





SPACE GENERATION

ADVISORY COUNCIL



Space Generation Forum 2.0 Vienna 2018



SPACE GENERATION ADVISORY COUNCIL

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Sponsors and Partners





Federal Ministry for Transport, Innovation and Technology











CitY of Vienna



European Space Agency



AUSTRIAN SPACE FORUM





ISS Crew Fund

Letter from the SGAC Executive Director

Dear Delegates,

This year we celebrated the extraordinary 50th anniversary of the United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE) as well as the creation of SGAC in 1999 at UNISPACE III. Over the past 19 years, the Space Generation Advisory Council (SGAC) has secured its position as one of the largest international networks of students and young professionals in the space sector. With more than 13,000 members and alumni in 150 countries. SGAC continues to fulfil its primary goal set 19 years ago: to enable the next generation of international space sector leaders to share their perspectives with policy makers, and develop their professional skills in the process.

On behalf of the SGAC Office, we were pleased to welcome you to Vienna, Austria. The historic Space Generation Forum 2.0. (SGF2.0) was an excellent opportunity to share your perspectives and recommendations on the thematic priorities put forward by the United Nations Office for Outer Space Affairs (UNOOSA) and shape the future of space activities. I hope you have taken advantage of the numerous Subject Matter Experts who have guided the discussions. You also had the chance to hear from our founders and those who marked the history of SGAC over the years.

The discussions and recommendations over the two days at SGF2.0. were presented at the United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS) 61st session of the General Assembly meeting held from the 20th June to the 29th June 2018. This was a chance to have your opinions and ideas heard on an international platform.

Over the past 12 months, the SGF2.0. Organising Team has put in endless hours of volunteer time to the development and planning of SGF2.0.. I would particularly like to acknowledge the SGF2.0. 2018 Manager and Organising Team for their outstanding contributions to what was an engaging SGF2.0. programme.

I would also like to acknowledge the support of all our sponsors that make it possible for SGAC to host the annual SGC, and their commitment in advancing tomorrow's space sector leaders to grow their network.

Regards,

Clémentine SGAC Executive Director

Letter from the SGF 2.0 Organizing Team

Dear SGACers,

It is so amazing that we could all get together to celebrate such milestones as UNISPACE+50 and 2 decades of SGAC! It was such an empowering feeling to know that June 16th and 17th there were multiple generations of SGACers standing together talking about space issues for all humankind. That our voices were heard at the international level at the United Nations the week after was something quite extraordinary and really shows how much our world depends on all of us to make a difference and to work through our challenges together -- whether they are on Earth or in space. I hope each and every one of you walked away from Space Generation Forum 2.0 feeling inspired, feeling like you contributed to the greater good, and feeling like you had some fun! We are all one big family at SGAC and with this event my organizing team and myself have worked hard to bring you an event you can learn from. We hope you made new friends and got inspired by our wonderful speakers, subject matter experts, moderators, organizing team, and (of course) each other! SGF 2.0 wouldn't be what it was without our wonderful sponsors and without the hard work and dedication of the SGAC founders and SGF 1999 crew.

All the Best,

Lauren SGF 2.0 Event Manager

About SGF/ SGF 2.0 / UNISPACE+50

In June 2018 the international community will gather in Vienna for UNISPACE+50. UNISPACE+50 will celebrate the fiftieth anniversary of the first United Nations Conference on the Exploration and Peaceful Uses of Outer Space. It will also be an opportunity for the international community to gather and consider the future course of global space cooperation for the benefit of humankind. SGAC will organise activities in connection to this important moment for the international space community as they convene in Vienna for the High Level Forum, UNISPACE+50 and the sixty-first session of COPUOS.

In 1999, at UNISPACE III, the Space Generation Advisory Council was created. At this time the Space Generation Forum was held and it was recommended "to create, within the framework of the Committee on the Peace-ful 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". SGAC would like to celebrate this historic event by hosting the second Space Generation Forum, now known as Space Generation Forum 2.0 (SGF 2.0), in the form of a pre-twentieth anniversary event.

SGF 2.0 aims

- To bring together all the different SGAC generations to celebrate SGAC's creation at UNISPACE III and to discuss how SGAC's activities should continue to evolve considering the UNISPACE+50 recommendations and specific aspects related to the United Nations Office of Outer Space Affairs (UNOOSA) and the Committee on the Peaceful Uses of Outer Space (COPUOS) and its subcommittees.
- To create a capacity building event that allows SGAC members to better understand UNOOSA, COPUOS, and international aspects of space from various perspectives
- Showcase SGAC's roots and connection to the United Nations
- Create outcomes based on the 4 thematic pillars of UNISPACE+50 which paves the way toward Space 2030
- Present outcomes in the form of a conference room paper and technical presentation at COPUOS



About UNOOSA

The United Nations Office for Outer Space Affairs (UNOOSA) works to promote international cooperation in the peaceful use and exploration of space, and in the utilisation of space science and technology for sustainable economic and social development. The Office assists any United Nations Member States to establish legal and regulatory frameworks to govern space activities and strengthens the capacity of developing countries to use space science technology and applications for development by helping to integrate space capabilities into national development programmes.



UNISPACE+50 Background

Since 1968, the United Nations has held three conferences on the exploration and peaceful uses of outer space:

- UNISPACE I, Vienna, 1968
- UNISPACE II, Vienna, 1982
- UNISPACE III, Vienna, 1999

UNISPACE+50 will mark the fiftieth anniversary of the first UNISPACE conference and take stock of the contributions to global space governance of the three UNISPACE conferences. Additionally, UNISPACE+50 will pave the way towards the "Space2030" agenda.



THEMATIC PRIORITIES

In order to guide preparatory work for UNISPACE+50, in June 2016 COPUOS identified and agreed on seven thematic priorities, as well as their objectives and mechanisms. The thematic priorities and their key activities and programmes of work are:

- 1. Global partnership in space exploration and innovation
- 2. Legal regime of outer space and global space governance: current and future perspectives
- 3. Enhanced information exchange on space objects and events
- 4. International framework for space weather services
- 5. Strengthened space cooperation for global health
- 6. International cooperation towards low-emission and resilient societies
- 7. Capacity-building for the twenty-first century

SGF 2.0 Organizing Team

Event Manager Lauren Napier, USA





Alessandra Vernile, Italy

Angeliki Kapoglou, Greece



Communications Team

Antonio Stark, South Korea

Lourdes Garcia-Hernandez, Mexico



Local Team Hannes Mayer, Austria Jakub Romanski, Poland/Austria Clelia Iacomino, Italy



Support Team

Jimmy Gora, Peru Swetha Kotichintala, India Tomas Hrozensky, Slovakia Ramasamy Venugopal, India







SGF 2.0 Team



Speakers and Moderators

Dr. Lance Bush

President and CEO, Challenger Center

Dr. Stephan Mayer

Austrian Delegate to the ESA Industrial Policy Committee (IPC) and the ESA Space Situational Awareness (SSA) Programme Board, Austrian Representative to the Space Surveillance and Tracking (SST) Committee und the SST Expert Group of the European Commission, Austrian Research Promotion Agency (FFG)

Dr. Chris Welch

Professor of Space Engineering, International Space University (ISU), Vice President for Education and Workforce Development, International Astronautical Federation (IAF)

Luc St-Pierre

Chief of the Space Applications Section, United Nations Office of Outer Space Affairs (UNOOSA)

Ali Nasseri

Advisory Board Member & Alumni Lead, Space Generation Advisory Council (SGAC)

Niklas Hedman

Chief of Committee Services and Research Section, the United Nations Office for Outer Space Affairs (UNOOSA)

Prof. Dr. Kai-Uwe Schrogl

Chief Strategy Officer, European Space Agency (ESA)

Dr. Werner Balogh

Chief of the Satellite Data Utilization Division in the Space Programme Office, World Meteorological Organization (WMO)

Dr. Norbert Frischauf

Chief Scientific Officer and Co-Founder, OffWorld

Virgiliu Pop

Researcher, Romanian Space Agency (ROSA), Manager, European Space Education Resource Office (ESERO) Romania

Dr. Will Marshall

Co-Founder and CEO, Planet

Chris Johnson

Space Law Advisor, Secure World Foundation

Soyoung Chung

Senior Researcher, Korea Aerospace Research Institute (KARI)

Alex Karl

International Space Station Operations Engineer, Space Applications Services

Jim Volp

International Space Station Operations Engineer & Ground Controller, Telespazio VEGA Deutschland

Agnieszka Lukaszczyk

Director for EU Policy, Planet

Andrea Jaime Albalat

Business Development Manager, OHB SE

JR Edwards

Technical Assistant to the Vice President for Technology, Strategy and Innovation, Chief Technology Officer, Lockheed Martin

Catia Cardoso

STEM Didatics Expert, European Space Agency (ESA)

Gabriella Arrigo

Head of International Relations, Italian Space Agency (ASI)

Steve Eisenhart

Senior Vice President Strategic & International Affairs, Space Foundation

Dr. Carsten Scharlemann

Head of Aerospace Engineering Department, University of Applied Sciences Wiener Neustadt (FH Wiener Neustadt)

Victoria Schebek

Expert, Federal Ministry for Transport, Innovation and Technology (BMVIT)

Mag. Martin Mössler

General Manager, European Space Agency Business Incubation Center Graz (ESA BIC)

Mag. Thomas Hassler CEO, Joysys

Dr. Gernot Groemer

Director, Austrian Space Forum (OeWF)

Subject Matter Experts

Ersilia Vaudo Scarpetta

Chief Diversity Officer, European Space Agency (ESA)

Dr. Diane Howard

Assistant Professor in the Commercial Space Operations programme, Embry-Riddle Aeronautical University

Markus Woltran

Programme Officer in the Office of the Director, United Nations Office for Outer Space Affairs (UNOOSA)

Dr. Stefano Ferretti Space Policy Officer, European Space Agency (ESA)

Dr. Luciano Saccani Senior Director for International Business Development, Sierra Nevada Corporation (SNC)

Toby Clark Secretary General, Eurisy

Fredrik Bendz Aarrestad Project Officer, Eurisy

Ana Avila Becerril Representative to the Permanent Mission of Costa Rica for International Organisations

Dr. Carsten Scharlemann

Head of Aerospace Engineering Department, University of Applied Sciences Wiener Neustadt (FH Wiener Neustadt)

Micah Walter-Range President, Caelus Partners

Kelsey Ocasio-Christian Chief Financial Officer (CFO), Caelus Partners

Dr. Yaireska Collado-Vega

Physical Scientist, NASA Goddard Space Flight Center

Anna Chulaki

Education Lead, Community Coordinated Modeling Center (CCMC)

Dr. Christina Giannopapa

Head of Political Affairs Office in the Strategy Department of the Director General's Services, European Space Agency (ESA)

Dr. Melanie Platz Deputy Professor, University of Siegen

Adrianos Golemi

Flight Surgeon, European Astronaut Centre (EAC)/ European Space Agency (ESA)

















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Schedule

Day 1 (Morning) - 16 June 2018 (9:00 - 14:00)

Time	Event / Topic	Speakers
8:30 - 9:00	Registration and Welcoming Coffee	

Opening Remarks and Keynotes

9:00 - 9:05	Lauren Napier, Event Manager- Space Generation Advisory Council - Opening Remarks
9:05 - 9:20	Dr. Stephan Mayer, ESA Expert, FFG - Austria in Space
9:20 - 9:30	Clementine Decoopman, Executive Director, Space Generation Advisory Council (SGAC) - SGAC as Model for Capacity Building
9:30 - 9:40	Dr. Chris Welch - Director of Masters, ISU - ISU as a Model for Capacity Building
9:40 - 9:50	Luc St-Pierre, Chief of Space Applications Section, UNOOSA - UNOOSA Programme on Space Applications
9:50 - 9:55	Q&A for Keynotes

Panel 1: History of SGAC and our birth at UNISPACE III / 1st Space Generation Forum

Moderator: Prof. Dr. Kai-Uwe Schrogl, Chief Strategy Officer, European Space Agency Rapporteur: Alessandra Vernile

9:55 - 10:05	SGAC and the United Nations	Dr. Werner Balogh - previously UNOOSA, now Chief of Satellite Data Utilization Division, WMO
10:05 - 10:15	The 1st Space Gen- eration Forum and the Outcomes	Dr. Norbert Frischauf - OeWF, Off World, SpaceTech Partners
10:15 - 10:25	Being an SGAC Founder and Alum	Virgiliu Pop - Researcher, ROSA
10:25 - 10:35	How SGAC was Con- ceptualized	Dr. Will Marshall - CEO and Co-Founder, Planet
10:35 - 10:40	Q&A for Panel 1	

Short Break (10:40 - 10:50)

Time	Event / Topic	Speakers
Panel 2: Ho Moderator: C Co-Moderato Rapporteur: A	w has youth involve hris Johnson, Space Law Advis r: Soyoung Chung, Senior Rese Angeliki Kapoglou	ment in space evolved since UNISPACE III sor, Secure World Foundation earcher, Korea Aerospace Research Institute
10:50 - 11:50 Evolution of SGAC, SGAC connection	Evolution of SGAC, SGAC connection	Alex Karl, International Space Station Operations Engineer, Space Applications Services
	w/ space actors, challenges then and	Jim Volp - Former Chair - ISS Ops Engineer, Telespazio VEGA Deutschland
tuture	Agnieszka Lukaszczyk - Former Executive Director - EU Policy Director at Planet	
		Andrea Jaime Albalat - Former Executive Director - Business Development Manager at OHB System

Inspirational Talk

Moderator: Clementine Decoopman

11:50 - 12:00	SGAC Alumni Pro-	Ali Nasseri - Former SGAC Chair, SGAC Alumni Coordinator
	gram	

Panel 3: A new era of capacity building

Moderator: JF Rapporteur: A	REdwards, Lockheed Martin lessandra Vernile	
12:00 - 13:00	Capacity Building - Perspectives from Space Agencies	Catia Cardoso, STEM Didactics Expert, ESA Gabriella Arrigo - Head of International Relations Unit, ASI
12:00 - 13:00 (cont'd)	Capacity Building - Models for Aware- ness and Education	Steve Eisenhart - Senior Vice President - Strategic & Interna- tional Affairs, Space Foundation Dr. Carsten Scharlemann - Head of Aerospace Engineering Department, FH Wiener Neustadt

Buffet Lunch (13:00 - 14:00)

Keynote

Moderator: Clementine Decoopman

14:00 - 14:10	Capacity Building OOSA and the Space Community	Niklas Hedman - Chief of Committee, Policy and Legal Affairs Section at UNOOSA

Working Groups Session

14:30 - 15:30 Experts to set the Scene

15:30 - 18:00 Working Group

SGF 2.0 Evening Session (20:00 - 24:00)

sponsored by the Mayor and Governor of <u>Vienna</u> Dr. Michael Ludwig, and <u>Planet</u> Location: **Heuringer Wolff** (Rathstraße 46-50, 1190 Vienna)

Day 2 (Afternoon): 17 June 2018 (14:00 - 18:30)

Time	Event / Topic	Speakers
9:00 - 9:30	Arrival of delegates and	d coffee
9:30 - 9:35	Welcome Day 2	Clémentine Decoopman
9:35 - 9:55	Working Groups out- comes from Day 1	SGF 2.0 Team
10:00 - 11:00	Inspirational Talks w/ Q&A	Victoria Schebeck, Expert, Federal Ministry for Transport, Inno- vation and Technology (BMVIT) Mag. Phil. Martin Mössler, General Manager, ESA BIC Austria Mag. Thomas Hassler, CEO, Joysys sponsor: BMVIT
11:00 - 11:30	Coffee break and group	o photo
11:30 - 13:00	WG Breakout Sessions	

Buffet Lunch (13:00 - 14:00)

14:00 - 15:45	Final breakout session and Presentation Rehearsal
15:45 - 16:00	Re-assemble in conference room (coffee break)

Presentation of the Outcomes of the WGs activities (5 outcomes) and Q&A each presentation: 5-6 min with 2 min Q&A

Cuch presente		
16:00 - 16:10	Introduction	Dr. Gernot Groemer - Director, Austrian Space Forum
16:10-17:20	W1: 16:10 - 16:20 / W2: W5: 16:50 - 17:00 / W6:	16:20 - 16:30 / W3: 16:30 - 16:40 / W4: 16:40 - 16:50 17:00 - 17:10 / W7: 17:10 - 17:20
17:20 - 17:30	Final thoughts	Dr. Gernot Groemer - Director, Austrian Space Forum
17:30 - 17:45	Break	1st draft of Conference Room Paper (CRP)
17:45 - 18:20	Discussion on the Outcomes	Lauren Napier, Clementine Decoopman, Ana Avila
18:20 - 18:30	Closing Remarks	Clémentine Decoopman







Evening Event

Sponsored by:

- the Mayor and Governor of Vienna Dr. Michael Ludwig
- Planet
- Heuriger Wolff, Rathstraße 46-50, 1190 Vienna

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Statistics



125 attendees

66 delegates

41 speakers / moderators

14 team members

4 additional participants

39 nationalities

7 Working Groups

Delegates by Nationality



Male Female

Gender diversity





delegate statistics





ISS Crew Fund Scholarship

Introduction

The ISS Crew Fund in cooperation with the Space Generation Advisory Council (SGAC) introduces the ISS Crew Fund Scholarship. This scholarship is an opportunity for students and young professionals to share their views and analysis on the future of human spaceflight and exploration by submitting a one page essay. The winners will attend the Space Generation Forum 2.0 (SGF2.0) to be held 16-17 June 2018 in Vienna, Austria.

ISS Crew Fund

In 2014 the Westphalian Peace Prize had been awarded to the crews of the International Space Station (ISS) to honour their international cooperation for the peaceful exploration of Space. In awarding the prize, special notion had been given to the fact that formerly competing nations have found a way to join their forces and build and operate the largest technical project in Space - the ISS. The prize ceremony took place in the German town of Muenster, North-Rhine Westpahalia, where in the presence of Federal Secretary of State, Mr. Steinmeier, and other local, state, and federal politicians the former ISS crew members Thomas Reiter, ESA/Europe, Michael Lopez-Allegria, NASA/USA, and Pawel Vinogradov, RoscosmosEnergia/Russia were presented with the symbol of the prize, a sculpture representing the heraldic horse of Westphalia.

The associated prize money and other such ISS prizes now form the ISS Crew Fund and are kept in an escrow account under the custody of the Association of Space Explorers - Europe. The money is intended to be used to provide opportunities of international cooperation also for the next generations of young space professionals and foster international cooperation for peaceful research and exploration of Space. Decisions are taken by a board composed of astronauts.

ISS Crew Fund Scholarship Winners



Thomas Cheney United Kingdom (UK)



Helen Tung UK/Australia



Matej Poliacek Slovakia



Hafizuddin Mohd Lowhim Malaysia



Working Groups

Introduction

The seven Working Groups (WGs) were created taking into consideration the four pillars (Space Economy, Space Diplomacy, Space Society, Space Accessibility) and the seven Thematic Priorities that represent the framework in which UNISPACE +50 was developed.

The delegates to the SGF 2.0 divided into WGs, had a lively exchange between them and the invited senior leadership (Subject Matter Experts or SMEs) on key space and non-space sector issues.

The final aim of the WGs discussion was to create outcomes based on the thematic priorities of UNISPACE +50 and to develop recommendations for the future of the space sector.

As a result, the key points discussed have been presented in the conference room paper A/AC.105/2018/ CRP.16 and in a technical presentation at UNISPACE +50 and during the COPUOS Plenary Session in June 2018.



Image taken from "UNISPACE+50 and its Thematic Priority "International Cooperation Towards Low-emission and Resilient Societies": Role of Space Research and Technology" report by UNOOSA

WG 1 - Space for Women

Experts: Markus Woltran, Program Officer, Office of the Director, United Nations Office of Outer Space Affairs; Ersilia Vaudo, Chief Diversity Officer, ESA; Dr. Diane Howard, Executive Secretary, IISL and Professor, Embry-Riddle Aeronautical University

Rapporteur: Angeliki Kapoglou

WG Description: There is no greater indicator of an innovative culture than the empowerment of women. Fully integrating and empowering women in leadership positions is the most important step that a country or organization can take to strengthen its competitiveness. However, a look into the gender distribution at a "Head's of Space Agencies Panel" is enough to understand that space leadership has largely remained a "men's club" – a surprising fact, considering that the space sector is built on the achievements of women such as Valentina Tereshkova, Katherine Johnson, or Margaret Hamilton just to name a few. Our challenge: How do we change the numbers at the top? This working group will explore what holds women back from stepping into leadership and decision making roles in the space sector and suggest specific actions for empowering young women in the space sector, with a special focus on developing countries.

- How might we encourage men in the space sector to mentor and champion women to take over leadership positions?
- How might we prototype new types of recruiting methods, meeting practices and women friendly facilities?
- How might we tell the story of how women and men are able to form trusting relationships and help each other perform at a high level?
- How can SGAC/students and young professionals contribute to this topic?
- How could UNISPACE+50 contribute to this topic?



WG 2 - Space and the Sustainable Development Goals

Experts: Stefano Ferretti, Resident Fellow, ESPI/ESA; Sergio Camacho, SGAC Honorary Board; Luciano Saccani, Director of Business Development, Sierra Nevada Corporation

Rapporteur: Alessandra Vernile

Sponsored by: Sierra Nevada Corporation



WG Description: Space services are enablers of change, playing a substantial role in implementing the Sustainable Development Goals (SDGs). Space applications can help in identifying the existing gaps and leveraging technologies. But Space is not only technology is also cooperation. Cooperation not exclusively among institutions but also with non-governmental organisations active in different areas of the world as well as private actors as supporting actors for the development of new technologies. In this context UNISPACE+50 and the Space2030 Agenda represent an important opportunity to demonstrate how much the society should rely on space to improve life on Earth. For this reason, to fully support the achievement of the SDGs, it is important to show the youngest generation the support that space technologies give us in everyday life, raising the awareness and motivating the future generations.

- How can SGAC/students and young professionals contribute to this topic?
- Considering the evolution of the space sector and the increasing role of new actors in the space market, will the democratization of space help to achieve the fulfilment of the SDGs?
- Space is not only technology is also cooperation. What cooperation means for you and how can you define it in the sustainable development context?
- How can the UN cooperate with private space actors in view of the implementation of the SDGs? Do we need new cooperation tools? What would be the perspective of the traditional space actors (e.g. space agencies)? Which one of new space actors (e.g. start-ups, SMEs)?



WG 3 - Space for Society

Experts: Toby Clark, Secretary General, Eurisy; Fredrik Aarestadt, Project Administrator, Eurisy

Rapporteur: Swetha Kotichintala

Sponsored by: Eurisy



WG Description: In recent decades governments around the world have invested public funds in building space infrastructure and services that can bring benefit to society in the fields of telecommunication, navigation and Earth observation. Eurisy's aim is to ensure a proper communication between end users, who may know nothing about space, and service providers who may know little about the needs of society. By bridging space and society in this way, Eurisy acts as a link between the upstream and downstream space industry. The key is the users expressing their needs in a way that service providers can respond, and service providers informing users about their capabilities in a way that users can see the benefits. The Working Group will study some examples of good practices covering a wide range of applications, and will examine one case study in detail concerning the use of satellite applications in the Alps.

- How can SGAC/students and young professionals contribute to this topic?
- How can the Space sector ensure that the return on the public investment in space brings real benefit to all citizens?
- Considering that the user needs are fundamental to define the future downstream trends, how can users express their needs to the space sector?
- Seen the examples of search and rescue in the Alps, are these findings applicable to the other sectors?
- How can global population benefit from Copernicus data?



WG 4 - Capacity Building in the Space Sector

Experts: Ana Avila Becerril, Permanent Mission of Costa Rica for International Organisations; Dr. Carsten Scharlemann, Head of Aerospace Engineering Department, FH Wiener Neustadt

Rapporteurs: Hannes Mayer and Jimmy Gora

Sponsored by: Austrospace



WG Description: "Capacity-building for the twenty-first century" is one of the seven thematic priorities of UNISPACE+50. It is therefore appropriate, in the context of SGF2.0, to take stock of the current challenges of the capacity-building activities in the space sector, to review the relevant policies and activities and to consider the necessity to strengthen and better align them with future needs and in particular with the 2030 Agenda for Sustainable Development. Space-based technologies are instrumental in every country as a crucial aspect of a country's infrastructure. With the increasing number of countries involved in space activities, the need for effective laws and policies on space activities, not just on an international level but also on the national level, is becoming more and more apparent. One of the pillars that support the development of legal and policy frameworks at the national level is the availability of professionals able to provide services in that field. Capacity-building, training and education helps to promote international development and cooperation in space activities, and helps build national expertise and capacity in countries with emerging space capabilities. It also provides the means for a better understanding of the interdependent roles of science, technology and law in space activities. At the same time, what better way to learn about space engineering than to design, build, launch and operate your own satellite? The opportunity to work on a real space mission from start to finish, including operating the satellites and conducting science experiments in space, can help students learn about space while at the same time give them useful experience and skills in project management, leadership, marketing and communications, equipping them well for the jobs of the future.

- Reflect on the personal challenges each delegate has experienced in their country, how could your government/space agency, better help you get involved with the space sector?
- How might we create a space policy starting kit for new space counties/agencies? (What outer space treaties and conventions should an emerging space country sign up for, what international programs exists etc)
- How might we create a platform to exchange information and foster collaboration between partners from space faring and non-space faring countries ?
- Which are the most innovative and cross-sectorial approaches to capacity building? (including consideration for women, youth, and new or non-space-faring nations)
- How can cubesat training programs help create the space innovators of tomorrow?
- How might we involve more countries in human spaceflight and lunar exploration and increase the benefit from the outcome of such activities through international cooperation, to make space exploration a truly international effort?
- How can UNISPACE+50/SGAC/students and young professionals contribute to this topic?





WG 5 - Building Partnerships and Investment in Space with Industry and the Private Sector

Experts: Kelsey Ocasio-Christian, CFO, Caelus Partners; Micah Walter-Range, President, Caelus Partners

Rapporteur: Jakub Romanski

Sponsored by: Caelus Partners



WG Description: The future – the vast frontier of space – is here now before us. We are at a critical and amazing point in humankind's interaction with space: we are moving from exploration toward utilization. The global effort to develop space will continue to attract new actors, many from the private sector. Partnerships that cross national borders, sectors, and disciplines are necessary and will increase as activity in space grows. Through UNISPACE 50+, we have the opportunity to present specific considerations for these partnerships.

- When are partnerships needed in developing space? What types of partnerships will emerge?
- · What benefits and challenges do we anticipate in these partnerships?
- How can SGAC/students and young professionals contribute to this topic?
- How could UNISPACE+50 contribute to this topic?



WG 6 - Safety and Reliability for Space and Earth

Experts: Anna Chulaki, Lead of CCMC Education on Space Weather and Coordinator of CCMC Simulation Services; Christina Giannopapa, Head of Political Affairs, Strategy Department, ESA; Dr. Yaireska Collado-Vega, the Lead of the Space Weather Research team at the Community Coordinated Modeling Center

Rapporteurs: Hannes Mayer and Jimmy Gora

WG Description: An extreme space weather event could inflict wide-spread damage on our technological systems, such as satellites, power grids, radio communications and GPS positioning. A space weather event could also affect on orbit missions and human spaceflight. Society's growing reliance on technology makes us increasingly vulnerable to the impacts of space weather. While recent growth in observational systems and advances in scientific modeling have significantly improved our forecasting capabilities, we need to ensure that our understanding of space weather continues to advance and translates into a widespread awareness of and preparedness for solar storms. Discussions and policy measures can be taken by space governances at the national and international levels in order to create best-practices against space weather. Both technological and policy level discussions are key to creating safe and secure space operations with regards to space weather. The working group will look through the eyes of a forecaster at a significant past space weather event and will contemplate its effects on technological systems. The working group will also look through the eyes of a policy decision maker to contemplate best practices and policy that could keep space and Earth safe and secure from space weather phenomena.

- How can SGAC/students and young professionals contribute to this topic?
- Why should we promote public awareness of solar storms and their hazards?
- How do we ensure that new technological ventures factor in potential risks presented by space weather?
- What kinds of policies could be put in place (at the national, regional, and international levels) that would consider space weather as pertains to maintaining a safe and secure space environment?
- Space technology plays a fundamental role in preserving collective security on Earth. How can we include non-space actors in the creation of policies that would assure security from space and in space? How can the implementation of these policies impact the Space2030 Agenda?



WG 7 - Space for Global Health

Experts: Dr. Melanie Platz, Professor, University of Siegen; Adrianos Golemis, Flight Surgeon, ESA/EAC

Rapporteur: Tomas Hrozensky

WG Description: There are about 1,400 infectious diseases, some of which are among the most important causes of death in developing countries. Half of the world's population lives in affected areas but it is not yet clear how decision support and early warning can be provided to them through space technology. Ultimately the impact of all climate change threats to the environment, economy and security will be on human health. To combat epidemics with coordinated responses, there is a need to establish an integrated global alert system. Information derived from Earth observation and meteorological satellites in combination with GIS and GNSS has increasingly been used to study disease epidemiology, enabling increased use of spatial analysis to identify the ecological, environmental and other factors that contribute to the spread of vector-borne diseases by locating "hot spots", monitoring disease patterns and defining the areas that require disease-control planning. Moreover the International Space Station is a unique laboratory for performing investigations that affect human health both in space and on Earth. Throughout its assembly, the space station has supported research that is providing a better understanding of certain aspects of human health. Several biological and human physiological investigations have yielded important results, including improved understanding of basic physiological processes normally masked by gravity and development of new medical technology and protocols driven by the need to support astronaut health. Advances in telemedicine, disease models, psychological stress response systems, nutrition, cell behavior and environmental health are just a few examples of benefits that have been gained from the unique space station microgravity environment. This Working Group will discuss the challenges and opportunities for the using space for global health: Raising awareness of the potential contribution of space technology and applications to global health; Engaging with users, researchers, decision makers and other stakeholders in the public health sector to identify further needs in tools and data that could be provided with the means of space technology and its applications; and strengthening capacities in terms of the discovery of, access to and processing and use of space-derived data and promoting international cooperation for increased use of space-derived data and information for planning and decision-making processes in public health, including for the mitigation of impacts of humanitarian crises.

- A global alert system with coordinated responses can help to reduce the impact of disasters and disease outbreaks. What components should such a global alert system to combat health risks consist of?
- How can the "last mile problem" be overcome to create sustainable risk awareness? (The "last mile problem" in the health-context denotes the problem to establish the challenging link between persons in risk situations and relevant information, which can help to combat the risk).
- How can medical research implemented in space or in analogues be more efficiently used for healthcare on the planet? How can related technology be better utilised (spin-offs)?
- How can SGAC/students and young professionals contribute to this topic?
- How could UNISPACE+50 contribute to this topic?







Space Generation Forum 2.0 Outcomes

Overarching Recommendation

We recommend that SGAC and all interested COPUOS permanent observers be invited to participate in the drafting of the Agenda 2030

Thematic Recommendations

WG 1: Space for Women

- The establishment and promotion of an awareness campaign to highlight the importance of the issue and provide evidence for support of advocacy
- The establishment and promotion of an SGAC mentorship programme to capitalize on SGAC's global network SGAC
- Support for the Space for Women ambassadors' initiative recommended by the UN Report on the UN Expert Meeting on Space for Women
- The promotion of outreach and awareness raising of SGAC among schools and space/STEM youth groups -'Junior' SGAC

WG2: Space and the SDGs

- We recommend the implementation of a coordination mechanism of space activities in regards to SDGs at UNOOSA and in the long-term focus existing efforts to establish a platform of exchange such as a permanent committee or annual symposium involving actors from the UN, UN member states, NGOs, industry, and educational entities under specific consideration of needs and interests of developing countries.
- We recommend the United Nations to define and adopt a sustainable 'space by all' policy and common [space objective] vision that encourages joint work between governments, space industry and young professionals to kick-off space technology projects globally.

WG3: Space for Society

- We recommend the Member States and the wider international community to encourage policy implementation across member nations to make automated location sharing of mobile devices when calling the emergency number a standard.
- We recommend that the COPUOS to endorse open data and open source [applications, services] policy that
 incentivizes making space based services contributing to solving societal issues in accordance with generally
 accepted standards.
- GPL compliant (open sources, free software , ...)
- We recommend the UN to dialogue with other sectors
- Open data and open source
- Change the way space is communicated
- Competitions and hackathons
- Problem Solving Forum (within SGAC)

WG4: Capacity building in the space sector

- We encourage the Member States and the wider international community to intensify [keep up, continue] the support the Office for Outer Space Affairs to create a repository of open data and open source materials, such as educational resources, career guidance, outreach and other capacity building means.
- Incentivise corporate social responsibility to incorporate capacity building activities, by providing scholarships, mentorship, competitions and other types of opportunities like hackathons for young people in space sector.
- We encourage Member States to provide funding and effective framework for technology incubation, especially technologies that have applications that contribute to the Sustainable Development Agenda, as well as Incentivise corporate social responsibility to incorporate capacity building activities, by providing scholarships, mentorship, competitions and other types of opportunities like hackathons for young people in space sector
- Recommend Member States to create [rationalise the existing] legal frameworks and to minimise legal and administrative obstacles to enable emerging space industries.

WG5: Building Partnership and Investments in Space and with Industry and the Private Sector

- We recommend that the "Global Strategy and policy on Partnerships with Industry and the Private Sector" be an agenda item and a focus group for the Agenda 2030, with one of the focus on space settlements and invite SGAC and interested permanent observers to this expert group.
- We recommend the UN to create and promote an effective way to incorporate space agencies and private sector into the discussion on technical and legal guidelines for space settlement and resources utilisation for innovation and sustainable development.
- COPUOS should encourage more discussions on PPP
- Modernizing the Moon Treaty to reflect current prospects for human space settlements
- Facilitating global discussion on principles for space settlement and resource utilization/preservation
- Helping define common policies to enable international cooperation and/or reduce potential for conflict
- Creating an effective way to incorporate space agencies and the private sector in the discussion, decision, and action
- Promoting access for new space-faring nations and bring non-spacefaring nations together to represent their interests as a group
- Promoting development of expertise among nations or multinational bodies to govern PPPs and space settlements

WG6: Safety and Reliability for Space and Earth

- Including discussions on Space Weather into the COPUOS agenda
- Bringing awareness through initiatives such as a UN Space Weather Day that will include all relevant stakeholders (energy providers, etc. non space actors that can be affected) and encourage the establishment of national action plans and emergency procedures for mitigating the impact of Space Weather events
- A space traffic management framework is needed to achieve safety and reliability of operations in outer space as well as entering outer space and returning from outer space to earth, while ensuring sustainable space environment for future generation. Safety and reliability of the space environment is important to be considered when developing future STM guidelines and framework. legal instruments
- Fostering the implementation of the LTS Guidelines

WG7: Space for Global Health

- It is recommended to develop a global virtual platform pooling and granting access to existing space-derived data pertinent to tackling global health issues. To facilitate individual access to such data, it is also recommended to work towards recognizing digital interconnectivity as a human right.
- The current trend indicates the realization of space-based connectivity to every individual within the near future. It is recommended that the UN builds on this capacity to accomplish the efficient use of this platform.
- Furthermore, the solution to the last mile problem, within the context of global health, needs to facilitate global interconnectivity and accessibility to bio-surveillance data via social media using space technology.
- In terms of dealing with global health, it is recommended that the UN OOSA collaborates with the WHO to meet SDGs for human health through space medicine research outputs towards society.

United Nations Committee on the Peaceful Uses of Outer Space Conference Room Paper

"Recommendations from the Space Generation Forum 2.0 and the Space Generation Advisory Council in support of UNISPACE+50"

Submitted by the Space Generation Advisory Council

Official United Nations listing of the SGAC CRP: A/AC.105/2018/CRP.16

The Space Generation Advisory Council in Support of the United Nations Programme on Space Applications (SGAC) organized Space Generation Forum 2.0 (SGF 2.0) in order to celebrate UNIS-PACE+50 and the first ever SGAC event, the Space Generation Forum, that was held in 1999 during UNISPACE III. At this time SGAC played an important role in the follow-up of UNISPACE III by actively participating in some of the action teams as well as having a technical report of the Space Generation Forum (A/CONF.184/L.14). During the Space Generation Forum it was recommended and adopted into the Vienna Declaration on Space and Human Development, "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" which led to the creation of the SGAC.

The aims of Space Generation Forum 2.0

- To bring together all the different SGAC generations to celebrate SGAC's creation at UNISPACE III and to discuss how SGAC's activities should continue to evolve considering the UNISPACE+50 recommendations and specific aspects related to the United Nations Office for Outer Space Affairs and the Committee on the Peaceful Uses of Outer Space and its subcommittees.
- To create a capacity-building event that allows SGAC members to better understand the Office, the Committee, and international aspects of space from various perspectives.
- To showcase SGAC's roots and connection to the United Nations (in particular to the United Nations Office for Outer Space Affairs and the Committee on the Peaceful Uses of Outer Space and its subcommittees).
- To create outcomes based on the thematic priorities of UNISPACE+50 which paves the way toward "Space 2030" agenda.
- To present outcomes in the form of a conference room paper and technical presentation at UNISPACE+50.

Space Generation Forum 2.0 was attended by more than 120 people from around 40 different nations. With 40 percent women versus 60 percent men overall. These numbers include: SGAC members (students, young professionals, alumni and founders), SGF 2.0 organizing team members, speakers, moderators, subject matter experts and guests.

The SGF 2.0 included seven working groups based on UNISPACE+50 and the thematic priorities:

- Working Group 1: Space for Women
- Working Group 2: Space and the Sustainable Development Goals
- Working Group 3: Space for Society
- Working Group 4: Capacity-Building in the Space Sector
- Working Group 5: Building Partnership and Investments in Space and with Industry and the Private Sector
- Working Group 6: Safety and Reliability for Space and Earth
- Working Group 7: Space for Global Health

Recommendations:

There are three overarching recommendations that conclusively bring together the thoughts and discussions of the SGF2.0 as a whole and are now endorsed here by the Space Generation Advisory Council.

- 1. The Space Generation Advisory Council recommends that SGAC be invited to participate in the development of the "Space 2030" agenda and implementation plan as defined in document A/AC.105/L.313 and represent the voice of the next generation.
- 2. SGAC encourages Member States to include young professionals in their delegations at the Committee and its Subcommittees and highlight the importance of engaging the next generation to reach the Sustainable Development Goals.
- 3. SGAC should be invited to actively participate in action teams, working groups, and other forums in leading roles that will deliver on the "Space 2030" Agenda.

From the seven working groups of SGF 2.0, there were thematic recommendations that were presented and are now endorsed here by the Space Generation Advisory Council.

- 1. SGAC supports the Office's Space for Women initiative, and encourages the Office and the Member States of the Committee to further support the appointment of "Space for Women Ambassadors" as recommended in the Report on the United Nations Expert Meeting on Space for Women (A/AC.105/1163), and to include in this initiative private sector and international representatives.
- 2. SGAC recognizes the work done by the Office in engaging with other United Nations entities and encourages the Office to continue to exchange information on how space activities can be an asset for the sustainable development goals.
- SGAC encourages the Office to continue to work with the Committee Members States and the Permanent Observers and to establish a platform to exchange information on programmes that emphasize space for the sustainable development goals, including the views of representatives from the next generation and emerging space nations.
- 4. SGAC acknowledges initiatives that encourage open data and open source resources, such as the Open Universe Initiative. SGAC encourages the Committee to build upon those existing initiatives and expand the scope outside of astronomical data to all space-related data that incentivizes solving societal issues in accordance with generally accepted standards.
- 5. SGAC encourages Member States and the wider international community to intensify support to the Office for Outer Space Affairs to consider the creation of repository of open source materials, educational resources, career guidance, mentorship opportunities, outreach and other capacity-building means.
- 6. SGAC recognizes the role that can be played by the private sector in capacity-building, particularly in the space sector, and therefore invites Member States to work in collaboration with the private sector to encourage the incorporation of Capacity-Building activities into Corporate Social Responsibility.
- 7. SGAC urges the Office and the Member States of the Committee to continue to engage with the Private Sector to enhance discussions that will drive the future of space activities.
- 8. SGAC commends the Office for establishing successful initiatives such the International Asteroid Day and encourages the Office to consider establishing a Space Weather Day to promote public awareness on Space Weather and space weather topics.
- 9. SGAC encourages the Committee and its Members States to exchange existing space-derived data pertinent to tackling global health issues.
- 10. SGAC encourages the Office to collaborate with the WHO in meeting the Sustainable Development Goals for human health in order to deal with global health.



All Participants from SGF 2.0



Anthony Yuen presenting outcomes from Working Group 7_ Space for Global Health



Co-Sponsors Planet Talking at SGF 2.0 Evening Event



Delegates working together at SGF 2.0



From SGF to SGF 2.0 with SGAC Executive Director Clementine Decoopman and two SGAC Founders Virgiliu Pop and Werner Balogh



Lauren Napier Receiving SGAC Pioneer Award



SGAC Data Handover From SGAC Alum Shane Kemper to SGAC Executive Director Clementine Decoopman



SGAC Founder Jim Volp and Subject Matter Expert Ana Avila Talking About Capacity Building in Space



SGAC Founders Talking About SGF and the Beginning of SGAC



SGAC members at the United Nations in Vienna, Austria for UNIS-PACE+50



SGF 2.0 Audience



SGF 2.0 Delegates Talking About Space for Society



SGF 2.0 Evening Event at Heurige Wolff



SGF 2.0 Program



Thinking About the Future of Space

SGF 2.0 Final Report

Designed by Antonio Fowl Stark (KangSan Kim) Photographs by Antonio Fowl Stark (KangSan Kim) Tomas Hrozensky





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