional network of the students and young professionals in the Asia-Pacific region**
- **To examine and consider key questions in the Asia-Pacific region that the regional space community is facing and to provide inputs from the next generation of the space professionals**
- **To allow tomorrow's space sector leaders in the Asia-Pacific region to have the opportunity to interact with today's space leaders and professionals in the region.**

Working Groups:

- **SOCIO-ECONOMIC IMPACTS OF REGIONAL NAVIGATIONAL SATELLITE SYSTEM**
- **SPACE DIPLOMACY: BRIDGING THE DIVIDE**
- **CUBESATS AS AN ENABLER OF SPACE TECHNOLOGY**
- **ECOSYSTEM FOR YOUNG SPACE ENTREPRENEURS**
- **REGULATORY HURDLES AND SPACE POLICY**
- **LUNAR EXPLORATION**

AP-SGW 2017
Bengaluru, India

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AFRICAN - SGW

1st AF-SGW | Akure, Nigeria | 16th and 17th of November 2017:

Objectives:

- **To strengthen the regional network of the students and young professionals in the African region**
- **To examine and consider key questions in the African region that the regional space community is facing and to provide inputs from the next generation of the space professionals**
- **To allow tomorrow's space sector leaders in the African region to have the opportunity to interact with today's space leaders and professionals in the region.**

Working Groups:

- **SPACE TECHNOLOGIES DEVELOPMENT IN AFRICA**
- **AFRICAN SPACE POLICY**
- **ROLE OF STEM EDUCATION IN DEVELOPING THE SPACE INDUSTRY IN AFRICA**
- **SPACE IN DRIVING THE AFRICAN ECONOMY/AEROSPACE START-UP**

1st African Space Generation Workshop
Akure, Nigeria
November 16-17 2017

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SOUTH AMERICAN - SGW

3rd SA-SGW | São José dos Campos, Brazil | of November 2017:

Objectives:

- **To strengthen the regional network of the students and young professionals in the South American region**
- **To examine and consider key questions in the South American region that the regional space community is facing and to provide inputs from the next generation of the space professionals**
- **To allow tomorrow's space sector leaders in the South American region to have the opportunity to interact with today's space leaders and professionals in the region.**

Working Groups:

- **Education in space topics**
- **Sustainability of Mars Analog Research Station in South America**
- **South American initiatives for the development of collaborative space activities**

3rd SOUTH AMERICAN SPACE GENERATION WORKSHOP 2017 São José dos Campos BRASIL

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THANK YOU

More details of the outcomes and discussions of the SGC and the different Space Generation Workshop will be published in the SGAC 2017 Executive Summary and Annual Report

www.spacegeneration.org

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