

# 1<sup>st</sup> African Space Generation Workshop

The Federal University of Technology, Akure, Nigeria

NOVEMBER 16-17, 2017



## FINAL REPORT

In Support of the United Nations Programme on Space  
Applications

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## EXECUTIVE SUMMARY

The First African Space Generation Workshop (AF-SGW) was held on 16, 17 November 2017 at the Federal University of Technology (FUTA) in Akure City, Nigeria. Space Generation Workshops or SGW are regional events organized by SGAC which brings together students and young professionals to discuss matters of regional relevance. Delegates have the opportunity to engage with space sector leaders, industry and academic experts, and fellow participants from various countries in the region.

The first AF-SGW was launched by welcome addresses given by the Deputy Vice-Chancellor of FUTA, the Deputy Governor of Ondo state and the Director of Centre for Space Research and Applications at FUTA. The workshop programme tackled some of the key issues in Africa, from challenges in policy to gaps in STEAM education and the emerging start-up scene in the aerospace sector. A number of high level speakers not only addressed the delegates but spent time in engaged discussions with the participants. Speakers included Brigadier General of the Nigerian Defence Space Administration, Managing Director of the Nigerian Communications Satellite limited, Director of the African Regional Centre for Space Science and Technology Education in English (ARCSSTEE), CEO of Hantheon, researchers from Kyushu Institute of Technology in Japan, All Nations University in Ghana and Durban University of Technology in South Africa.

A total of 100 delegates from 12 countries were selected to participate in the first AF-SGW. Delegates engaged in discussions over two days, interacted with speakers and bonded with each other. The results of these discussions will feed into the recommendations presented by SGAC at the United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS). They will also form the basis of future discussions within the SGAC community in Africa.

The first AF-SGW provided a platform for students and young professionals in Africa to lend their voice to the global discussions. It was also an important milestone that allowed new relationships to be forged, both personal and professional, that will hopefully strengthen the SGAC community on the continent. Finally, we sincerely thank our host, sponsors, supporters and the SGAC Executive Council for their trust and confidence and tremendous support in making this event a success.

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## ABOUT THE SPACE GENERATION ADVISORY COUNCIL (SGAC)

The Space Generation Advisory Council in Support of the United Nations Programme on Space Applications is a global non-governmental, non-profit (US 501(c)3) organisation and network which aims to represent university students and young space professionals ages 18-35 to the United Nations, space agencies, industry, and academia. Headquartered in Vienna, Austria, the SGAC network of members, volunteers and alumni has grown to more than 10 000 members representing more than 110 countries.

SGAC was conceived at UNISPACE III in 1999, whereby states resolved, as part of the Vienna Declaration, "To create a council to support the United Nations Committee on the Peaceful Uses of Outer Space, through raising awareness and exchange of fresh ideas by youth. The vision is to employ the creativity and vigour of youth in advancing humanity through the peaceful uses space". SGAC holds Permanent Observer status at the United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS) and regularly takes part in the annual meeting, as well as its Legal and Scientific and Technical Subcommittees. SGAC holds consultative status at the United Nations Economic and Social Council (UN ECOSOC), contributing to discussions on the role of space in achieving the UN Sustainable Development Goals.

SGAC works diligently to raise awareness among the next generation of space professionals on a global scale working together with the United Nations Office for Outer Space Affairs (UN OOSA) in promoting UN workshops and activities, and in supporting SGAC members to attend space conferences around the world. By hosting international, regional and local events, SGAC provides its members with opportunities to expand their knowledge of international space policy issues, think creatively about the future direction of humanity's use of space and engage with current leaders from space agencies, industry and academia. Our members to further develop their thoughts on key topics of relevance to international space policy often resulting in technical papers, policy briefs and recommendations.



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## ABOUT AFRICAN SPACE GENERATION WORKSHOP (AF-SGW)

The African Space Generation Workshop (AF-SGW) was a two-day regional workshop for students and young professionals in the African region. The workshop had up to 100 African delegates between 18 and 35 years old, focusing on university students (BSc, MSc, PhD students) and young professionals working in the African space sector.

The theme of the first AF-SGW is Space: The Driver of the Desired Future in Africa

### OBJECTIVES:

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



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## PRACTICAL INFORMATION

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### VENUE

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The First African Space Generation Workshop (1st AF-SGW) was held at the University Auditorium, Federal University of Technology, Akure Campus on November 16-17, 2017. The Opening and Closing Dinners were held at the University Multi-Purpose Hall. We are grateful to the Centre for Space Research and Applications for its kind support in hosting the Event.



### DELEGATIONS

Applications were received from 22 Countries namely; Nigeria, Ghana, Togo, Malawi, Mauritius, South Africa, Uganda, Liberia, Kenya, Ethiopia, Nepal, Sudan, Cameroon, Zimbabwe, Tunisia, Zambia, Libya, Namibia, Egypt, India, Japan, United Kingdom. Delegates from 12 countries made it to the workshop. Countries represented include Nigeria, Ghana, Togo, Malawi, Mauritius, South Africa, Uganda, Kenya, Ethiopia, India, Japan and United Kingdom.

### PRE-WORKSHOP VISIT

Members of the AF-SGW organizing team were invited to a meeting at the Office of the Executive Governor of Ondo State. Team members met with the Deputy Governor, Hon. Agboola Ajayi and other top officials of the state.



Prior to the official launch of the event, team members also met with the Vice Chancellor of FUTA, represented by the Deputy Vice Chancellor (Academics), Prof. O. Arayela and other university officials.



## **OPENING CEREMONY**

SGAC Chair, Ali Naseeri welcomed delegates to the workshop on behalf of the executive team.



The Regional Coordinator for Africa, Oniosun Temidayo Isaiah introduced the delegates and Speakers to background information about SGAC and the opportunities that are available for students and young professionals.



The University Vice-Chancellor, Prof. J. Fuwape represented by the University Deputy Vice Chancellor (Academics), Prof. O. Arayela welcomed delegates to the University



Ondo State Governor, Oluwarotimi Akeredolu represented by his deputy, Hon. Agboola Ajayi declared the workshop open. He expressed optimism that the

state government will engage all relevant technology solutions aimed at solving the various socio-economic issues in the state. The Governor expressed excitement that this is happening in the state following the participation of the Federal University of Technology Akure in the BIRDS programme to launch a CubeSat earlier this year.



The Governor added that his administration is not oblivious to the ability of satellite technology to help in getting the needed data for policymakers in engaging several intervention projects. He then called for more efforts to be made across the board to increase the participation of Africa in the space evolution. He henceforth declared the workshop opened.

### **DAY 1 KEYNOTES**

The director, Centre for Space Research and Applications, Federal University of Technology, Akure gave a keynote on behalf of the Director General, National Space Research and Development Agency (NASRDA). He spoke on Space Technologies for Self-Reliance and Sustainable Development; the way forward for Africa.





Benjamin Bonsu from All Nations University College, Ghana and Ghana Cubesat lead also spoke on the Utilization of Lean Satellite Development program to boost University Space Activities in Achieving Sustainable Development Goals in Africa.



Managing Director of the Nigerian Communications Satellite limited and Alumnus of the International Space University, Abimbola Alele gave a talk on connecting Africa using Satellite technologies; a case study of NIGCOMSAT. She shared various ways on how Nigeria's satellite is being deployed in various areas across the world in getting required satellite data for several intervention projects. According to her, the NigComSat-1R system provides domestic and international satellite services via a 2-way satellite communications service across West, Central, South East Africa; Europe and Asia.



Dr. Ganiyu Agbaje, the Director of the African Regional Centre or Space Science and Technology Education in English (ARCSSTEE), spoke on **equipping African Youths for the Future**. He highlighted the importance of capacity building in space sciences and technology to respond to societal challenges. He stated that Africa needs to “transform from a resource based to a knowledge based economy”.



Prof. Oludayo Olugbara, Dean of the Faculty of Information Technology and the Deputy Director of the Space Studies Centre, Durban University of Technology, South Africa gave a presentation to stimulate participants to gain better understanding of the concepts of space science towards its practical applications

The key notes set the scene for the workshop, providing thought provoking input on a variety of topics, including the chosen Working Group topics.



### **IGNITE SESSIONS**

For the ignite sessions, Chineye Vivian James spoke on how her team at Brainiacs is working on democratizing STEAM education in Nigeria, Kitan David charged participants on driving productivity with the aid of technology: The New Normal while Emmanuel Odunlade from DevDistrict gave an ignite talk on solving Africa-centric problems with the application of space technologies.

### **OPENING DINNER**

Finally, the day ended with the official opening dinner held at the University Multipurpose hall, thanks to the support of our host and sponsors.



During the dinner, the recipients of the SGAC travel grants were formally recognized. They are:

Uganda - Daniel K. Nanghaka  
Kenya – Nuria Ali  
Malawi - Christopher Luwanga  
Mauritius - Hansley Noruthun  
Ghana – Rebecca Berkoh-Oforiwaa



## DAY 2

### KEYNOTES

Prof. George Maeda from Kyushu Institute of Technology, one of the Directors of the BIRDS project gave a presentation about the BIRDS project and how it is helping developing nations to put Satellites in orbit. He emphasized on available opportunities and how other African Countries can take advantage of it.



Dr. Dahunsi of the Centre for Space Research and Applications, Federal University of Technology also spoke on the involvement of FUTA in the BIRDS project.



Professor Romanus Eze from the University of Nigeria, Nsukka emphasised that the government needs to do more to encourage the learning and interest level of astronomy in the country. He opined that the government can refurbish some radio dish assets in the country for use in assessing data that can be used in the study of some Space elements. He lamented the reality of the absence of a perfectly working major telescope in the country. With the level of passion, he had in his voice, most likely UNN will be the next University to launch a CubeSat.



CEO of Hantheon from USA, Jeff Demain also shared insights on how Africa can leverage the various opportunities and platforms to join the community of nations exploring space for beneficial purposes.



## PANEL DISCUSSION



The second day featured a panel discussion on “Career building and development”. Panelists were:

Jeff Demain (CEO, Hantheon),  
 Oluseye Soyode Johnson (African Technology Foundation),  
 Hansley Noruthun (NPoC Mauritius),  
 Maryanne Muriuki (NPoC Kenya) and

Funmi Erinfolami (Outgoing NPoC Nigeria)

Moderator: Ramasamy Venugopal

The panelists discussed the challenges of space careers and the startup ecosystem on the continent. They also shared their opinions on opportunities in space education and careers as well as SGAC's role and advantages in this context.

## **POST WORKSHOP ACTIVITIES**

### **CITY TOUR**

Post Workshop event included a city tour to Idanre. Rock engravings dating back to the Mesolithic period, have been discovered at Idanre. Also, the oldest Homo sapiens fossil ever found in West Africa thus far was discovered there, dating back to around 11,000 years ago



All Presentations are available [here](#)

All Pictures are available [here](#)

## **WORKING GROUPS**

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Working groups served as an integral part of the workshop with the overall aim of producing tangible deliverables resulting from robust discussions by the participants. The participants were divided into 4 groups where they discussed selected topical issues or themes that are relevant to the role of space science in society – these discussions were led by an Industry Mentors.

### **SPACE TECHNOLOGIES DEVELOPMENT IN AFRICA**

Objectives:

- Discuss how African countries can develop space technology and programs
- How to build the capacity to sustain the programs and conditions?
- How to launch own satellites from African Soil?

### **PROBLEMS**

- Limited funding to pursue.
- Limited/No mentorship in the region.
- There is no motivation to build capacity.
- Inadequate/Lack of essentials to build the Individual Capacity

### **RECOMMENDATIONS**

- School Outreach to develop Space clubs to introduce space at early levels of learning
- Need to take challenges to adopt and implement these technologies in Africa. An example is the use of Satellite imagery in Geological sector.
- There is a need to relate the fundamental challenges to the space technologies. “Space helps to think out of the box”. The importance and relevance of Space Technologies has to be used to outreach to the communities.
- Create awareness to both Private and Government Sector and not limit the knowledge to Academia.
- There is a need to mandate large companies to invest in Research



### **AFRICAN SPACE POLICY**

This project group featured a Member of the Federal House of Representative who was representing the House Committee chairman on Science and Technology.

- What are the main challenges from a policy perspective?
- What is the role of an organization such as SGAC in the African space programme?
- Human capacity and skill gap?

### **RECOMMENDATION**

**Funding:** Funding is very important

**Awareness creation:** When it comes to our representative in African Union (AU), Creating awareness program like (orientation program to primary, secondary & tertiary institution)

The issue of sustainability is a major issue, project being abandoned without completing them.

There should be a form of correlation with the policy implementation and we should employ people who are capable

In the near future, countries might tend to pull out from the policy if the law or policy guiding them is not strong enough in regards to space association policy. Issue of ideological differences of countries pulling out from the policy.

Organ of the AU get their funding from the body.

You shouldn't compete rather think of a way forward  
Africa should come out with our own strategy, perspective.  
We should find solution to our local needs and we should be able to develop ourselves.  
Africa should come out with our own strategy.

#### ISSUE OF FUNDING (Recommendation)

Some space program is funded from outside  
Funding is what make space policy and program sustainable  
Persuasion  
Awareness strategy in terms of education program and outreach awareness to high figure personality (i.e. politicians)  
Emotions  
There should be enabling environment in term of re-orientation and showing the relevance of space to our people.  
We can bring in private sector

#### AWARENESS CREATION

1. Using comic books
2. Creating a movie
3. Having workshop with the politicians (policy makers)
4. Mass media awareness
5. Reach out to the children, politicians and the teachers
6. Expand your awareness to both rural and urban area

#### SUSTAINABILITY

- I. Using the young people - How can we involve (youth) in Africa Space Programme
  1. Forming a committee and work together as a team.
  2. Mobilise and pressurize the government to pass bill on space policy
  3. Writing of article to the top government officials
  4. What do you need from African Union to contribute to Africa Space Program?
    1. Scholarship program for space related field for Africa Space Program.
    2. Economic prospect
    3. Commitment and continuity
    4. Research facilities and laboratories

#### RECOMMENDATION TO QUESTION II

1. We can join the SGAC group
2. We can also speak with their professionals in SGAC

3. We could have the MOU
  4. Partnership (follow the activity of SGAC)
- {SGAC} to the AU Chairman)
1. Young generation to power African policy union agenda till (2063)
  2. Using a concurrent engineering method
  3. SGAC can bring people together those with intellectual ability.
  4. SGAC should set up a program to test people who really have the skill of ability.

Human capacity and skill gap

Recommendation on how do we bridge the gap

1. We talk about space capability (Astronomy, skill acquisition)
2. Knowing where you are as a country and finding a proper solution to it
3. Student base in Africa should be given opportunity to participate in training and overseas program.
4. Circulation of knowledge should be done by SGAC
5. We talk about project team. i.e. distributed research, concurrent engineering
6. Facilitate competition
7. Organising of skill acquisition e.g. seminar training
8. Organisation should come together (i.e. different organisation)



## **ROLES OF STEAM IN DEVELOPING THE SPACE INDUSTRY IN AFRICA**

This working group focused on how to improve STEAM Education as a bottom up approach to space manpower development in Africa. The working group discussions were centered around educating the educators and provision of the right resources for training. Participants agreed that the teaching aids, materials and resources available are not adequate and sought to identify suitable suggestions to help make teaching easier for the teachers and learning more fun, for the students.

### **RECOMMENDATIONS**

- Creation of communities which can handle STEAM campaigns and programs in their localities.
- Use of special groups like the NYSC in Nigeria to teach STEAM.
- Development of better learning tools to help the students learn in a more interesting and intuitive way. For example, participants from the Dev's District Design and Innovation hub demonstrated an Augmented reality based mobile app being built by the hub to teach kids more about space.
- Sponsorship of Competitions and Science fairs to build a competitive atmosphere which encourages learning by doing and encourage students and schools to allow the growth of STEAM education in Africa.
- Campaigns and events to train teachers should also be created to encourage STEAM education.



## **SPACE IN DRIVING THE AFRICAN ECONOMY/AEROSPACE START UP**

### Challenges Identified:

1. Lack of Mentors
2. Unfavorable government policies
3. Inadequate knowledge about the possibilities embedded in Space
4. Space related skills dearth
5. Lack of funding and support space enthusiast and entrepreneurship.
6. The community of space enthusiasts is still not well developed.

### Recommendations:

1. More effort needs to be put in to developing the community of space enthusiasts in Africa. More events like the AF-SGW should be organized. Participants at the workshop and members of the SGAC should also be encouraged to organize Space related meetups and events in their immediate environment.
2. Similar to point 1, Space clubs and other space related societies should be created in primary and secondary schools, so student can learn from a tender age how the Importance of Space science and interest can be sparked in them to pursue a career along that line.
3. With communities coming together it becomes easier to reach out to government and lobby for policy changes that could facilitate the developments of aerospace startups.
4. Support from Government in facilitating training and development trips for citizens will help develop the needed skill pool and thus facilitate the growth of the startups and the nation's economy.
5. Events like hackathons, that could stimulate the mind to come up with space based solutions to problems in Africa should be organized. There should be plans to support startups that emerge from this competition to go from idea to product.



## COMMENTS FROM DELEGATES

“In Mauritius, we are working towards getting more kids involved in the early stage through the STEAM projects. We are also considering working with technologies that are specific to the issues in the country. Collaboration is key, as we continue on this journey of capacity building, infrastructure and see how we can further collaborate and research into areas of interest” – Hansley Noruthun (NPOc- Mauritius).

“For the continent, we need to look beyond the space programme to how we can advance space satellites to go beyond just sensing to processing more of the data at the satellite level. We can engage in building more smart satellites that can turn raw data to usable information as close to where the data is collected as possible. For example, a farmer that needs information (processed satellite data) on the spread of pests or diseases, sometimes temperature and climate issues, it will be easier for him to work with a ready-made processed information than raw data – This works for the academia.” – Jeff Demain (CEO Hantheon)

The main reason I came over is because I am interested in understanding the aerospace industry in Africa – Current opportunities and so on. My working group focused on how to know the value chains in the industry and dissected the market product fit; understanding the economic value to the continent and by extension—the people – Christopher Luwanga, Malawi

“The workshop was a learning experience for us. It is very good. It brought some of the African countries together and revealed some insights of how strong we can be if we unite and work together to discuss our problems and challenges, with a view to finding solutions” - Nebiyat(Ethopia)

## MEDIA COVERAGES

Space News - <http://spacenews.com/event/african-space-generation-workshop-af-sgw/>

African Brains - <http://africanbrains.net/2017/08/29/africas-first-space-generation-workshop-coming-nigeria/>

Space Awareness - <http://www.space-awareness.org/en/news/space-awareness-endorses-first-african-space-generation-workshop/>

All Events - <http://www.allevvents.ng/en/events/1st-african-space-generation-workshop-401/>

PR - <https://www.pr.com/press-release/727034>

Campus Lit - <https://www.campuslit.com/2017/11/17/futa-hosts-1st-african-space-generation-workshop-making-africa-the-next-frontier-in-the-global-space-industry/>

Galason - <http://galason.com.ng/futa-hosts-1st-african-space-generation-workshop-see-details/>

SatNews - <http://www.satnews.com/story.php?number=1485283921>

Evensi - <https://www.evensi.com/africa-space-generation-workshop/230911799>

Scifest Africa - <http://www.scifest.org.za/index.php>

FUTAToday - <http://www.futatoday.com/2017/12/futa-hosts-first-african-space.html>

Xumalo - <https://zumalo.com/epic/nigeria-hosts-1st-african-space-generation-workshop/>

Xumalo - <https://zumalo.com/tech-events/akure-hosts-african-space-generation-workshop-af-sgw>



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