ANNUAL REPORT 2022

SPACE GENERATION
ADVISORY COUNCIL

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ADVISORY COUNCIL

In support of the United Nations Programme
on Space Applications

c/o European Space Policy Institute (ESPI)
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Vienna A-1030
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Acknowledgements

The SGAC 2022 Annual Report was compiled and edited by the SGAC Reports Team. Members of the Space Generation Advisory Council worldwide were the primary contributors to the content of this report.

The Space Generation Advisory Council (SGAC) in Support of the United Nations Programme on Space Applications is a non-profit organisation and professional network that represents university students and young professionals in the space sector. SGAC has permanent observer status at the United Nations Committee on the Peaceful Uses of Outer Space (COPUOS) and is a member of the UN Economic and Social Council and the International Astronautical Federation (IAF). Headquartered in Vienna, with full-time staff, the organisation is supported by a volunteer network of over 21,000 members in more than 150 countries. SGAC is a registered 501(c)(3) in the United States.

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ACRONYMS

Term	Definition
AF	Africa
AP	Asia Pacific
CA	Central America
E	Europe
EU	European Union
ESA	European Space Agency
IAC	International Astronautical Congress
IAF	International Astronautical Federation
ISS	International Space Station
JAXA	Japan Aerospace Exploration Agency
LEO	Low Earth Orbit
ME	Middle East
NEO	Near Earth Object
NPoC	National Point of Contact
PG	Project Group
SA	South America
SDGs	Sustainable Development Goals
SGAC	Space Generation Advisory Council
SGAPP	Space Generation Advocacy and Policy Platform
SGC	Space Generation Congress
SGFF	Space Generation Fusion Forum
SGW	Space Generation Workshop
STEM	Science, Technology, Engineering and Maths
UAE	United Arab Emirates
UN	United Nations
UN COPUOS	United Nations Committee on the Peaceful Uses of Outer Space
UN OOSA	United Nations Office for Outer Space Affairs
USA	United States of America

SPONSORS AND PARTNERS

SGAC is ever grateful for the generous support of its sponsors and partners, who continue to expand both their financial and intellectual contributions to the organisation. From scholarships to mentoring, to advising and sponsoring, contributions from our sponsors are invaluable towards creating the experience that SGAC is able to offer its members. SGAC would like to thank all our sponsors and partners again for their contributions towards another successful year for SGAC.

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ispace


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GALACTIC


planet.


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a LEONARDO and THALES company


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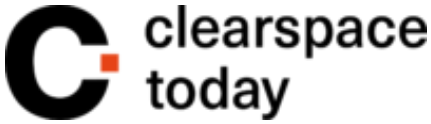
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GOVERNMENT RELATIONS


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AXIOM
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SPACE VENTURES

OXFORD SPACE SYSTEMS

GGPEN
Gabinete de Gestão do Programa Espacial Nacional

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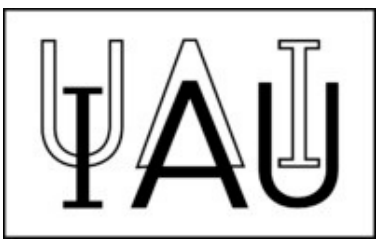
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CLUB FOR THE FUTURE
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Office for Outer Space Affairs


INTERNATIONAL SPACE UNIVERSITY
ISU


3AF
Groupe Grand Est


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E.AMALDI


ISEB
International Space Education Board


AYAA


KARI
Korea Aerospace Research Institute


ASTRONAUTICA AD PACEM HOMINUMQUE PROGRESSUM
IAF


AMOS
Advanced Maui Optical and Space Surveillance Technologies Conference


ACADEMIE DE L'AIR ET DE L'ESPACE
AAE
AIR AND SPACE ACADEMY


SSPI
SPACE & SATELLITE PROFESSIONALS INTERNATIONAL


ESPI

FROM THE EXECUTIVE OFFICE

Letter from the Chairs

Hamza Hameed, SGAC Chair

Anthony Yuen, SGAC Co-Chair

Dear SGAC members, colleagues, alumni, and supporters,

2022 had been an incredible year for SGAC. As we take a moment to reflect upon the year, it is an honour and a privilege to foreword our Annual Report.

Firstly, thank you to all of our SGAC members and volunteers in 165 countries across the globe. SGAC is first and foremost a student and young professional-led organisation. Our successes and achievements are only possible thanks to the countless hours of effort and hard work from our voluntary team members and staff. The incredible achievements recorded in this annual report is testament to the impact you, as a passionate group of young space people, have across the space industry and the world.

Thank you also to our alumni, supporters, and sponsors who enable us to carry out our mission. Your steadfast support allows us to connect, grow, and empower students and young professionals across the world. Your continued support is truly an investment in the next generation of young space leaders.

One of the luckiest parts of leading SGAC has been the opportunity to witness the tremendous impact our members make across the world. However, we grew from very humble beginnings and our foundation has sometimes not kept up with the scale of work we do. Our executive team, along with major stakeholders including the executive committee, advisory board, and the broader membership, made several major achievements to strengthen the foundation and governance of our organisation. You may not see this in our day-to-day activities, but they crucially underpin everything that we do.

These major achievements include the first major revision of our mission and vision statements, which defines what SGAC is and our collective direction. SGAC also launched our Endowment Fund in April 2022, setting up a strong financial foundation for long-term growth. Finally, we overhauled our staffing and labour practices, shifting our staff from contract hires to full-time salaried employees with benefits. We also employed our third full-time employee, and expanded our in-person employment opportunity in Vienna to beyond EU citizens.

These little steps will be instrumental in SGAC's growth in the next 5 years. The result is a stronger, more resilient organisation that will continue to do what we do best - "to enable and empower the young generation in advancing humanity through the peaceful uses of outer space".

Thank you everyone,
Per aspera ad astra!

Anthony Yuen & Hamza Hameed

Executive Members

CHAIRPERSONS

Anthony Yuen
Australia
Chair

Hamza Hameed
Pakistan
Co-Chair

EXECUTIVE OFFICE

Davide Petrillo
Italy
Executive Director

Valentina Luchetti
Italy
Chief of Staff

Amanda Sathiaraj
India
Remote Operations Manager

Daniel Seybold
Germany
Treasurer

Phylis Makurunje
Zimbabwe
Executive Secretary

Kristine Jane Atienza
Philippines
Executive Secretary

Johanne Ekue
Ghana
Executive Secretary

Stephen Robison
United States
General Counsel

Ayomide Jile-Omole
Nigeria
General Counsel

Antonino Salmeri
Italy
SGAPP Coordinator

Giuliana Rotola
Italy
SGAPP Coordinator

Katrin Dietmayer
Germany
Alumni Team Lead

Harriet Brettle
United Kingdom
Alumni Team Lead

Ginny Randall
United States
SGx Manager

Tasman Powis
Australia
SGFF Manager

Victoria Carter-Cortez
Bolivia
SGC Manager

Mehdi Scoubeau
Belgium
Regional Events Coordinator

Charlotte Flory
France
Local Events Coordinator

Faith Tng
Singapore
Mentoring Team Lead

Victoria Da-Poian
Spain
Mentoring Team Lead

Abraham Akinwale
Nigeria
HR Team Coordinator

Leonard de Guzman
Australia
HR Team Coordinator

Morgane Lecas
France
Project Groups Coordinator

Joshua Critchley-Marrows
Australia
Project Groups Coordinator

Shreya Santra
India
Scholarships Team Lead

Flavie Rometsch
Germany
Scholarships Team Lead

Anne Nethmini
India
PR & Comms Lead

Tsion Endale Bonger
India
PR & Comms Lead

Ewerton de Marchi
Brazil
Reports Team Lead

Rachel Venn
United Kingdom
Reports Team Lead

Laud Bentil
Nigeria
Web & Data Team Lead

SGAC Regional Coordinators

Tensae Ali
Ethiopia
RC for Africa

Rania Toukebri
Tunisia
RC for Africa

Bernadette Detera
Philippines
RC for Asia-Pacific

Antonio Stark
Republic of Korea
RC for Asia-Pacific

Eleonora Lombardi
Italy
RC for Europe

Antonio Scannapieco
Italy
RC for Europe

Rawan AlShammari
Kuwait
RC for Middle-East

Ahmed Baraka
Egypt
RC for Middle-East

Angel Arcia Gil
Panama
RC for North, Central America and the Caribbean

Elizabeth Barrios
United States
RC for North, Central America and the Caribbean

Isi Casas Del Valle P.
Chile
RC for South America

Santiago Enriquez
Argentina
RC for South America

OUTPUT AT A GLANCE

23,500+
members

165+
countries

15+
SGAC events

11
Project Groups

1 new SGAC initiative: the Space Generation Advocacy and Policy Platform was established to coordinate SGAC's policy activities

1 new paid staff position: SGAC's first remote operations manager, Amanda Sathiaraj, was recruited in May 2022

1 new Co-Chair: Hamza Hameed (Pakistan) was hired as the new Co-Chair of SGAC

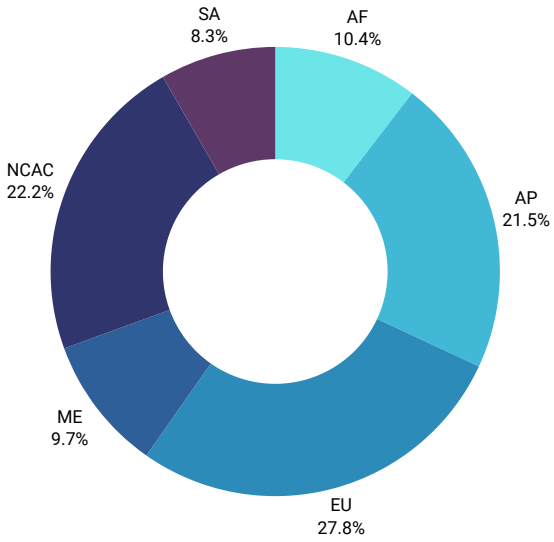
115
new staff recruited

212
mentee/mentor matches

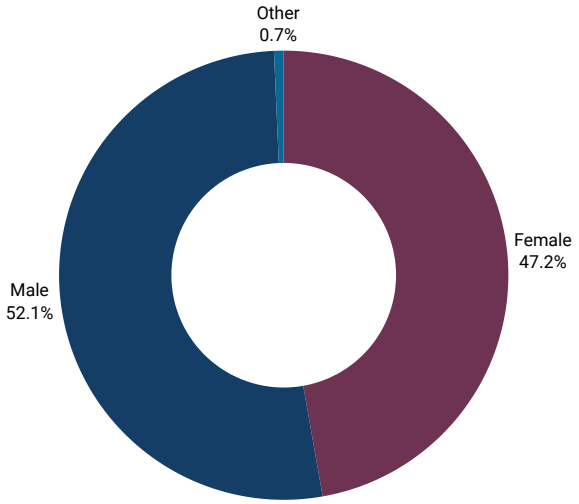
Scholarships

The SGAC Scholarships are one of the core opportunities offered to active members of the Space Generation Advisory Council. SGAC and its partners host a number of scholarships for students and young professionals to attend the Space Generation Congress (SGC), the International Astronautical Congress (IAC), the Space Generation Fusion Forum (SGFF), the Space Symposium (SS), the SATELLITE, the SGx, regional and local SGAC events and other space events.

In 2022, SGAC was pleased to award the following scholarships to SGAC members:



Scholarships by region



Scholarships by gender

Scholarship/Award/Competition	Event Supported	Number of Awardees
SSPI Essay Competition	SGx/SATELLITE Show	1
SGAC4Steam Scholarship	SGx2022	1
NASA SCaN	SGx2022	2
Virgin Galactic	SGFF2022	1
Global Grant Programme	SGFF2022	5

Scholarship/Award/Competition	Event Supported	Number of Awardees
NASA SCaN	SGFFx2022	2
SEDS	SGFF2022	1
ASA	SGFF2022	1
Chris Boshuizen	SGFF2022	3
E-SLA	E-SGW	8
SA-SLA	SA-SGW	4
Global Grant	SGC2022	2
ESL	SGC2022	19
ESL/SGC 2022 Logo Competition	SGC2022	1
Loft Orbital	SGC2022	3
OHB SE	SGC2022	2
Global Rising Star	SGC2022	6
Chris Boshuizen	SGC2022	5
Future Space Leaders Grant Program	SGC2022	5
ispace	SGC2022	2
NASA SCaN	SGC2022	2
Space Generation Leadership Award	SCG2022	5
Italian Space Agency	SGC2022	5
Australian Space Agency	SGC2022	2
AYAA	SGC2022	3
ISEB ESA	SGC2022	2
ISEB KARI	SGC2022	4
ISEB NASA	SGC2022	3
ISEB CSA	SGC2022	2
SGAC4Steam Scholarship	SGC2022	1
ESA	SGC2022	1
Airbus	SGC2022	1
NASA Exploration	SGC2022	1
NGAC-SLA	NCAC-SGW	3
AF-SLA	AF-SGW	3
NewSpace Europe 2022	NewSpace Europe	5
SGAC-WSBW	World Satellite Business Week	19
GSA-SGAC	Global Aerospace Summit	3
NSE-SGAC	New Space Economy	5
	Total	**144**

* SGAC Scholarships are organised by SGAC itself or together with a partner. Scholarships also include partnership with programmes such as the Future Space Leaders Foundation (FSLF) or the International Space Education Board (ISEB).

Awards

Member of the Month Award

The SGAC Member of the Month Award has been established to pay tribute to the most active volunteers each month, recognising their hard work and contributions to SGAC. Members of the Month may be nominated by any SGAC member, and represent those who have brought leadership and inspiration to our space community. The Member of the Month Award recipients of 2022 are:

January

TENSAE ALEMAYEHU ALI

Ethiopia

SGAC Regional Coordinator for Africa

February

MATEJ POLIACEK

Slovakia

SGAC National Point of Contact - Slovakia

March

ÁNGEL ARCIA

Panama

SGAC Regional Coordinator for NCAC

April

TASMAN POWIS

Australia

SGFF 2022 Manager

May

MARÍA FERNANDA DEL BARCO

Costa Rica

Event Manager - 7th South American SGW

May

MATÍAS F. CAMPOS ABAD

Ecuador

Event Manager - 7th South American SGW

September

WELANDAKULAGE D. A. N. KAUSHALYA

Sri Lanka

SGAC Global PR & Comms Team - Co-Lead

October

PHYLIS MAKURUNJE

Zimbabwe

SGAC Executive Secretary

October

KRISTINE JANE ATIENZA

Philippines

SGAC Executive Secretary

October

JOHANNE AYELEY EKUE

Ghana

SGAC Executive Secretary

November

WIJDANE BENANI

Morocco

Event Manager - 6th African SGW

November

IMANE EL KHANTOUTI

Morocco

Event Manager - 6th African SGW

December

20TH SPACE GENERATION CONGRESS ORGANISING TEAM

Pioneer Award

The Pioneer Award was created to recognise individuals who consistently go above and beyond in their work for, and personify the values of, SGAC. The recipients of the Pioneer Award represent the best of the best of our organisation and are selected through a nomination process and independent review board. The Pioneer Award consists of a special pin with a certificate that states the accomplishments of the recipient, along with recognition on the SGAC website. The Pioneer Award is presented twice a year to up to four individuals.

In 2021, the Pioneer Award was awarded to Antonio Stark, Saira Roxana Williams, and Rania Toukebri.

The Pioneer Award recipients for 2022 are:

Laura Gonzalez Llamarez (Spain)

SGAC National Point of Contact - Spain

Laura is the Space Manufacturing Lead at the Satellite Applications Catapult, supporting the space sector through advanced manufacturing for space, including 3D printing rocket engines in metal, and participating in other microgravity and in-orbit servicing and manufacturing activities. Laura is also the CMO and cofounder of Radian Systems, a start-up providing thermal analysis solutions for space. In the past she has worked as AIT and Systems Engineer for two ESA science missions, PLATO and ATHENA, at the Spanish equivalent of a space agency (INTA).

Within SGAC she is currently Spain NPoC and organizer of the Global Satellite Tracking Initiative.

Tasman Powis (Australia)

Manager - 2022 Space Generation Fusion Forum

In 2015 Tasman moved from his home city of Melbourne, Australia to the United States to begin a PhD at Princeton University. After completing his PhD in 2021 Tasman began a position as a Computational Research Associate at the Princeton Plasma Physics Laboratory to continue this research. Leveraging connections through the SGAC he met with policy makers in Washington, D.C. and shared findings with the National Space Council. In 2020 the White House chose to formalise the policies he advocated for via Space Policy Directive 6, effectively banning the use of weapons grade uranium in future space reactors.

After nearly a decade being involved with SGAC, Tasman was manager of the team that delivered the 2022 Space Generation Fusion Forum.

Tensae Alemayehu Ali (Ethiopia)

SGAC Regional Coordinator - Africa

Tensae Alemayehu Ali is a Mechanical Engineering graduate from Mekelle University. He is currently working as the Regional Coordinator for Africa at the Space Generation Advisory Council (SGAC). Formerly, he has worked as SGAC's Regional and Local Events Coordination Team and as the National point of contact for Ethiopia. He is also a member of the IAF Administrative Committee of Developing Countries and Emerging Communities (ACDCEC).

He has received Space In Africa's premier award, Top 10 Under 30 African Space Industry Award – Class of 2021. Tensae was one of the five recipients of the Global Grants Programme through SGAC in 2021, as well as Member of the Month for January 2022.

Daniel Seybold (Germany)

SGAC Treasurer

Since 2020, Daniel Seybold is the CEO of TeleOrbit, a company focused on the sales and marketing of satellite navigation equipment, such as antennas or receivers. At TeleOrbit he is, among others, responsible for the overall project, contracts, and IPR management.

Besides this, Daniel is currently the Treasurer for SGAC where he oversees all financial aspects of the organisation, ranging from supporting event managers, to making sure that the bookkeeping is in order and that all of SGAC's tax returns are filed on time. This role also includes strategic elements since it is his responsibility to plan SGAC's financial future in the near and long term.

Alumni Award

Launched on the occasion of SGAC's 20th anniversary in 2019, the SGAC Alumni Award Programme aims to acknowledge selected alumni for meritorious contributions to the SGAC community, demonstrating a high degree of loyalty and commitment to SGAC, and their outstanding leadership and ongoing support of the organisation.

The Alumni Award for 2022 was presented to Dr. Lance Bush at the 20th Space Generation Congress in Paris.

Dr. Lance Bush

Dr. Lance Bush was nominated for playing a foundational role at SGAC. More than 20 years ago, Bush led efforts to establish and formalize SGAC after what was originally intended to be a one-time gathering of youth attending the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) in Vienna, Austria. As an active SGAC leader and member throughout the past two decades, Bush was pivotal in establishing SGAC in the United States as a 501(3)c nonprofit; then, as a global non-governmental organization.

Additionally, Bush has held the role of Investment Committee Chair on the SGAC U.S. Board, advised SGAC's U.S. activities, established the SGAC endowment fund, and mentored other SGAC members.

"I'm honored to be recognized by the Space Generation Advisory Council with this year's Alumni Award," said Bush. "Challenger Center and SGAC share a common mission—to inspire the next generation. Today's students and young professionals are tomorrow's leaders and innovators, and we must ignite and foster their potential. It's been a privilege to lead and support SGAC for more than 20 years in its vision to cultivate the views and opinions of today's youth to ensure the advancement of humanity's use of outer space."

Ambassador Award

Through the SpaceGen Ambassador Award programme, SGAC wants to acknowledge organisations that deeply care for our generation, our talents, skills and needs that actively support us as the 'next' generation of space leaders, empower us as such and enable us to grow. The award is presented to an organisation from the space sector, either governmental, non-governmental, or private company that demonstrates genuine care for the next generation, actively supporting and empowering young space professionals and students.

SGAC was pleased and honoured to award the 2022 SpaceGen Ambassador Award to the European Space Agency at the closing ceremony of the 20th Space Generation Congress in Paris.

"SGAC is a key partner of ESA and remains instrumental in enticing the young generation, ultimately securing humankind's future on Earth and in space"

Josef Aschbacher, European Space Agency Director General

ESA has been a longstanding sponsor and partner of SGAC, greatly contributing to SGAC's mandate of providing a platform for growth and engagement for our members around the world to gain skills that prove essential to their future careers.


SPACE GENERATION
ADVISORY COUNCIL
LOCKHEED MARTIN

Conferences, Events and Workshops

Global

- SGx (Washington DC, USA)
- SGFF (Colorado Springs, Colorado, USA)
- SGC (Paris, France)

Local

- SG[India] (Online)
- SGACxECSL Model UN COPUOS (Online)
- Our Giant Leap Hackathon (Daejeon)
- SG[France] (Strasbourg)
- SG[Spain](Madrid)
- ISSC-4(Napoli)

Regional

- E-SGW - 6th European Space Generation Workshop (Limassol, Cyprus)
- SA-SGW - 7th South American Space Generation Workshop (Quito, Ecuador)
- AF-SGW - 6th African Space Generation Workshop (Rabat, Morocco)
- NCAC-SGW - 3rd North, Central America and Carribean Space Generation Workshop (Houston, Texas, USA)

Conferences and Events with Official SGAC Representation

Members of the SGAC Executive Committee officially represented SGAC at the following conferences and events:

- STSC 2022, 7-18 February 2022, Vienna, Austria, SGAC Statement + Technical Presentations
- SATELLITE 2022 & SGx 2022, 21-24 March 2022, Washington D.C., USA
- SGFF 2022 & 37th Space Symposium, 1-7 April 2022, Colorado Springs, USA
- LSC 2022, 28 March - 8 April, Vienna, Austria, SGAC Statement + Technical Presentations
- South American Workshop & GLEC, 15-20 May 2022, Quito, Ecuador
- Global Aerospace Summit 2022, 24-26 May 2022, Abu Dhabi, UAE
- Committee on the Peaceful Uses of Outer Space, 65th Session, Vienna, Austria, SGAC Statement + Technical Presentations
- SGC 2022 & IAC 2022, 14-22 September 2022, Paris, France
- World Satellite Business Week, 12-16 September 2022, Paris, France
- ASCEND, 24-26 October 2022, Las Vegas, USA
- NSE ExpoForum, 1-3 December 2022, Rome, Italy
- Abu Dhabi Space Debate, 5-6 December 2022, Abu Dhabi, UAE

Papers, Publications and Presentations

SPACE EXPLORATION PG

Bram de Winter, Marcos Eduardo Rojas Ramirez, Sapna Rao, Marion Dugué, Priyanka Sinha, Coralie Elmeleh, Chanud Sithipreedanant, Nicholas Florio. *"Lessons learned from SGAC's ACHIEVED mission design project, adapting projects based on curiosity and needs of the next generation"*. 2022. IAC Conference Proceedings.

Sapna Rao, Priyanka Sinha, Marcos Eduardo Rojas Ramirez, Bram de Winter, Saira (Roxy) Williams, Viduranga Landers, Alejandro Astudillo, Nitya Jagadam, Sondes Morchedi, Dorcas Oseni, Rayen Laabidi, Harsh Singh. *"Mercury Sample Return Mission Design Utilizing Innovative Systems and Technologies. September 2022"*. IAC Conference Proceedings.

Newsha Haghgoo, Kiran Mankame, Yassir Debbah, Acatzin Ben ́ ıtez Salgado, Nicholas Florio. *"Space Radiation Safety For Female Astronauts: A Thorough Study On Radiation-Induced Cancer"*. 2022. IAC Conference Proceedings.

SPACE LAW AND POLICY PG

Alvaro Piris Cuiza, Leah Farrar, Giuliana Rotola, Renata Knittel Kommel, Kyran Grattan, Nicolas Moraitis, Evgeniia Drozhashchikh, Brett Shearing. *"International space security mechanisms: current status and analysis of their limitations in the context of the prevention of an arms race in space"*. 2022. IAC Conference Proceedings.

Alvaro Piris Cuiza, Anmol Dhawan, Declan William Dundas, Giuliana Rotola, Justine Dousset, Karen Cook, Kubakurungi Saphirah, Kyran Grattan, Lindsey Wiser, Luca Ricci, Maya Nasr, Renata Knittel Kommel, Sunny Narayan, Trevor Owen, Victoria Heath, Miraslava Kazlouskaya, Tejas Bharadwaj, Yuk Chi Chan. *"Report on the Implementation of the United Nations Long-Term Sustainability Guidelines"*. February 2022. SLP-PG Blog.

SMALL SATELLITES PG

Ricardo Colpari (*project lead), Niki Sajjad, Anoop Kiran, Moitrayee Chakraborty, Vishal Tripathi, Prerna Baranwal, Bhavyashree Janardhana, Daria Stepanova, Daniel Wischert. *"Conceptual analysis for a technology demonstration mission of the ion beam shepherds"*. July 2022. CEAS Space Journal.

Kiran Mankame (*project lead), Lena Obaid, Jake Kwaayisi Yawson, Newsha Haghgoo, Sakshi Nagayach. *"Analyzing the Impacts of Climate Change on N2O Emissions from Soil Using Small Satellites"*. 2022. 73rd International Astronautical Congress 2022.

Pallavi Prasad (*project lead), Yassir Debbah, Gabriel Valles Valverde, Vignesh Vishwanath, Stephan Mc Lean, Claudia Guerra, Angeliki Parisi-Ploumpi, Andy Navarro Brenes, Lokesh Kumar G, Khushi Shah, Gujjati Sathvik, Priyanka V, Ashwin Balaji. *"Feasibility Study of Orbit Control Methods in CubeSats with Electric Propulsion for an Interplanetary Mission"*. 2022. 73rd International Astronautical Congress 2022.

Ricardo Gomes (*project lead), Aaron Zucherman, Nadir Atayev, Nishita Sanghvi, Tahsin Hossain, Karthika Rani Ramdoss, Suraj Parasuram, Claudia Guerra, Abubker Fadl, Alessandro Verniani, Adesh Phalphale, Harmit Janak Vyas, Samrudhi Inamdar, Sakshi Nagayach, Jorge Rubén Casir Ricaño. *"Conceptual Design of a Sustainable SmallSat Constellation to enable Reliable Lunar Communication Network"*. 2022. 73rd International Astronautical Congress 2022.

Emma Belhadfa (*project lead), Onyinye Gift Nwankwo, Natasha Nogueira, Eugene Idogbe, Alessandro Verniani, Navarro Brenes, Deanesh Ramsewak, Amy Huynh. *"Investigating the Applications of Small Satellites in the Measurement and Evaluation of the Essential Ocean Variables"*. 2022. 73rd International Astronautical Congress 2022.

Emma Belhadfa (*project lead), Sahil Bhatia, Lena Obaid, Oussema Jouini, Onyinye Gift Nwankwo, Deanesh Ramsewak. *"Developing a Small Satellite Mission to Monitor Ocean Acidification within the Polar Seas"*. 2022. 73rd International Astronautical Congress 2022.

SPACE SAFETY AND SUSTAINABILITY PG

Loïs Miraux, Andrew Ross Wilson, Guillermo J. Dominguez Calabuig. *"Environmental sustainability of future proposed space activities"*. 2022. Acta Astronautica.

SPACE TECHNOLOGY FOR EARTH APPLICATIONS PG

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ACTIVITY HIGHLIGHTS

General

SGAC welcomed Hamza Hameed (Pakistan) as the new SGAC Co-Chair

SGAC awarded members a total of 144 scholarships to travel around the world and connect

SGAC held the 20th Space Generation Congress in Paris, France and the 11th SGFF in Colorado Springs, USA

SGAC organised 13 events all around the world, with even more activities online

SGAC recruited 115 new active volunteers

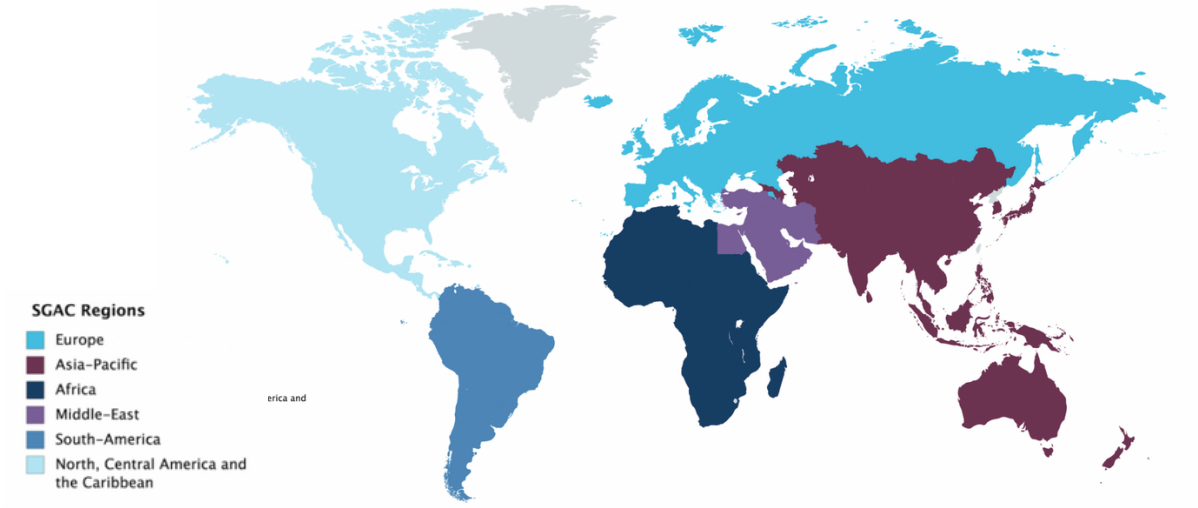
SGAC selected Amanda Sathiaraj as the new Remote Operations Manager

SGAC attended all COPUOS sessions and strengthened its policy activities and outreach with the launch of the new Space Generation Advocacy and Policy Platform (SGAPP)

SGAC organised an Alumni end of year party for members old and new

The SGAC Alumni Team was revamped and created clear and new ways for Alumni to stay engaged and give back to the organisation

Regional



EUROPE

- Increased number of informal gatherings with local communities extend the outreach of SGAC
- Cross-country activities increased, with more and more cooperation between NPoCs
- E-SGW 2022 back as an in-person event
- Monthly newsletter created
- Four official local events, intense support to SGC in France and engagement with PGs

SOUTH AMERICA

- Latin America joint Cubesat Workshop and Symposium on Small Satellites held in Brazil, with SGAC participation
- South America Space Generation Workshop in 2022 in Quito
- Invitation to participate in FIDAE organisation
- One NPoC and one RC of South America received the IAF Emerging Space Leaders Award
- Increased number of informal gatherings with local communities to extend the outreach of SGAC

AFRICA

Back on track with a fully in-person AFSGW in Rabat, Morocco

Grew our regional team to 7 members

Increased NPoC Representation

Africa Space Education Programme launched

NORTH, CENTRAL AMERICA AND THE CARIBBEAN

SGAC NCAC Online Booth at the Nestlé Caribbean Youth Summit

One member and two NPoCs of the NCAC Region received the IAF Emerging Space Leaders Award

SGAC_Decode July- August 2022

ASIA-PACIFIC

Increased NPoC representation, especially for countries in Southeast Asia and Oceania

Onboarded new members and on the way to a fully dual-staff team

Created the first regional Instagram page @sgacasiapacific

Began sending out monthly newsletters in collaboration with SGAC global team

Local events signed on for 2023

Appointments

42
Vacancies Posted

414
Applications Received

115
Members Recruited

SGAC is pleased to have appointed the following new staff members in 2022:

Sam Bunka Reports Editor	**Francesca van Marion** Reports Editor	**Rachel Venn** Reports Team Co-Coordinator	**Dhanisha Sateesh** Reports Team Co-Coordinator
Anne-Marlene Rüede Project Group Media and Comms Lead	**Luca Ricci** Project Group Partnerships Lead	**Giulia De Rossi** Space and Cyber Security PG Co-Lead	**Helena Kent** Project Group Partnerships Lead
Ryan Udell Reg. Partnerships Manager - NCAC	**Leonard de Guzman** HR Co-Coordinator	**Ying Rui Neoh** Reg. Partnerships Manager - AP	**Brett Shearing** Membership Co-Manager
Sejal Budholiya AP Executive Secretary	**Harriet Brettle** Alumni Team Co-Lead	**Nidhi S. Vasaikar** Alumni Team Co-Lead	**Raleigh Wooldridge** NCAC Executive Secretary
Ashley Peter SGx 2023 Deputy Manager	**Anne Nethimini** PR & Comms Co-Lead	**Juliah Champion** Regional Comms. Manager - AP	**Fama Jallow** AF Space Education Programme Lead
Marcos Eduardo Rojas Ramirez SGC 2023 Manager	**Alessandra Vernile** SGC 2023 Deputy Manager	**Madison Telles** SGFF 2023 Deputy Manager	**Charlotte Flory** Spaceops 2023 Deputy Manager

Morgane Lecas **Project Groups Coordinator**	**Khushi Shah** **AP Regional Comms Manager**	**Erica Kriner** **SGAPP Comms Officer**	**Abraham Akinwale** **HR Co-Coordinator**
Houda Bellakridi **Reports Designer**	**Yvan Zolo** **AF Regional Web Editor**	**Erica Kriner** **SGAPP Comms Officer**	**Kyran Grattan** **Space Law and Policy PG Co-Lead**
Nzeussi Mbouendeu Charles-Aimé **Reg. Partnerships Manager - AF**	**Alessandra Capurro** **Space Safety and Sustainability PG Co-Lead**	**Rachita Puri** **Space Safety and Sustainability PG Co-Lead**	**Swarnajyoti Mukherjee** **Space Technology Earth Applications PG Co-Lead**

Mentoring Programme

The SGAC Mentoring Programme was created in 2018, following key recommendations at SGF 2.0 (Vienna) to foster development and support in the space sector through mentoring. SGAC created the mentorship program for its members in order to help connect SGAC members with experts in the space sector, especially through our vast network of SGAC Alumni. The mentorship program aims at connecting mentees and mentors in order to provide guidance, give personalised advice, and support to mentees from the different mentors.

212
Mentee Applications

117
New Mentor Applications

183
Mentee-Mentor Matches

In 2022, SGAC increased the number of mentors and mentorship access in the underrepresented fields of space law & policy, space life sciences, and the commercial space fields. This was concluded with a mini graduation ceremony with speed mentoring sessions and a series of talks.

The SGAC Mentoring Programme also implemented a Best Mentor Award category for outstanding mentors. Over 10 nominations were received and after a blind review, Aaron Zucherman was selected for the award for Fall 2022.

Aaron Zucherman Best Mentor Award

"I am honored to be recognized, but mostly just gladdened that I had a positive impact on my mentee...Without [the programme], I would never have had the honor of getting to know my mentee"

Nominated by Ferdinand Ferguson Alexander Hope

"Aaron went above and beyond to support me and ensure that I had a successful and fulfilling mentoring experience... From our very first meeting, I could tell that he was truly invested in my growth and development, and was always willing to lend a listening ear, provide guidance, and share his own experiences and insights"

SGAC Mentoring Programme Testimonials

Alumni Activities

47
Alumni fund donations

2500+
Alumni registered online

2
Alumni-exclusive events

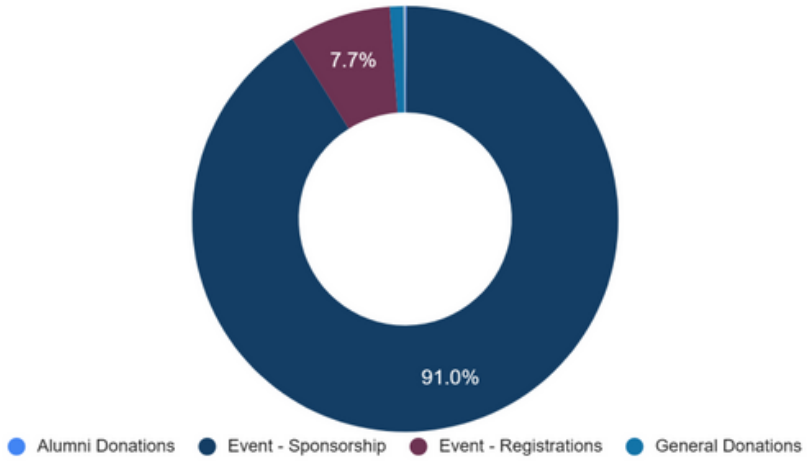
The SGAC Alumni Team has grown its members and goals in 2022, with two new Alumni Co-Leads and six strategic goals to increase alumni engagement with SGAC. A successful year for alumni has grown the network to over 2500 alumni registered on the SGAC website, with 1000+ subscribers to the alumni mailing list.

The two annual alumni events, SGAC Alumni Night at IAC and the SGAC Alumni End of Year Party gathered over 300 people both online and in-person in Paris. Fundraising is also an important part of engagement with our former members, and SGAC are incredibly grateful to our donors who together contributed over $3800 to the Alumni fund and $2,500 to the Endowment Fund.

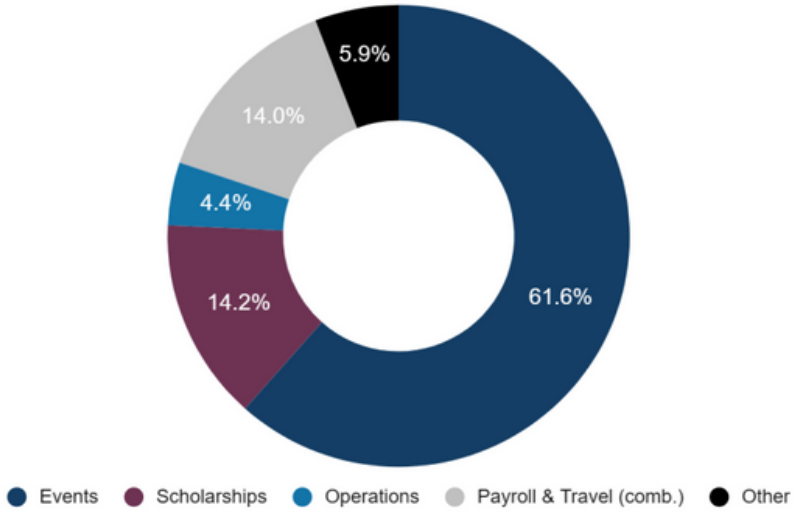
FINANCIAL SUMMARY

	2022	Change from 2021
Revenue	€ 605,907.83	+ 95.90 %
Expenditure	€ 576,063.26	+ 89.95%
Surplus / Loss	€ 29,962.62	+ 387.42%
% Surplus / Loss	+ 4.95 %	

2022 Revenue



2022 Expenses



GLOBAL AND REGIONAL EVENTS

21 March 2022 Walter E. Washington Convention Centre, Washington DC

In partnership with the Future Space Leaders Foundation, Access Intelligence, and SATELLITE 2022 Conference, the Space Generation Advisory Council hosted its seventh SGx in Washington, DC on March 21st, 2022.

Styled in the TEDx format, SGx is a high-impact day of expert "lightning talks" and networking opportunities designed to create an environment where young professionals, industry experts, and government leaders can gather to share their insights and experiences with each other. The schedule included a full day of thematic lightning talk sessions on topics ranging from space policy and government, technology and science, human spaceflight, and institutional culture. For the first time in SGx history, the event featured thematic lightning talk Q&A/panel sessions as well as a sponsored "job fair" for attendees.

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Space Generation Congress

14-16 September 2022
The FIAP Jean Monnet, Paris, France

The Space Generation Congress (SGC) is SGAC's annual meeting in support of the United Nations (UN) Programme on Space Applications. Top university students and young professionals with a passion for space will travel from all around the globe to attend three days of the 20th SGC. Up to 150 delegates will enjoy an inspiring and resourceful engagement with their peers at the congress, held in Paris, on September 14-16 2022, prior to the 73rd International Astronautical Congress (IAC). In demonstrating the symbiotic relationship, leaders from these space organisations gained fresh, innovative and bold perspectives from the incoming space generation.


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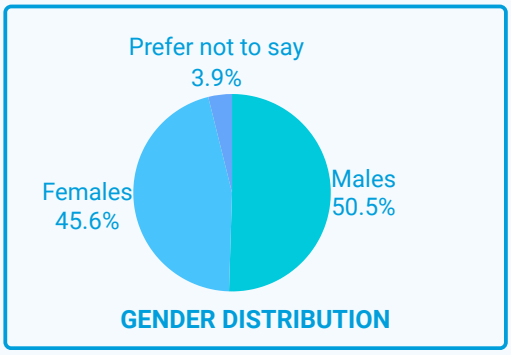
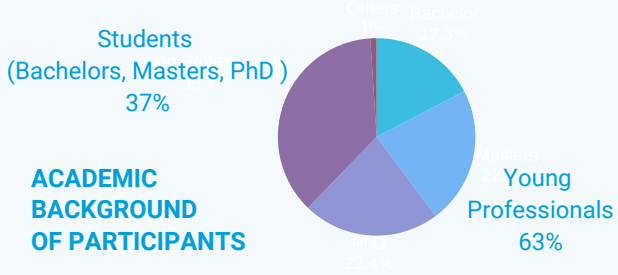
Statistics



GENDER DISTRIBUTION



ACADEMIC BACKGROUND OF PARTICIPANTS

NATIONALITIES	56
NUMBER OF DELEGATES	135
NUMBER OF WORKING GROUPS	6

Sponsors

PLATINUM

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NATIONAL AGENCIES

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UK SPACE AGENCY

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Space Generation Fusion Forum

March 19 [Virtual] and April 1-4 [Hybrid], 2022
Broadmoor Resort, Colorado Springs, Colorado, U.S.A

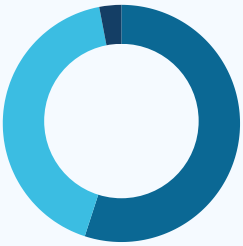
TThe Space Generation Fusion Forum (SGFF) is a multi-day, high-intensity, fast-paced professional development and networking event held annually at the Broadmoor Resort in Colorado Springs, U.S.A., in conjunction with the Space Symposium. The event attracts students and young professionals from various fields to collaborate on global space industry issues. Through breakout sessions, expert panels, keynote presentations, and networking, SGFF delegates combine their unique perspectives to formulate solutions. The output is compiled into a report for the United Nations Committee on the Peaceful Uses of Outer Space.

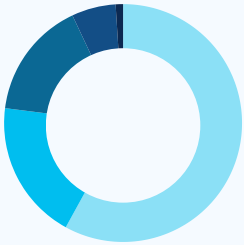
Statistics

118
Number of delegates
71 in-person | 50 online

20
Countries represented

11
Breakout sessions





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Virgin
GALACTIC
SPACE FOUNDATION

SPACE GENERATION WORKSHOPS

6th African Space Generation Workshop

25-26 November 2022 **Rabat, Morocco**

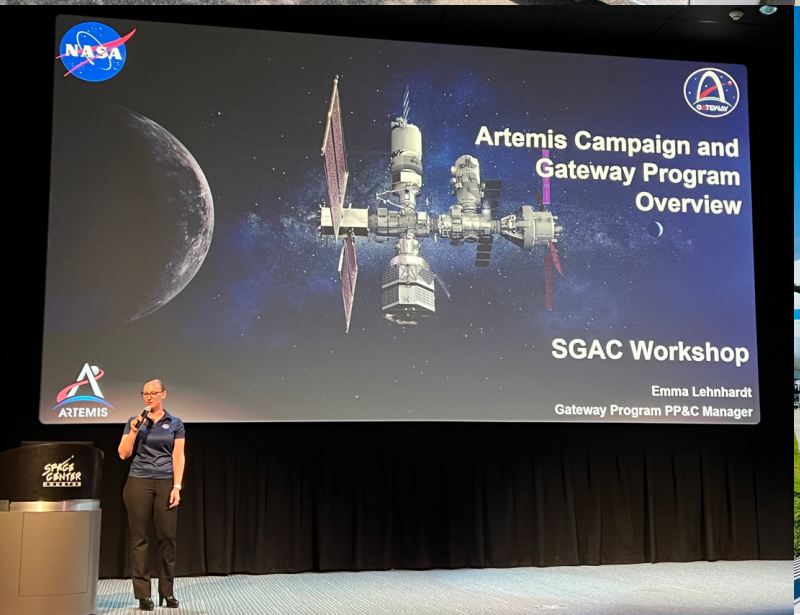
The African Space Generation Workshop (AF-SGW) is a two-day regional workshop connecting students and young professionals with agency and industry representatives from across the African continent. It provides an unparalleled opportunity for the future leaders of Africa's space endeavours to proactively establish strong relationships, exchange ideas and knowledge, and to collaborate on brainstorming new ideas and solutions using space technology for the benefit of Africa.

The 6th AF-SGW was held at the University of Rabat, Morocco on the 25th and 26th November 2022 with the theme "#Space4Africa for a more prosperous continent". The event included workshops, speakers, and panels, along with seven working groups: Metaverse Technology & Capacity Building, Satellites & the Digital Divide, Propulsion Systems & Green Propellants, Space Technology for Healthcare & Sustainability, James Webb Space Telescope, Commercial Space & Legal Frameworks for Africa, and the Industrialist in the African Space Environment.

3rd North and Central American and Caribbean Space Generation Workshop

24-25 June 2022 **Houston, USA**

The North and Central American and Caribbean Space Generation Workshop (NCAC-SGW) is a two-day regional workshop connecting students and young professionals with agency and industry representatives from across the NCAC region. It provides an opportunity for the future leaders of the region to proactively establish strong relationships, exchange ideas and knowledge, and to collaborate on brainstorming new ideas and solutions using space technology for the benefit of North America, Central America, and the Caribbean. The 3rd NCAC-SGW was held at NASA's Johnson Space Center (Space Center Houston) in June 2022 focusing on the future of human spaceflight, orbital debris, and how to build the aerospace workforce. The event included workshops, speakers, and panels, along with four working groups.



6th European Space Generation Workshop 2022

9-10 April 2022 **Limassol, Cyprus**

The European Space Generation Workshop (AF-SGW) is a two-day regional workshop connecting students and young professionals with agency and industry representatives from across the European continent. It provides an unparalleled opportunity for the future leaders of Europe's space endeavours to proactively establish strong relationships, exchange ideas and knowledge, and to collaborate on brainstorming new ideas and solutions using space technology for the benefit of Europe.

The 6th E-SGW was held at the Cyprus University of Technology on the 9th and 10th April 2022, covering different themes aiming at thinking and collectively creating Europe's future in space. The event included workshops, speakers, and panels, along with four working groups.

7th South American Space Generation Workshop 2022

14-15 May 2022 **Quito, Ecuador**

The European Space Generation Workshop (AF-SGW) is a two-day regional workshop connecting students and young professionals with agency and industry representatives from across Latin America. It provides an unparalleled opportunity for the future leaders of South America's space sector to proactively establish strong relationships, exchange ideas and knowledge, and to collaborate on novel ways in which space technology can be utilized for the benefit of the region.

The 7th SA-SGW was held on the 14th and the 15th of May 2022 in Quito, Ecuador. Participants were divided into working groups, each focusing on a specific sub-theme broadly covering Technology, Entrepreneurship, Policy and Capacity Building.
The SA-SGW was held the weekend prior to the IAF's Global Conference on Space for Emerging Countries, which was hosted from the 16th to the 20th of May 2022 in Quito, Ecuador.

UNITED NATIONS INVOLVEMENT

SGAC works constantly to accomplish a key component of its mission as an organisation: to be the link between UN Member States present at the UN COPUOS and the next generation of international space sector leaders.

SGAC has permanent observer status in UN COPUOS and is regularly present at its annual meeting (in June) and at its two subcommittees' meetings: Scientific and Technical (in February) and Legal (in March/April). As one of the permanent observers in UN COPUOS, SGAC contributes to the activities and action teams of UN COPUOS.

Over the course of the year, SGAC has continued to support the UN by actively participating at the UN COPUOS meetings, and other events by the UNOOSA. The UNOOSA and SGAC continued to work jointly in supporting young people in line with the Secretary General's Youth 2030 strategy, launched in September 2018. Together, they have delivered the 4th edition of ‘Space for Youth’ Competition aimed at engaging youth in the discussion of how space science and technology can be relevant on the topic of Water. The competition invited participants to submit examples in their communities and to amplify the voice of the youth in space policy-making by issuing the winning entries to the UN COPUOS.

UN COPUOS Scientific and Technical Subcommittee

SGAC participated in the 59th session of the UN COPUOS Scientific and Technical Subcommittee on the 16th February 2022. Representing the SGAC Delegation to COPUOS STSC were Harriet Brettle, SGAC Chair, Valentina Luchetti, SGAC Chief of Staff, Caterina Gallo, SGAC Space Medicine and Life Science Project Group co-lead, and Maren Hülsmann SGAC Space Safety and Sustainability Project Group co-lead.
Harriet spoke of the plans for 2022, and the lessons learned in 2021. She outlined the values of SGAC as embodied through the establishment of the **Space Generation Advocacy and Policy Platform**, to survey the ideas and activities of SGAC members on space policy and advocacy in order to convey them with a united voice to the global space community.

Additionally, during the two-week meeting, SGAC member Kristi Ray made a Technical Presentation. An aerospace medicine resident at University of Texas Medical Branch and NASA Johnson Space Center, Kristi's presentation was titled 'Anaerobic Bioreactors for Refugee Health and Long Duration Space Missions'. This presentation was Agenda Item 16 of Space and Global Health.

Model UN COPUOS

SGAC held its first ever Model COPUOS in collaboration with ECSL in 2022. This simulation of a UN session follows the scenario of a real UN COPUOS meeting, with members representing States with diverse interests and debating to agree on legal and policy solutions for the continued peaceful use of outer space.

This Model UN COPUOS had the aim of attempting to draft a Resolution on the use of Space Resources. In a legal-framework that is fast-developing, the allocation of space resources remains largely unregulated. With limited access and availability but great demand, it is crucial to ensure their fair and sustainable use. This Model took place online from 13th-16th May and generated great debate among its 29 delegates.

UN COPUOS Legal Subcommittee

This was the 61st UN COPUOS Legal Subcommittee session and SGAC presented its activities with regards to space law and policy. Davide Petrillo, the Executive Director, and Antonino Salmeri, the SGAC Policy and Advocacy Coordinator, were members of the SGAC Delegation. There were also a number of Technical Presentations by SGAC Members for Agenda Item 5, and information on the activities of international, intergovernmental, and non-governmental organisations relating to space law.

- Antonino Salmeri: Enhancing the participation of the young generations in space policy & advocacy: Introducing the Space Generation Advocacy & Policy Platform (SGAPP)
- Giuliana Rotola: Information on the activties of Space Generation Advisory Council relating to Space Law.

COPUOS General Assembly

The 65th COPUOS General Assembly was attended in person and online by Davide Petrillo, SGAC Executive Director, and Valentina Luchetti, the SGAC Chief of Staff. Davide delivered a statement on the behalf of SGAC on 3 June 2022.

There were three technical presentations headed by SGAC members:

- Laetitia Cesari Zarkan, Agenda Item 6: Ways and means of maintaining outer space for peaceful purposes. **Title**: Safety Norms for Space Security: How the development of norms can strenghten the peaceful purposes principle.
- Bram de Winter and Newsha Haghgoo, Agenda Item 15: Space Exploration and Innovation. **Title**: SGAC Space Exploration Group: assuring a diverse, sustainable, and exciting future for space exploration in the future through the eyes of the next generation
- Giuliana Rotola, Agenda Item 5: General exchange of views. **Title:** A united voice for the youth in space policy and advocacy: Introducing the Space Generation Advocacy and Policy Platform (SGAPP).

Space4Youth Competition

The United Nations Office for Outer Space Affairs, in collaboration with the Space Generation Advisory Council, launched the 2022 edition of the Space4Youth Competition. The theme of this year's competition was **Youth4Water: Space as a tool to accelerate change in sustainable water resources management, hydrology and the protection of aquatic ecosystems**. Water is the focus of the 6th UN Sustainable Development Goal, to ensure access to water and sanitation for all.

The authors of six winning essays had the opportunity to participate in a trip to the United States to meet with representatives of the U.S. space sector, visit NASA headquarters and the White House in Washington D.C., and attend an Adult Space Camp at the U.S Space & Rocket Center in Hunstville, Alabama.

Space4Youth 2022 Winners

"A Picasso in the sea. So beautiful, so deadly"

SELENE CANNELLI
Italy

"EFUNDJA: an Angolan geospatial project for flooding control"

MARCO CARLOS
Angola

"Women, Water, and Space: Role of Indigenous Women in using Geospatial Tech for Conserving Water"

SIA DAS
India

"Water quality monitoring of Lake Cluster in Pokhara Valley, Nepal with satellite images and machine learning"

PRAYON JOSHI
Nepal

"Application of radar altimetry in surface water bodies monitoring of the second largest worldwide river basin"

BENJAMIN KITAMBO
Congo

"Climate risks and capability sharing in the Asia-Pacific region: Exploring a future GNSS-based early warning system for tsunami"

RACHEL VENN
United Kingdom

POLICY AND ADVOCACY

Introducing SGAPP

In 2022 SGAC has launched the new Space Generation Advocacy and Policy Platform (SGAPP).

SGAPP surveys the ideas and activities of the young generations on space policy and advocacy in order to convey them with a united voice within the global space community. The Platform is composed of a central Policy and Advocacy Team (PAT) and various specialised divisions focusing on selected topics and/or geographic areas, and is directed by two Policy & Advocacy Coordinators. The purposes of the Platforms are:

1. Develop, advocate & implement united space policy positions on behalf of the youth;
2. Coordinate, consolidate & disseminate space policy activities conducted within SGAC.

The establishment of the SGAPP allows SGAC to increase the effectiveness of its existing policy and advocacy activities, as well as to strategise the development and implementation of new initiatives in these areas. Through the platform, SGAC aims to increase the relevance and impact of the young generations in global policy and advocacy processes for the peaceful, prosperous and sustainable uses of space. In pursuance of this vision, the SGAPP will produce:

1. Policy reports providing the united space policy position of the youth on selected space topics, coupled with related advocacy campaigns and implementation actions.
2. Policy overviews consolidating policy inputs and activities throughout SGAC, coupled with related dissemination and implementation actions.

SGAPP Activity Highlights

120	2	2
Members	IAC 2022 Presentations	Active Policy Divisions

SGAPP PUBLICATIONS

Policy Position on Climate Change: *"Saving Our Future on Earth Through Our Presence in Space - Recommendations from the Young Generations on the Role of Space for Climate Action."*

Policy Overview on Space Sustainability: "This Is Our Space. Contributions from the Young Generations for Sustainable Space Activities."

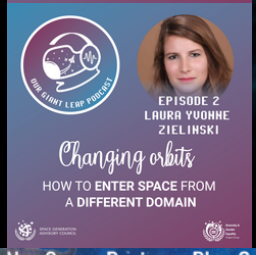
CONFERENCES, EVENTS AND WORKSHOPS

- International Moon Day Webinar - July 20, 2022 [online]
- Presentation at UN/Austria Symposium on Space for Climate Action - September 14, 2022 [online]
- SGAC Sustainability: A Space Generation Perspective. World Space Week 2022 - October 4, 2022 [online]
- ASCEND Workshop: New Generations in Space Leading the World Fight Against Climate Change - October 25, 2022 [in person]

PROJECT GROUPS AND ACTIVITIES

The Project Groups (PGs) of the Space Generation Advisory Council (SGAC) represent a core pillar to the organization, and one of the largest space research community. Originally, the PGs acted as a forum for young professionals and students from across the sector to discuss and debate on relevant space related topics, from cybersecurity to exploration.

In recent years, the PGs have expanded their focus beyond just maintaining research continuity to include activism for diversity, consulting on space legislation, accelerating start-ups, and satellite integration. Consequently, PGs have caught the interest of the industry, which wants access to this network. The team's international and interdisciplinary diversity allows young people from all over the world to join and feel empowered to contribute, from the student to the rising expert. This diversity contributes to the team's remarkable influence on the researched subjects.

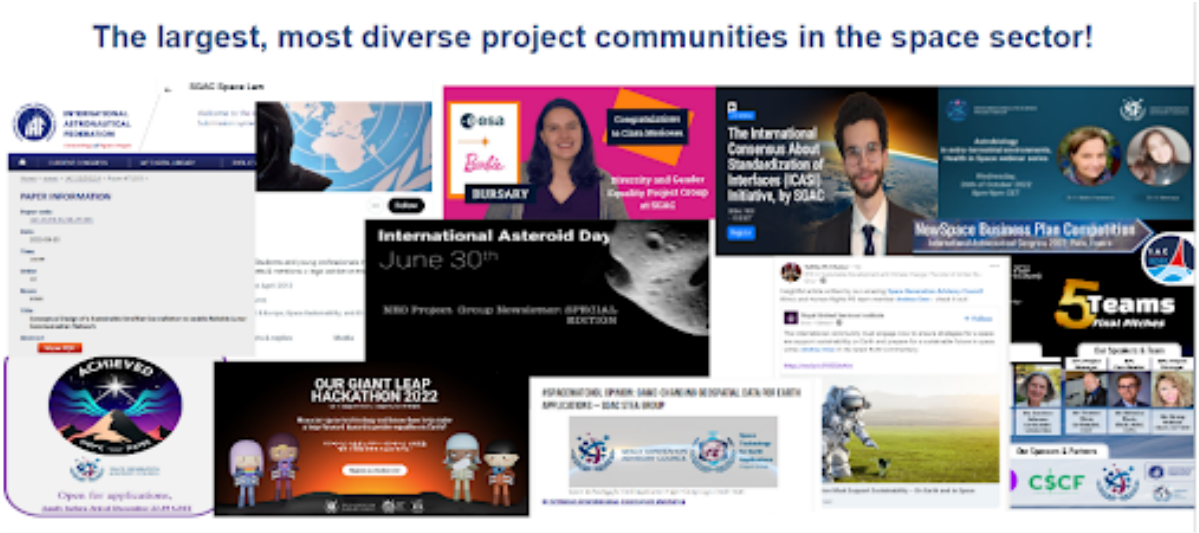


PROJECT GROUPS HIGHLIGHTS FOR 2022

To better support the PG in 2022/2023, the Project Coordination team has developed a strategy to enable, empower, raise their profiles and create synergies within SGAC to leverage opportunities

- Enabling PG with logistical pathways and organisational charts, led by Sakari Teerikoski. This has been established after the PG revision and allows the PG to have increased responsibility. It enables the PG coordination team to support recruitment, onboarding, website creation… This has also led to the creation of a PG registry for better visibility and overview of all the initiatives within PG.
- Empowering the PGs through partnerships, led by Luca Ricci Partnership Coordinator. Many PGs already have partners supporting but this aim at coordinating, finding new partners and new way of partnerships (monetary and long term support) in alignment with SGAC leadership efforts. PGs are and will be supported by partners to develop projects, attend conferences and access specialised data.
- Raise their profile through Media & communication strategy, led by Anne Marlene Ruede Medica & Coms Coordinator. This enables the PG to publish in academic journals and conferences as well as articles in mainstream media and a coordinated approach to social media with templates, guidelines and monthly learning groups.
- Creating Synergies: a priority for 2022, continuing in 2023 is to better connect the PG to others. To leverage the incredible brain power and accomplishments achieved by the PGs, we intend to merge projects with regional and global events. Discussions and collaboration started at SGC 2022 in Paris and are continued in 2023 at ESGW in Bari and SGC 2023 where PGs will lead one working group. Other regional links are being explored with all regions by the Executive Committee.

Papers, Hackathon, ESA/Barbie Bursary, multiple presentations at COPUOS and webinars led by PG, the Competition for Asteroid Day and SSS Essay are some of the initiatives PG have been extremely active in in 2022, with new and renewed initiatives in their PG and outwards.



Commercial Space

Scope and Objectives

When we think of the term Commercial Space, we do not solely consider companies around the world who are endeavoring to help propel humanity into the stars. We also think of the principle that all people should have the right to be a part of mankind's reach into the final frontier. This approach has guided our organizational objectives, which are to:

- Conduct academic research on the Theory of Industrial Practice in the commercial space sector.
- Constitute a Think Tank to promote idea acceleration for commercial space purposes.
- Make our efforts influential upon decision-makers and widely publicized throughout the global space community.
- Equip the younger generation with the knowledge, tools and network to be active in the realm of commercial space and space-based entrepreneurship.

Initiatives

- **Space Business in Developing Countries**
  - Identify key factors that attract foreign investment to new space-faring countries
  - Disseminate conclusions to foment such development in emerging and developing countries
  - Involve SGAC network in a wide-range analysis of such factors worldwide
- **Commercial Space Resources Activities**
  - Overview the regulatory challenges of an international framework on space mining from a commercial standpoint
  - Address the economic challenges of space mining using specific case studies on different celestial bodies
  - Disseminate conclusions to promote well-balanced regulation for commercial space resource exploitation activities
- **Think Tank**
  - Foment the entrepreneurial spirit within SGAC
  - Push the brainstorming of New Space business and technical ideas for today's and tomorrow's problems
  - Grow such ideas by providing mentoring and technical support, in an idea-accelerator scheme.
- **Outreach** such as webinars/podcasts, newsletters, and hackathons.

Space Exploration

Scope and Objectives

The topic of exploration is in the centre of SGAC interest. Special working groups during the SG Congress, held annually in conjunction with the IAC, are indeed focused on the theme of exploration. Our aim is the creation of an international and interdisciplinary forum integrated by students and young professionals to approach Space Exploration from a multidisciplinary point of view and focused in the 8 common goals outlined in the GER:

- Develop Exploration Technologies and Capabilities
- Engage the Public in Exploration
- Enhance Earth Safety
- Extend Human Presence
- Perform Science to Enable Human Exploration
- Perform Space, Earth, and Applied Science
- Search for Life
- Stimulate Economic Expansion

Through articles, reports, meetings and conference presentations we would like to integrate the perspectives of the next generation of space explorers into the GER implementation.

Initiatives

- **ACHIEVED** - **A**ssembly for **C**oncepts in **H**uman **I**nterplanetary **E**xploration with **V**arious **E**xtraterrestrial **D**esignations
  As space agencies and private space companies seek new mission design concepts that challenge and advance our technological and/or scientific knowledge, our research team strives to support the space community with original and innovative mission designs.
  Stemming out of ACHIEVED, we have created two year-long mission design teams:
  1. **HOPE** - **H**igh-technology **O**perations for **P**lanetary **E**xploration: Examining a deep space CubeSat-based mission that provides flexibility, affordability, and lower risk than traditional single-spacecraft missions. The outcome is a technology demonstration mission to study Uranus and its moons with a main orbiter carrying several CubeSats as its payload.

2. **RAISE - R**esearch **A**ssembly for **I**nnovative projects in **S**pace **E**xploration: Investigating an innovative approach to a Mercury sample return mission. The science collected from this mission contributes to understanding how Mercury formed and potentially how our own Moon formed.

- **ROADMAP**
  Space exploration has significantly enhanced human knowledge and presence in the Solar System, with the International Space Station (ISS) being a prime example of its success. The future of space exploration will involve robotic and human missions beyond Low-Earth orbit, the Moon, asteroids, Mars, and beyond.
  The Space Exploration Project Group (SEPG) is launching four new committees to revise existing Space Exploration Roadmaps, focusing on four themes:

  1. Revising the Global Exploration Roadmap strategy
  2. Humans on Mars
  3. Europe's 2030 and beyond strategy
  4. Space for Science.

  ROADMAP aims to create a compact version of a space exploration roadmap, emphasizing critical issues discussed in sub-committees. Results will be presented to policymakers at conferences and/or journals.

- **DREAM** - Design and Research of Exploratory Analog Missions
  DREAM's ultimate goal is to improve the efficiency of analog missions, commencing a creation of a set of standardised protocols and guidelines for analog missions to answer the absence of standardisation.

Partner Organizations

VALISPACE

Space Law and Policy

Scope and Objectives

This group is a forum for university students and young professionals interested in working together to impact global discussions on the legal and policy aspects of outer space activities. Dedicated to addressing current and future international and national issues, the Project Group pursues projects relevant to space law, policy, and those relevant to the broader space community.
The goals of SLP-PG are to:

- Engage in critical debates about legal and policy aspects of space activities
- Investigate legal and regulatory challenges faced by the space community
- Propose space-related policy recommendations
- Address emerging questions and issues in the space sector
- Develop research papers on trends and issues of the space community
- Contribute and collaborate with the space community on multidisciplinary topics

Initiatives

- **Best Practices Framework for Developing Space Legislation in Africa –** In collaboration with the Commercial Space PG, this research aims to develop a White Paper on best practices framework/examples that can serve as a model for developing relevant space legislation in African countries that do not have existing regulation. Some examples could be drawn from other African countries or countries in other regions with similar socioeconomic resources and capacity (e.g. Asia-Pacific). This research will also explore the role that Intra-African Space partnerships play in the broader global context, especially in terms of space commercialization and regulation. This project will further explore how Intra-African space partnership plays a role in expanding the African Union's collaboration with other institutions, such as the EU (e.g. ESA). As part of this project, a webinar in collaboration with the Moon Village Association will be held in order to provide insight into this topic.

- **Review of UNCOPUOS Space Debris Compendium –** In collaboration with the Space Safety and Sustainability PG, this review aims to characterise standard, good, and best practices in order to promote, streamline, and expedite regulatory reform towards a comprehensive solution for space debris.
- **In-Orbit Servicing –** The team is working on reconstructing the principles of the International Civil Aviation Organization (ICAO) for the safety and security of in-orbit servicing, studying membership, jurisdiction and enforcement and its application in the space domain. The objective of this analysis is to provide best practices for safe and sustainable spaceflight and avoid harmful interference.
- **Gender Equality –** The Gender Equality project team is currently performing a comparative analysis of perspectives on gender and sexuality equality in Africa. The objective is to provide recommendations directed at private companies and governmental institutions to achieve equality in the space industry.
- **Non-Peaceful use of Commercial Satellites –** How is/can the use of civilian satellite (data) for military purposes be regulated? What instruments can be used? With contemporary conflicts targeting commercial satellites, the team wishes to explore the broader issue of the use of commercial space systems in times of warfare. The research will have two main axes: the legal and the policy. We wish to examine the stance of the law in the aforementioned questions (treaties, legal documents, state practice), but also real life historical cases in addition to the current situation. In the end, we aim to provide an overview of the present state of affairs but also assess potential solutions/suggestions for the future.
- **International space security mechanisms –** This report analyses space security initiatives and mechanisms to date to inform future efforts with lessons learned from the past. It is the product of an almost 2-years long project carried out by an international team of students and young professionals of the SGAC Space Law and Policy Project Group. Throughout the project, the team has conducted two activities:
  a) researching and analysing existing international space security mechanisms
  b) interviewing space security experts to cover most of the world region for getting a complete perspective on the current status of airs.
  These critical efforts will be presented for the first time in this report. It begins by summarizing the different security mechanisms that have been drafted and presented to international fora for negotiations. These summaries are structured in terms of their historical and legal context, their content, the general reception by the international community and their outcome in the context of space security, including the main shortcomings and strengths in the prevention of an arms race in outer space.The analysis of these mechanisms' applicability and limitations in the current climate of space security is supported by the results from a set of interviews with experts in the eld, which aimed at covering diverse perspectives from different geographical backgrounds and elds of expertise. Several topics were discussed during these exchanges, with the overarching aim of understanding what aspects of space security remain unresolved despite the variety of approaches that have been used in the drafting of these mechanisms, and how nations can work towards the prevention of an arms race in outer space in this era of unprecedented technological advancements in space.

This paper will cover key topics, including current and future challenges of space security from legal and geopolitical perspectives, main points of contention, approaches that have shown positive results towards the prevention of an arms race in outer space, and other relevant topics of today related to space security and safety, including the consequences of space debris and the interaction between space security and the rapidly growing commercial space sector. Finally, it attempts to provide a set of recommendations for a path to move space security forward through a widely accepted solution.

- **National implementation of LTS Guidelines –** In September 2020, the Space Generation Advisory Council's Space Law and Policy Project Group established the Space Sustainability subgroup. The aim of the subgroup was to raise awareness about the Guidelines on the Long Term Sustainability of Space Activities 2019 (LTS) of the United Nations Committee on Peaceful Uses of Outer Space (UNCOPUOS) and understand the level of implementation by states and international organizations. The subgroup aimed to contribute to Guideline C.4 which deals with raising awareness on the importance of long-term sustainability of outer space activities. The subgroup comprised young professionals and students from different continents, either working in or studying the space sector respectively. Representing different countries, the members were also keen to assess how their respective countries implemented the LTS Guidelines. A preliminary analysis of the implementation plans was prepared and submitted to the 62nd United Nations Committee on Peaceful Uses Of Outer Space Legal Subcommittee (UNCOPUOS LSC) in June 2021. Pursuant to the good reception of the presentation at the UNCOPUOS LSC (2021), the subgroup decided to expand the research into a full report that assessed the trends of implementation by various states and international organizations, with corresponding examples of implementation.

Ethics and Human Rights

Scope and Objectives

The Ethics and Human Rights Project Group (EHR PG) of the Space Generation Advisory Council (SGAC) is dedicated to ensuring that space activities are conducted ethically and with respect for human rights. Founded in 2016, the EHR PG operates under key principles that prioritise the rights of all humans, the non-exploitative use of space, non-proliferation of conflict, justice, equity, and the recognition of space exploration within its social context. The group collaborates with like-minded organisations to advance a peaceful, diverse future for space exploration and sets standards for ethical conduct. The main objectives of the EHR PG are to identify and raise awareness about ethical and human rights challenges in the space sector and develop solutions to address them.

Initiatives

- **Space Ethics Library** – A curated resource list developed by the PG to raise awareness of ethical and human rights issues in the space sector. It offers a collection of resources including podcasts, conferences, and organisations, covering topics such as international politics, environmentalism, planetary protection, and more. The goal is to promote equity and sustainability in space by providing accessible information and encouraging community feedback for further expansion.
- **Space Ethics Survey** – A comprehensive membership survey within SGAC to capture diverse ethical perspectives of young professionals in the space industry. The survey covered demographics and explored viewpoints on various ethical issues related to space exploration, including satellite technology, orbital debris, planetary protection, off-Earth infrastructure, space settlement, resource utilisation, and first contact. The survey emphasises the significance of addressing ethical concerns and promoting accountability among space actors. The results will be presented at the upcoming International Astronautical Congress, held in Baku, Azerbaijan.
- **Palestine Project** – The current primary research initiative of the EHR PG that focuses on the ethical implications of space militarization, indigenous perspectives, and sustainability, using Palestine as a case study. It examines issues such as decoupling defense and space, the environmental impact of militarization, restrictions on Earth observation data access, and weapon manufacturers' manipulation of public perception.

Small Satellites

Scope and Objectives

The vision of this Project Group is to create an international and interdisciplinary forum focused on different aspects of the growing small satellite industry; to promote the application of small satellite systems, technologies, and products to the betterment of both humanity and the natural world.

In order to promote their use, the SSPG aims to educate its members about small satellites through research projects, and also to connect people interested in small satellites across the globe. This gives rise to the main SSPG objectives:

- Provide career and project assistance for young professionals and students already active in the small satellite community.
- Provide the small satellite community with up-to-date information on relevant topics, as well as recommendations regarding the directions to be taken for future research and development and/or policy and legal issues.
- Attract young professionals and students to the world of small satellites and more generally to the world of space exploration.

Initiatives

- **Analyzing the Impacts of Climate Change on N2O Emissions from Soil Using Small Satellites** – Led by Kiran Mankame, this project examines the detrimental effects of increasing greenhouse gas (GHG) concentrations on soil health and agriculture. It emphasizes the need to monitor GHG emissions from soil to address these challenges. The project proposes a rational mission concept using small satellites to continuously and accurately monitor atmospheric concentrations of N2O. This monitoring approach would improve understanding of soil GHG emissions and health dynamics, providing valuable data across different climates and landscapes. The project also looks into the potential of Earth Observation data to mitigate social and economic crises caused by deteriorating soil health.
- **Feasibility Study of Orbit Control Methods in CubeSats with Electric Propulsion for an Interplanetary Mission –** Led by Pallavi Prasad, this project explores the feasibility of utilizing electric propulsion technologies and orbit control methods in CubeSats for interplanetary missions. It focuses on a specific case of a CubeSat orbiting Jupiter's polar

orbit, aiming to achieve scientific objectives such as studying Jupiter's magnetosphere and analyzing the mass and energy flows in the Io-Jupiter system. The study includes a mission analysis, feasibility assessment, and trade-off analysis of spacecraft power requirements, mass and thruster considerations, trajectory design, orbit determination, and flight path control mechanisms.

- **Conceptual Design of a Sustainable SmallSat Constellation to enable Reliable Lunar Communication Network –** Led by Ricardo Gomes, this project examines the use of a constellation of small satellites to establish a cost-effective and sustainable communication infrastructure around the Moon. It focuses on SmallSat technologies, particularly CubeSats, and explores the feasibility of developing a low-cost lunar constellation. The study emphasizes the potential of Optical Communication Technology (OCT) for high data rates and efficient spectrum usage. Additionally, the project addresses the challenge of debris mitigation in cislunar orbits, aligning with the United Nations' sustainable development goals. The objective is to design a reliable communication network and lay the groundwork for future space exploration infrastructure.
- **Investigating the Applications of Small Satellites in the Measurement and Evaluation of the Essential Ocean Variables –** Led by Emma Belhadfa and in collaboration with the Space Safety and Sustainability Project Group, this review aims to characterize standard, good, and best practices in order to promote, streamline, and expedite regulatory reform towards a comprehensive solution for space debris.
- **Developing a Small Satellite Mission to Monitor Ocean Acidification within the Polar Seas –** Led by Emma Belhadfa, this project discusses the impact of ocean acidification, particularly in the polar regions, caused by the absorption of carbon dioxide from the atmosphere. It proposes the use of small satellites equipped with Earth observation payloads to monitor and gather data on these effects. The objectives of the project include highlighting the current state of ocean acidification, designing a constellation of small satellites for dedicated monitoring, addressing mission parameters, and assessing the socio-economic impacts. The mission aims to provide a framework for future Earth observation missions in hostile regions and has been developed by a multinational team of students and young professionals.

Space and Cybersecurity

Scope and Objectives

The Project Group, consisting of enthusiastic young professionals and students, establishes a global platform to foster dialogues exploring the convergence of space and cybersecurity. This dynamic team actively contributes to the field by producing insightful reports, articles, and book chapters, while also organising engaging webinars and related events. They proudly represent SGAC in topic-specific gatherings and deliver impactful presentations at COPUOS. Additionally, they regularly convene to brainstorm innovative approaches aimed at increasing awareness about the critical nexus of cyber and space.

Initiatives

- **Publication of the Book "Space Law in a Networked World" –** A subset of the project group has collaborated as co-authors on a book chapter within a forthcoming publication centred around space technology. The book explores the emergence of novel information technologies that seamlessly integrate and distribute space-derived advantages directly to users. With the evolving landscape, access to space technology is becoming less exclusive. Anticipated for publication later this year, the book promises to offer valuable insights in this field.
- **Organisation of the hackathon and development of partnerships –** Throughout the current year, the project group has been actively engaged in organising a hackathon and forging partnerships with key stakeholders. The primary objective is to enhance awareness regarding the crucial significance of safeguarding the cybersecurity of space infrastructure. By bringing together individuals from diverse backgrounds, the aim is to dismantle barriers and foster collaboration, enabling participants to cultivate fresh skills and gain a comprehensive understanding of the subject matter. In pursuit of this goal, the project group is actively cultivating new networks and partnerships.

Space Safety and Sustainability

Scope and Objectives

The Space Safety and Sustainability Project Group provides a platform for students and young professionals to contribute to technical and policy debates on space safety and sustainability. Our objectives include:

- Identifying key issues and areas of space safety and sustainability relating to current and proposed space operations.
- Examining the safety and long-term sustainability of outer space activities in all aspects, taking into account the interests of all countries.
- Creating an international space forum to showcase the youth's perspective on the safety of space activities, and the sustainability of the space environment for future generations.
- Raising awareness on sustainability issues and practices related to the space industry.

Initiatives

- **Essay Competition 2023 –** Space safety and sustainability covers a broad range of topics with increasing relevance in today's ecosystem. In this project, one topic relevant for to space safety and sustainability is selected and students and young professionals are called to share their view on the topic. The winner of the competition receives a scholarship to participate in IAC 2023 in Baku. The project involves engaging the SGAC advisory board, establishing new partnerships with public and private entities, and coordinating PR and communication activities for the advertisement of the competition. Involvement with this project is a great way to encourage students and young professionals to share their ideas on space safety and sustainability, since it provides them with a platform to voice their initiatives and present their technical research to the wider space community. This is the third edition of the SSS Essay competition.
- **SSS Newsletter –** This project consists of designing, writing, and organizing the newsletter regarding Space Safety and Sustainability initiatives that is then sent periodically to subscribed members, currently over 1000 people. This newsletter has been successfully distributed since 2020, and shares up to date news and developments on SSS in the space ecosystem.

- **ICASI (On-Orbit Servicing) –** The need for On-Orbit Servicing has increased significantly with the proliferation of artificial satellites. The associated challenges are becoming more nuanced and complex, with no demonstration to-date of a sustainable solution. This study is a continuation of previous research on On-Orbit Servicing, and aims to identify technical solutions which would enable companies to perform on-orbit services by proposing a standardization of the interfaces on spacecrafts. This study is shaped around 3 pillars/goals:
  - Communicate the need for standardization of interfaces for OOS through papers and conferences to engage the space sustainability community.
  - Identify and develop interfaces by collaborating with industry and institutions based on technical needs.
  - Implement a legal framework to stimulate and regulate the economy of OOS.
- **UNSDGS –** This project aims to connect developing nations to space faring nations while training local ambassadors to implement UNSDGs in their communities. Members are divided into three working groups to focus on one or two SDGs based on location:
  - Regional coordinators aim to perform research on the current status of technology in the region, identify gaps and realistic ways in which space technology can facilitate reaching sustainable goals, and preparing guidelines and recommendations for SGAC considering regional needs and potentials.
  - Communicating with companies and experts to provide mentorship and participate in webinars to share knowledge on SSS topics, as well as preparing guidelines for SGAC and companies on how to collaborate to achieve the UNSDGs.
  - Identifying the technological barriers to achieve the selected SDGs in the region and utilizing data to develop a realistic, efficient solution.
- **UNCOPUOUS Space Debris Compendium –** A collaboration with the SLP PG, this project proposes to utilize the information database provided by the Compendium to provide a structured insight into global approaches to space debris management through law and regulation. It aims to ensure that Nation States implement effective national legal mechanisms of debris mitigation. The objectives of the project are:
  - Distill COPUOS Space Debris Compendium into a review of global approaches towards implementing national legal mechanisms for mitigating space debris.
  - Write a report that may be published in full or summary by COPUOS to supplement the information database.
  - Create recommendations for best practices to implement national legal mechanisms for space debris mitigation and also recommendations for further research on the establishment of norms relating to space debris mitigation practices.
- **UNCOUPUOS presentations –** In 2022 the following members of the SSS PG had the opportunity to present at various UNCOPUOS Subcommittees:
  - Scientific and Technical Subcommittee
    - Virgile Gautier - ICASI (OOS): improve space sustainability through the scope of on-orbit servicing
    - Clarissa Luk - SGAC review of the UNCOPUOS space debris compendium
  - Legal Subcommittee
    - Sahil Bhatia - Strategies for Cislunar Space Traffic Management

  - Clare Fletcher - Clear and present danger: Understanding risks to outstanding universal geoheritage values on Mars to guide proactive policy
  - Daniel Patton - Understanding Space as a Global Commons
  - Laurent Fleming - Review of the UN COPUOS Space Debris Compendium
- **Earth's Orbits as UNESCO World Heritage –** This project aims to create the first framework that could recognize Earth Orbits as part of the UNESCO World Heritage Site List, including objects of historical importance. The continued exploitation of orbits is creating a landfill in space, which necessitates a more extensive Space Traffic Management system, particularly regarding satellite operations and future space stations. This project faces many challenges, such as restricting accessibility of space and hindering the space economy. It has the following objectives:
  - Translate the UNESCO principles for application to space, more specifically to Earth's orbits.
  - Leverage the interdisciplinary project team to consider both academic and industry/professional experience.
  - Develop a framework that won't limit the use of our orbits, hinder the space economy, or endanger employment across all related industries. We want to create a framework that will guarantee the sustainable use of this environment while fostering the evolution of both technology and the space economy.

Partner Organizations

RFA Rocket Factory

SURREY SATELLITE TECHNOLOGY LTD

iBOSS GmbH

HE SPACE it's all about people

EPFL

Astroscale

GEOSS Portal

DLR

Space Medicine and Life Sciences

Scope and Objectives

The scope of the Space Medicine and Life Sciences (SMLS) Project Group encompasses: collaboration on research projects, knowledge sharing and promoting awareness, facilitating professional development and advancing policies in the space health fields. Our primary objective is to provide a global interdisciplinary platform to build a community of young professionals in space medicine and life sciences in collaboration with international stakeholders within the space sector. This community will work towards creating tangible solutions and applications to address both space and terrestrial healthcare issues, as aligned with the United Nations (UN) Sustainable Development Goals (SDGs). In addition, this group aims to address space medical issues associated with the unique challenges of extreme space environments and to work towards standardised evidence-based space medical guidelines.

Initiatives

- **SMLS newsletter –** PR & Communication team were responsible for sharing news on SMLS topics and continuously informing PG members on the latest developments and opportunities within the SMLS ecosystem. This project consists of designing, researching, writing, and organising the newsletter, which is sent out once every 2 months to the members subscribed to the newsletter (2290+ people). Though the project was already successfully conducted in the previous years, the newsletters sent out this year were more frequent and regular.
- **"Health in Space" webinar series –** The primary objectives of this project are to bring together a community interested in space health topics and to offer a platform for knowledge exchange for the participating members. A total of four educational webinars, with nine top experts in a variety of SMLS fields, have been held throughout this year. This webinar series has been a continuation from the project successfully established and conducted in previous years.
- **Research grants list –** The Research Grants team has been researching and compiling a resource list of available funding opportunities for space health-related research projects and conference attendance.

- **Collaborative research projects –** SMLS PG committee created two review research projects for any SMLS member to take part in. By bringing together online individuals from diverse backgrounds, we aimed to foster collaboration and to cultivate new partnerships within the SMLS network, enabling participants to cultivate fresh skills, to gain a comprehensive understanding of the subject matter and to aid professional advancement. In pursuit of these goals, the project group facilitated and supported research work on the following subjects: “Optic Nerve Sheath Fenestration and its Potential Prophylactic Application for Spaceflight-Associated Neuro-Ocular Syndrome.” and “:Medical Ethics of Long-Duration Spaceflight”. Consequently, two articles were authored and presented by members of the project group at the International Astronautical Congress in Paris. The selection of these articles for the renowned IAC underscores the peer recognition of the project group's valuable contributions to the international space community.

Space Technologies for Earth Applications

Scope and Objectives

The Space Technology for Earth Applications project group aims to address the intersection of space-based technology and sustainable development by providing students and young professionals from around the world equal access to hands-on experiences, professional networks, and a platform for debates and discussions. Our activities focus on a variety of societal challenges including climate change adaptation, disaster management, environmental monitoring, urban planning and pollution mapping. In collaborative project work and capacity-building efforts with local partners, we utilise the immense potential of space technology and apply innovative analysis methods such as deep learning to extract actionable information and to support non-trivial decision-making.

The objectives of STEA are to:

- positively impact society through collaborative project work and capacity-building efforts.
- create an interdisciplinary forum for passionate students/young professionals and provide opportunities for personal and professional growth.
- contribute to and enhance academic research through publications in recognized journals.

Initiatives

- **General Assembly Meetings** – General Assembly meetings are held quarterly for PG members to be informed about recent PG activities and to network. The meetings are held at alternating times to accommodate our members that are coming from diverse time zones around the world. The agenda often starts with quick updates of recent PG activities, followed by a plenary lecture from invited speakers and a short open discussion, presentations from PG members about their exciting projects either from within PG or from outside, and break-out discussion sessions for networking.

- **REFRA-SOS (Realtime Flood Risk Assessment in developing countries using social media, optical and SAR satellite data) Research Project** – This research project aims to develop a feasible and economically viable solution for flood management in developing countries. The mitigation will rely on the integration of data from social media crowdsourcing (e.g. Twitter, Flickr), optical satellite imagery, and synthetic aperture radar (SAR). The project is expected to produce open-sourced software packages that are easy to use. Moreover, the project hosts annual workshops for our local partners in Cameroon to transfer the knowledge gained from this work. This project is currently endorsed by the International Geological Correlation Programme (IGCP), a cooperative enterprise of United Nations Educational, Scientific and Cultural Organisation (UNESCO) and International Union of Geological Sciences (IUGS) under project 734.
- **REFRA-SOS IGCG734 Annual Workshop** – On October 15, 2022, STEA and WaterForLife Cameroon together hosted the annual workshop. Using Cameroon as a case study, the workshop topic "*Flood Risk Assessment in Cameroon: The Present*" focused on flood conditioning factors, methods, and technologies developed for flood assessment in developing countries and the needs for improvement.

Partner Organisations

Sponsors

Diversity and Gender Equality

Scope and Objectives

Our Giant Mission is to open-heartedly bring everyone in on the discussion and provide education about gender equality and diversity. It is a mission to persuade the society that these values are the forces that hold together resilient, egalitarian, and healthy groups of people, and showcase how they can be uplifted from space. Our Giant Vision is to unite, enrich, and inspire, for a better space sector and life on Earth.

Initiatives

- **Giant Leap Hackathon 2022 –** 2022 saw GE PG's first hackathon, under the general theme 'How can space technology and know-how help make a leap forward towards gender equality on Earth?'. The Giant Leap Hackathon was held in Daejeon, South Korea on August 14th and 15th, to generate original ideas to significantly impact gender equality by 2030, as per UNSDG number 5. Results were evaluated by the jury and experts present.
- **Giant Leap Podcast –** three episodes of the Giant Leap Podcast were published in 2022, a project of the DEG PG executed by a team of five students and young professionals. Topics at the intersection of space and gender equality and diversity were discussed, released via Spotify.


Unmanned Exploration Lab. (UEL) Booth


kathon
PRESENTATIO

SPACE GENERATION
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