United Nations
OOSA

28th Workshop on Space technology
for Socio-Economic Benefits:
"Space Exploration – a source of inspiration,
innovation and discovery"

SPACE GENERATION
ADVISORY COUNCIL

UN /IAF Workshop
Space Exploration – SGAC African Space Education Program

SGAC Origins

SPACE GENERATION ADVISORY COUNCIL

SGAC is a global ***non-governmental***, ***non-profit*** 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.

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

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

SGAC Purpose

SPACE GENERATION ADVISORY COUNCIL

- Create a global volunteer base of university students and young professionals in the space sector who have a passion for making a difference in the space sector and a commitment to action
- Connect them to peers and top space professionals from various organisations
- Give the next generation of space sector leadership opportunities and a voice in global space policy

SGAC Network

SPACE GENERATION ADVISORY COUNCIL

6 Regions, 168 Countries, 15,000+ Members

SGAC The Five Pillars

SPACE GENERATION ADVISORY COUNCIL

- Events
- Project Groups
- Professional Development
- Scholarships
- UN-related Activities

SGAC Project Groups

SPACE GENERATION ADVISORY COUNCIL

Space Safety and Sustainability

Near Earth Objects

Space Law and Policy

Space Exploration

Space and Cybersecurity

Commercial Space

Space Medicine and Life Sciences

Small Satellites

Space Technologies for Earth Applications

Ethics and Human Rights

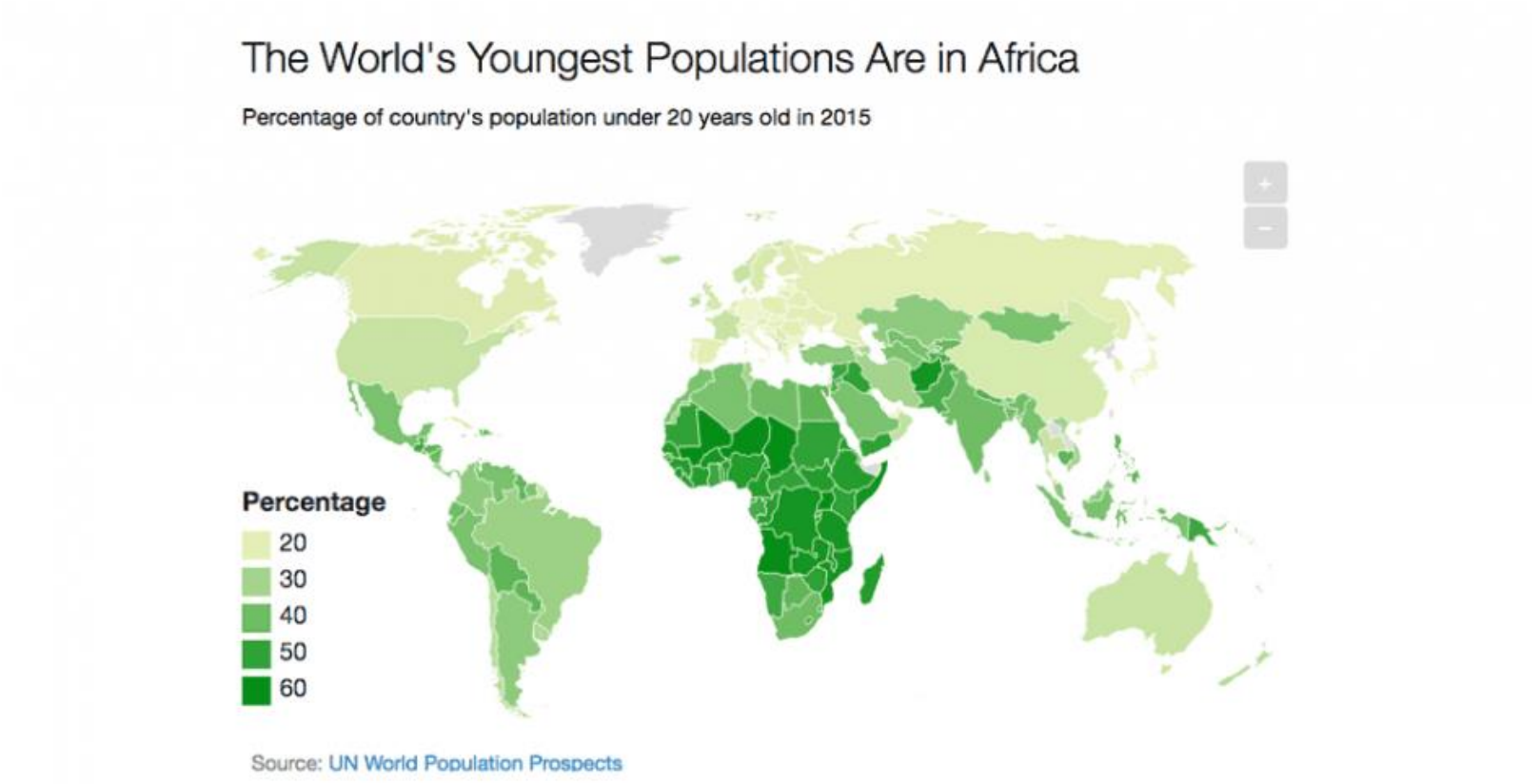
https://spacegeneration.org/projects

SPACE GENERATION
ADVISORY COUNCIL

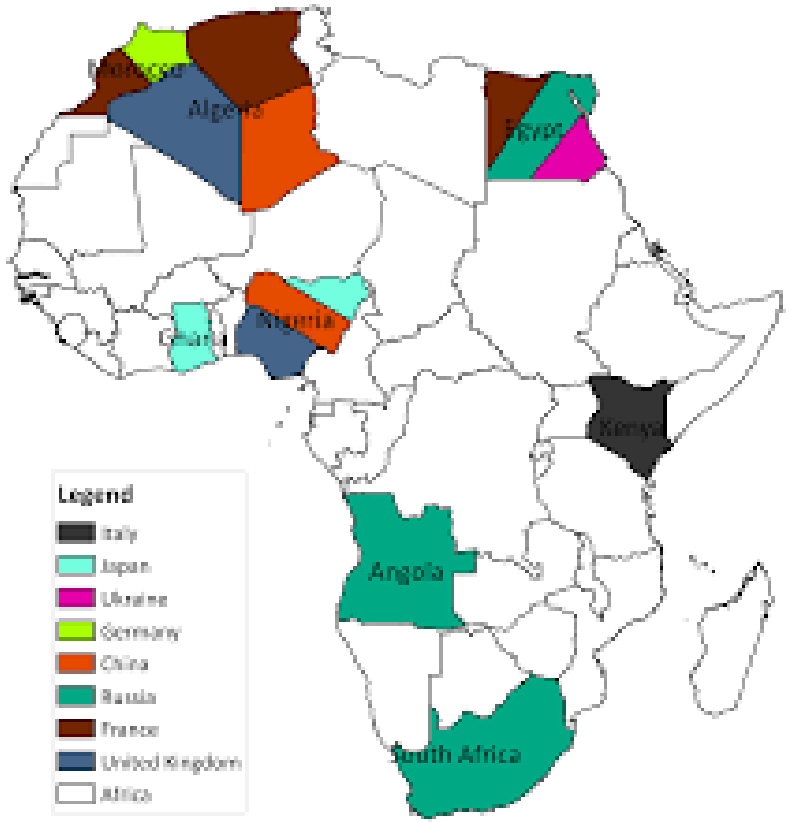
Africa Space Education Program

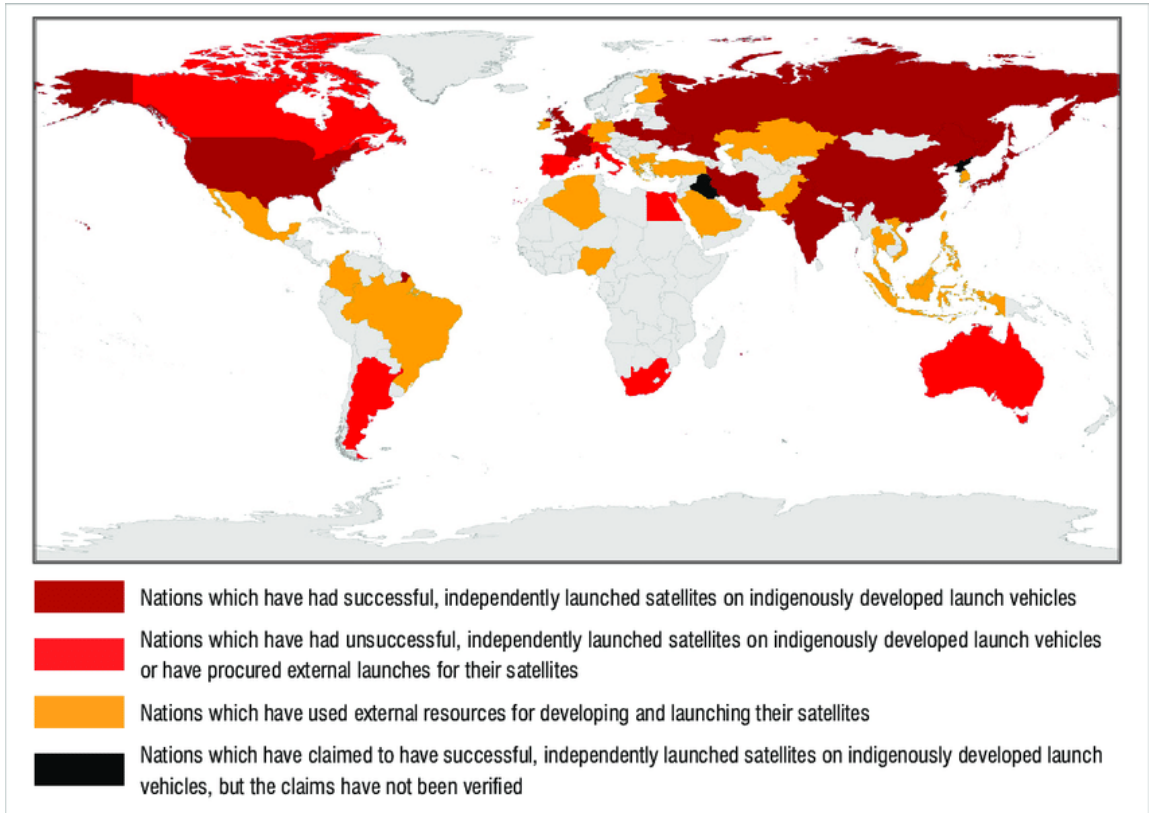
Why Investing in Africa ?

Huge Human resources



African Raw Space Market





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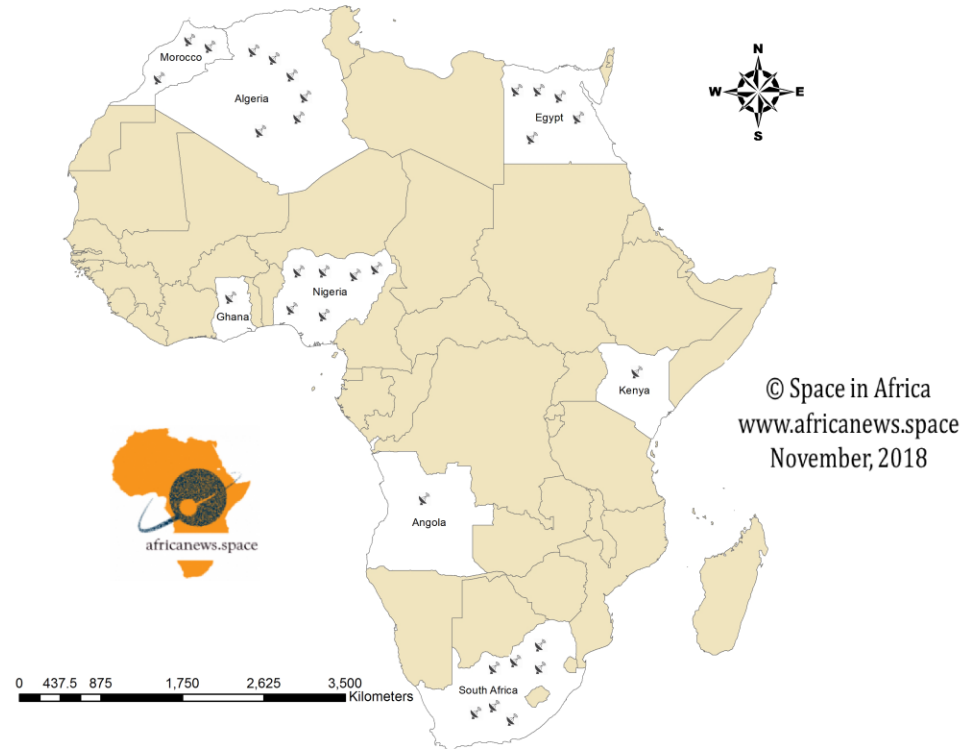

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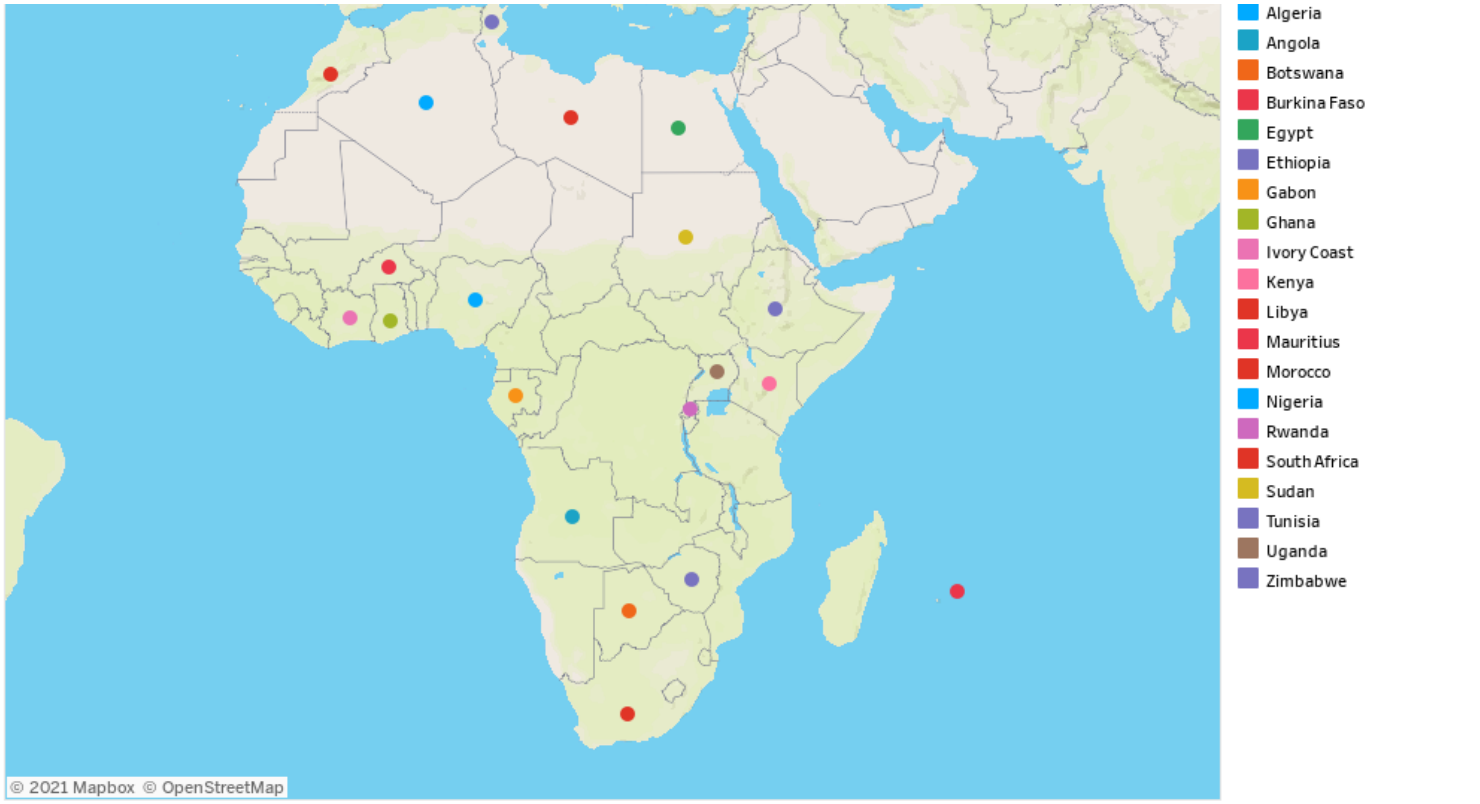
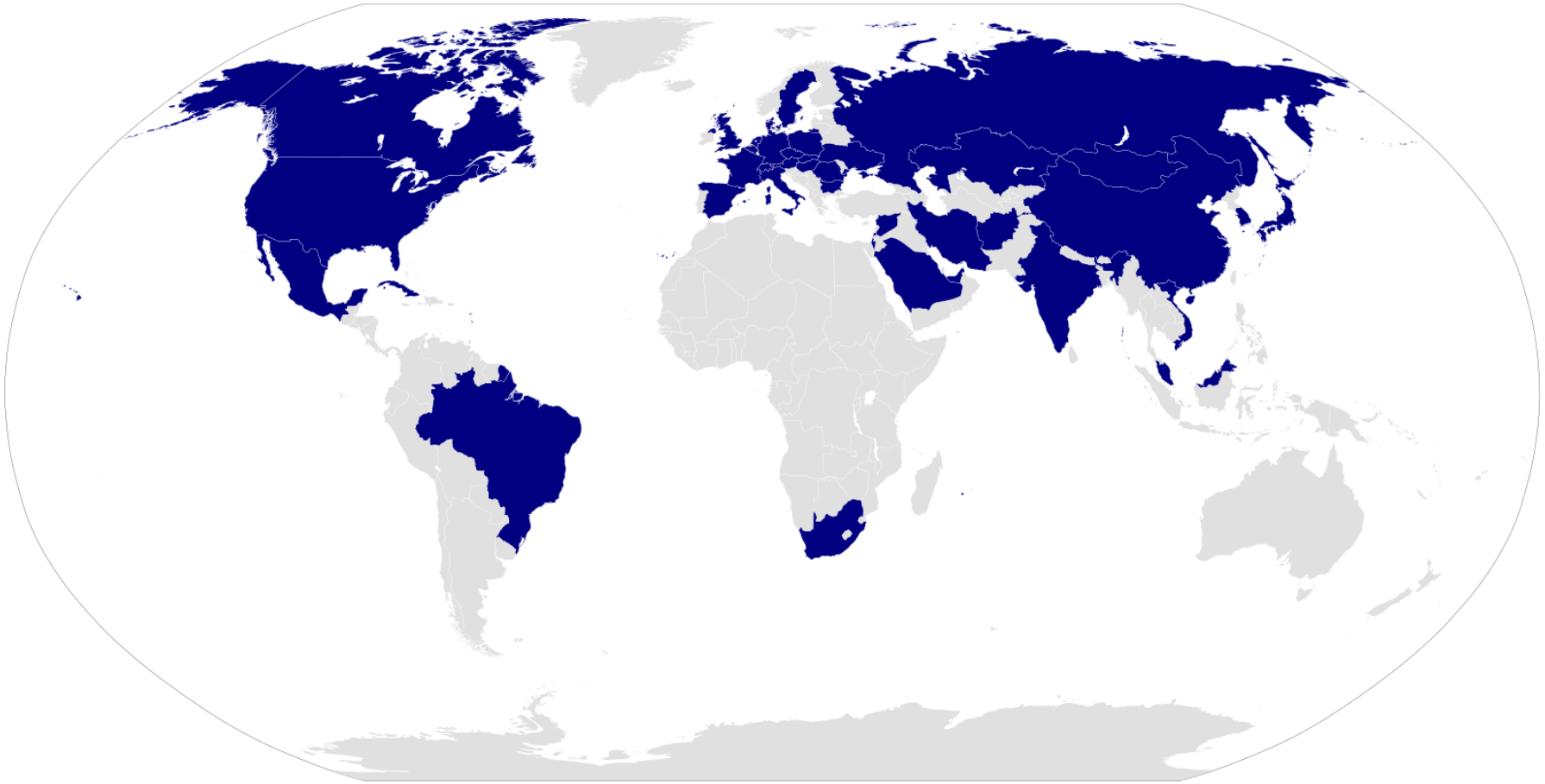
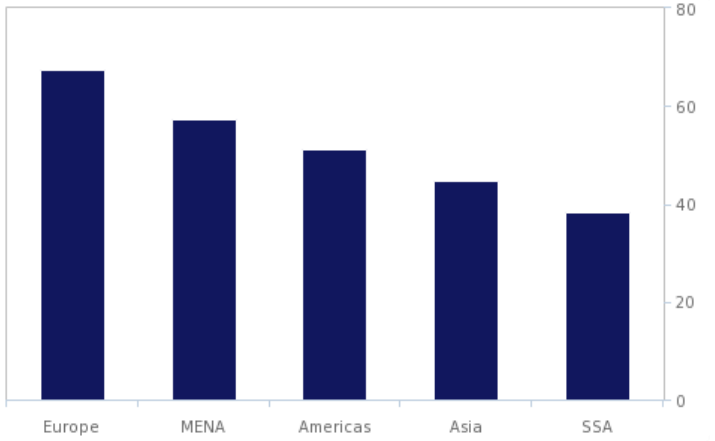
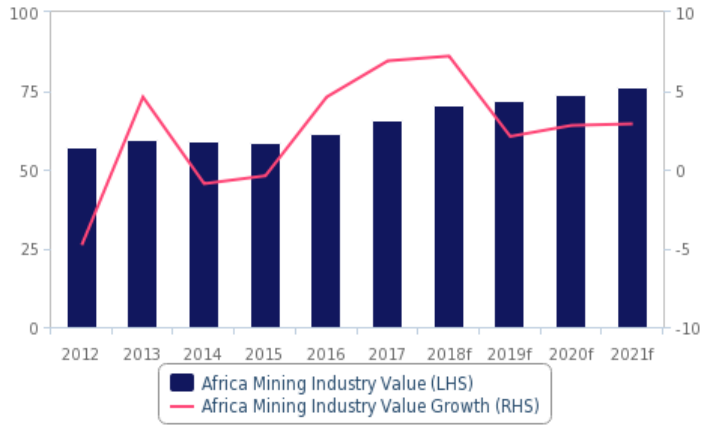
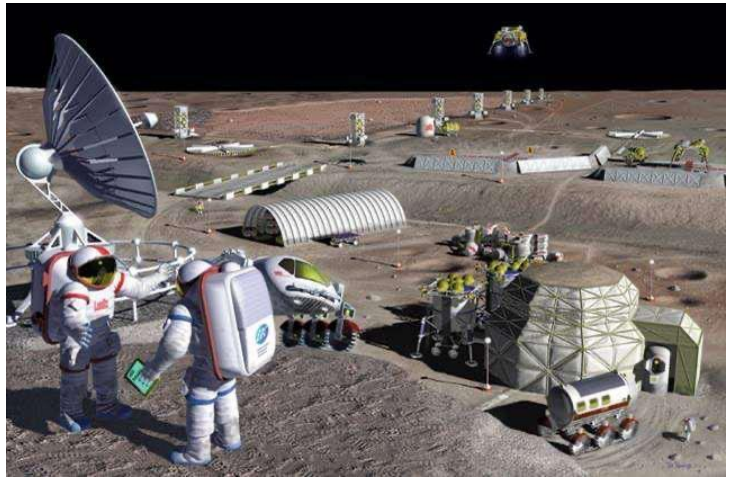


Astronaut Nationalities









Socio-economic opportunities and challenges

Issues to solve

- Absence of Space Strategy
- No Space Education Program
- Absence of Space Exploration projects
- Limitation to Space Awareness
- Lack of support on the space policies
- Communication
- Costs
- Poor Documentations

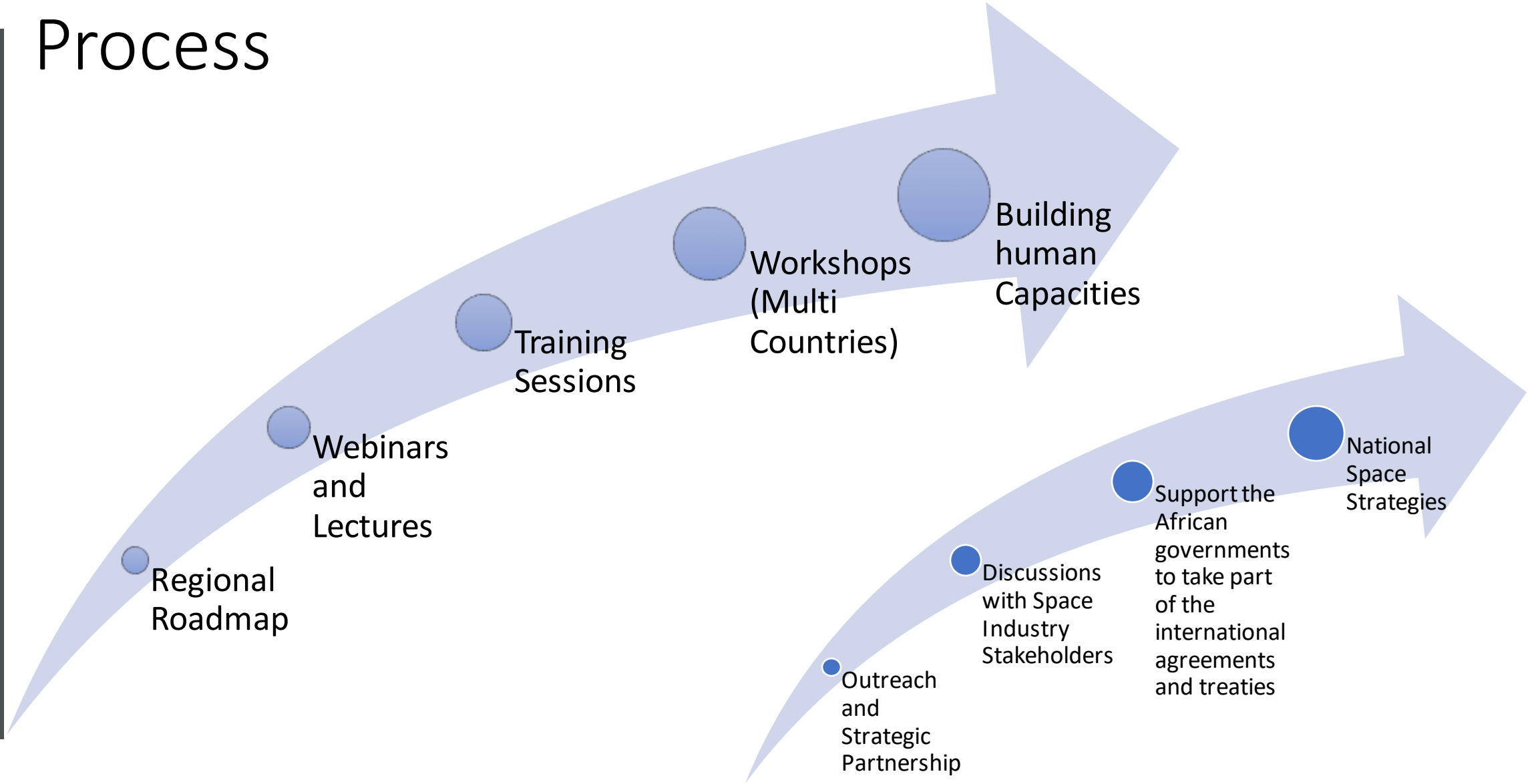
- **Clear Roadmap**
- **Open Source Space Education Program**
- **Participation to Space Exploration research**
- **Implicated society**
- **Agencies and organizations supported - the international treaties**
- **Communication tools**
- **Adapted Language**
- **Documentation**

Space Exploration Education - Africa

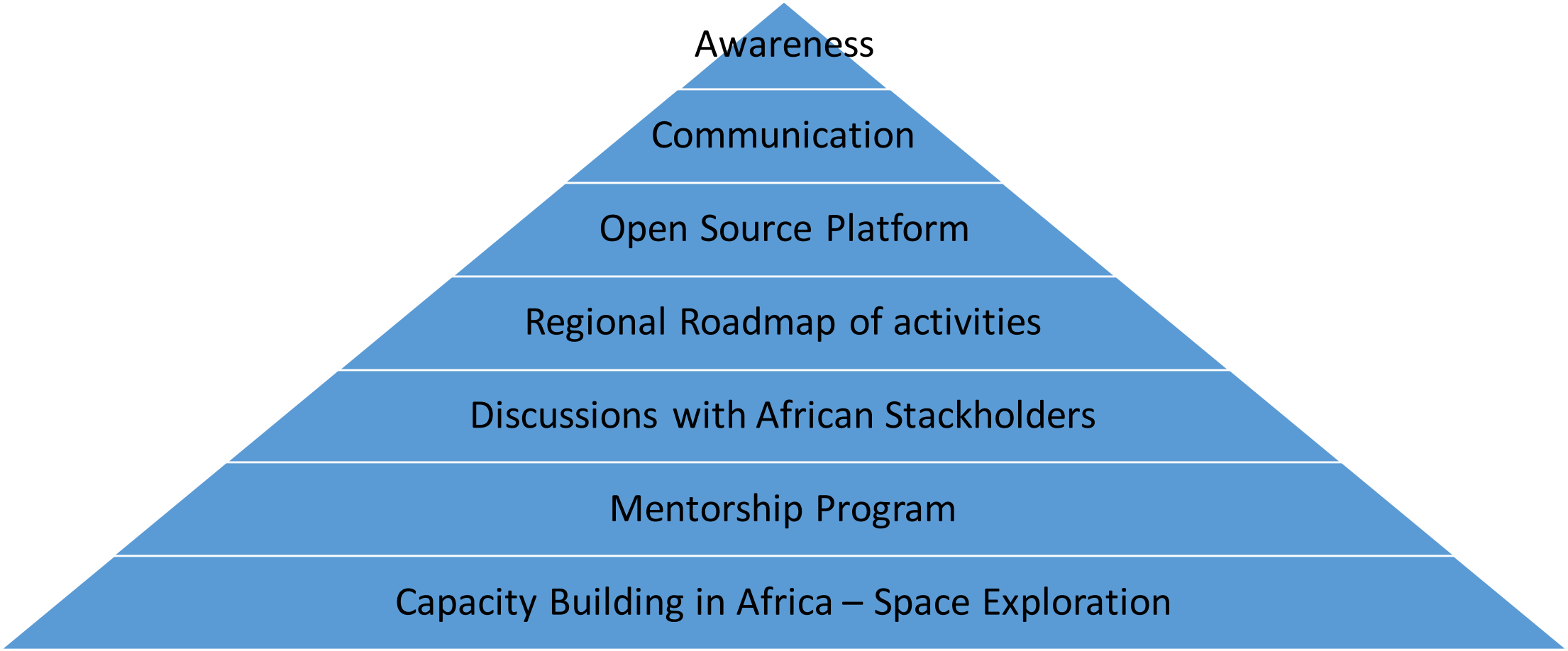
Purpose

- Educate and mentor the African young professionals and students on space and space exploration
- Support the African entities to take part of the space exploration missions and international treaties

Process


Regional Roadmap
Webinars and Lectures
Training Sessions
Workshops (Multi Countries)
Building human Capacities
Outreach and Strategic Partnership
Discussions with Space Industry Stakeholders
Support the African governments to take part of the international agreements and treaties
National Space Strategies

Purpose of the program



Support of the Stockholders

1- Drafting the National Space Stategies and Involve Space Exploration in their goals

2- Support african stackeholders to take part of the international treaties

Space Law and Policy

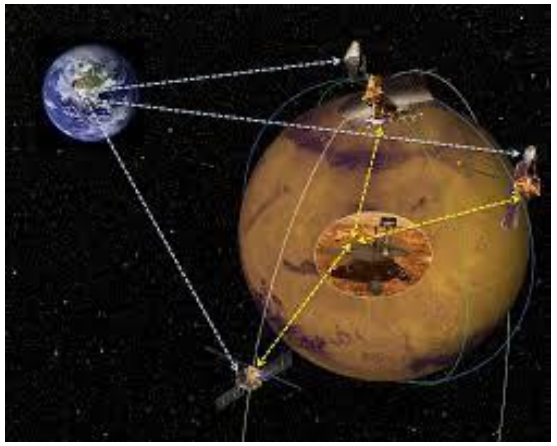
(1) Registration of Space Objects

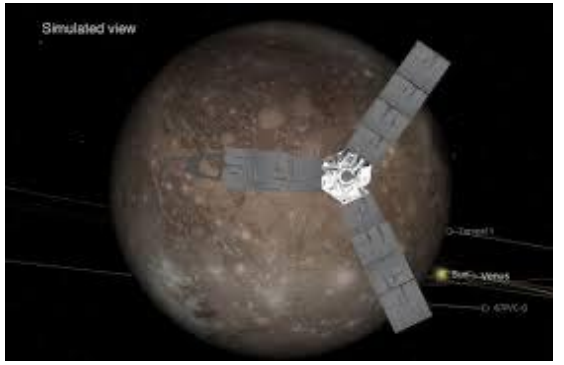
- Sustainable environment in space to conduct public and private activities.
- Support the African region to join for the Registration Convention

Space Law and Policy

(2) Utilization of space data

- Access full, and open sharing of scientific data
- The entire African society can benefit from the Space missions of exploration.





Space Law and Policy

(3) Space Resources

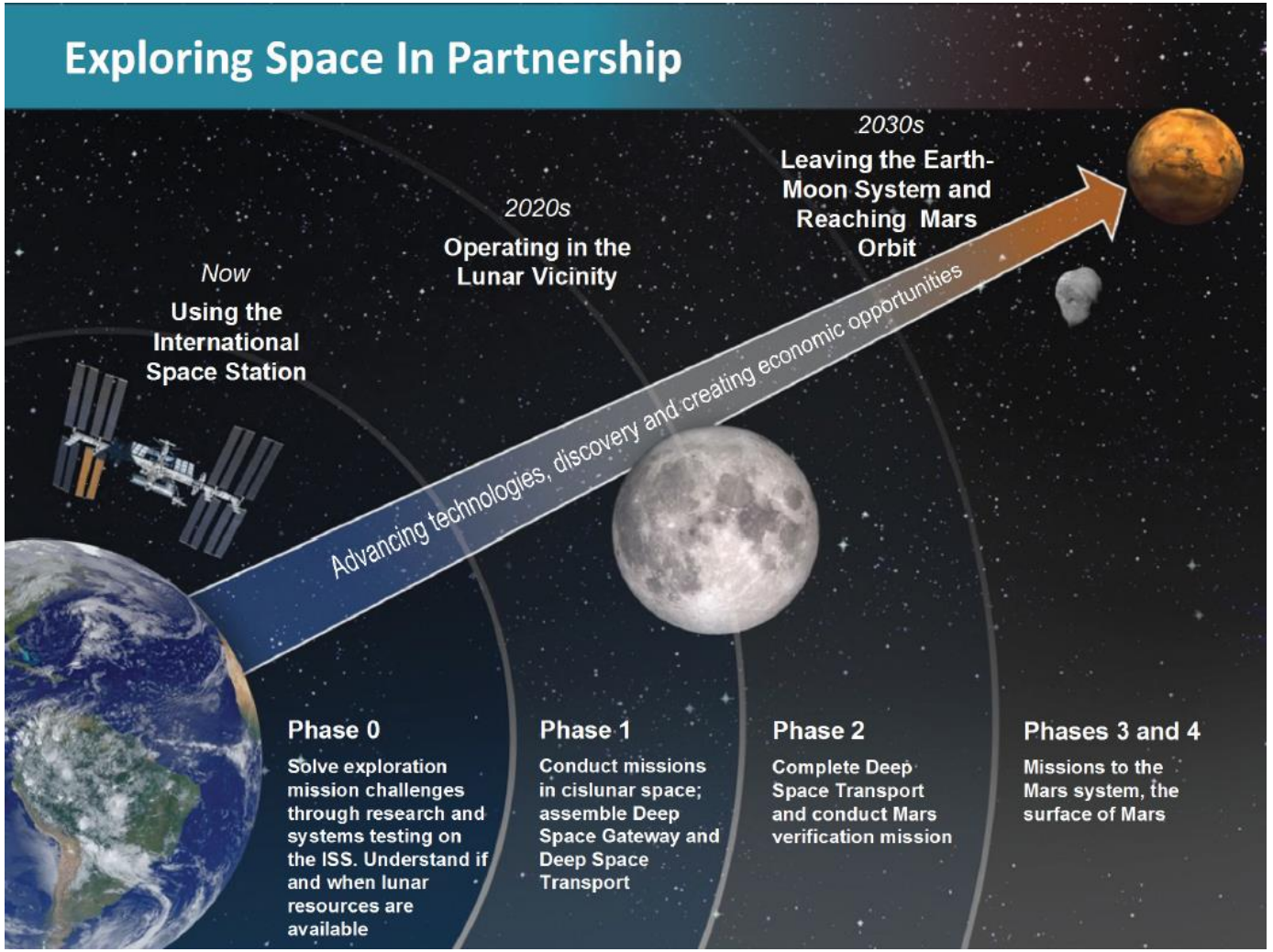
- Utilize resources on the Moon, Mars, and asteroids to support safe and sustainable space exploration and development research
- Outer Space Treaty, Articles II, VI, and XI.

Space Law and Policy

(4) Orbital Debris and Spacecraft Disposal

- Safe and sustainable environment in space is critical for both public and private activities.
- Space Debris Mitigation Guidelines of the United Nations Committee on the Peaceful Uses of Outer Space.

Education and Participation in international Projects

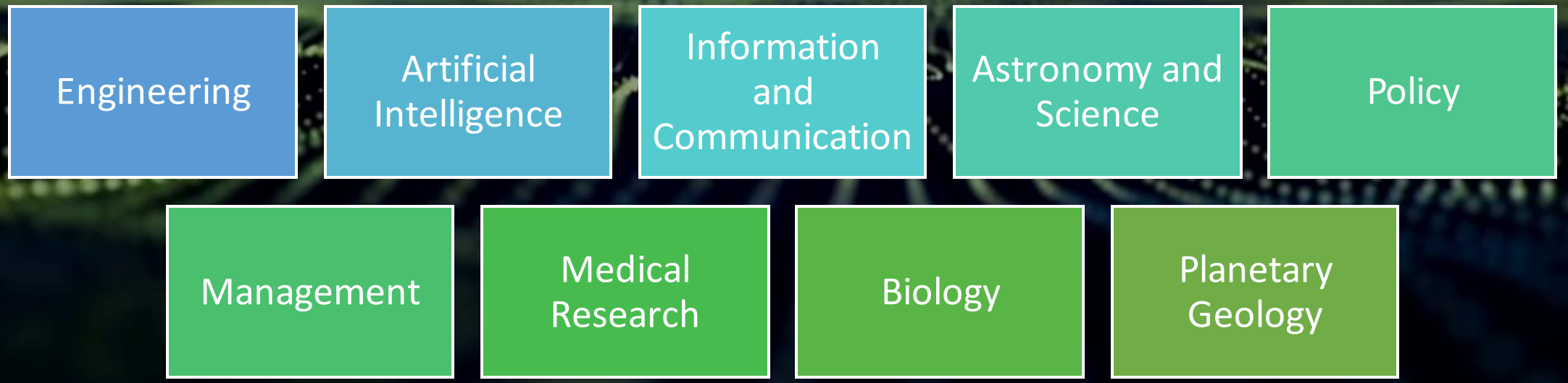


Education methods

Main Regional Axes

- Space Exploration
- Satellite Communication
- Navigation and positioning
- Earth Observation

SGAC Africa Education Platform



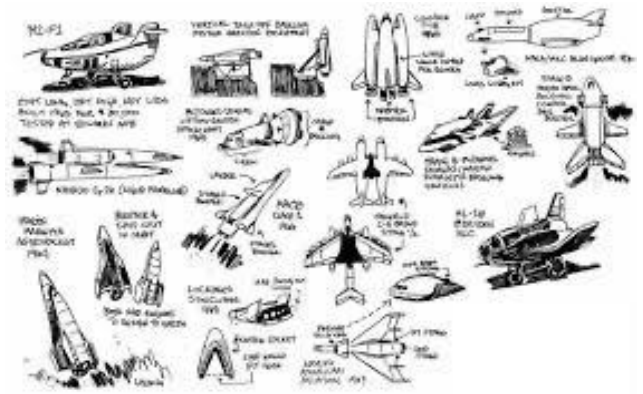
Space Generation Workshop – Ghana

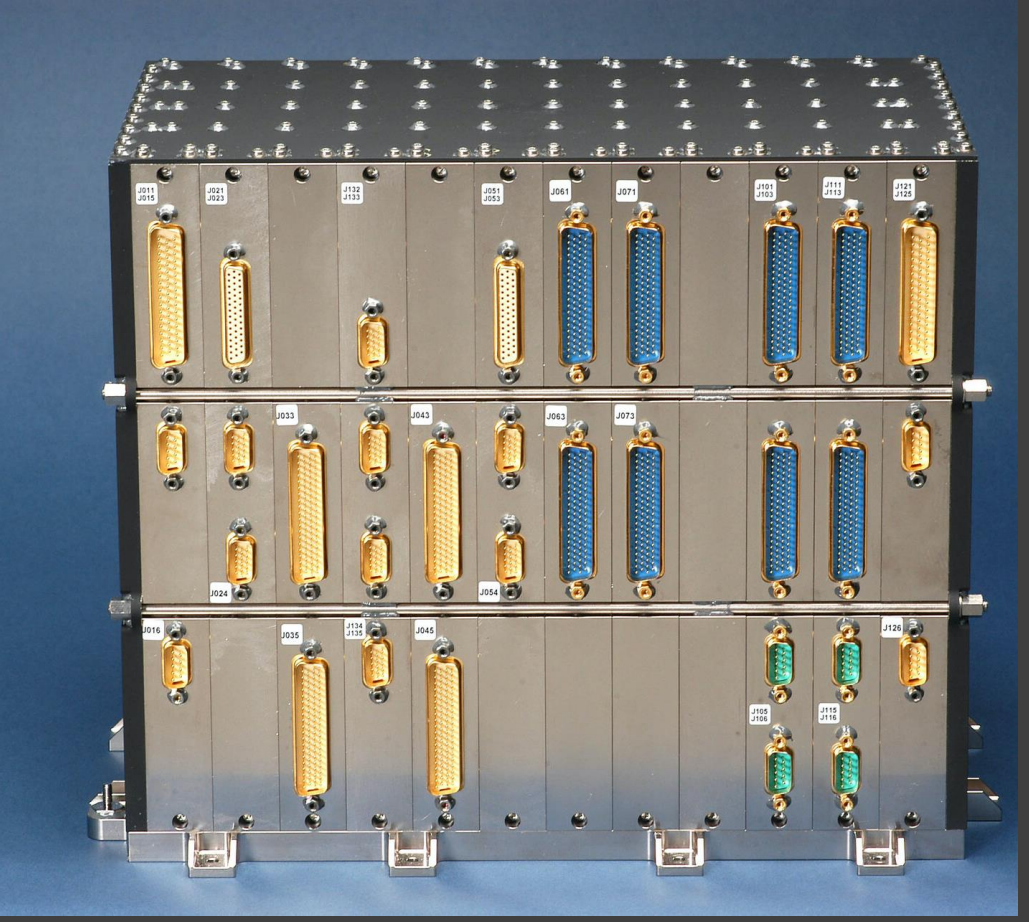
Africa Space Generation Workshop - Ethiopia

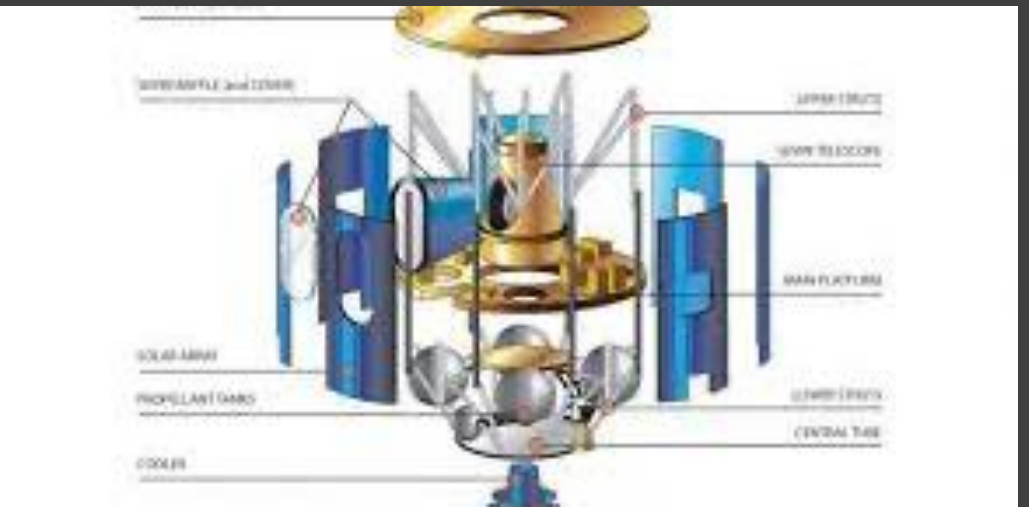
Space Engineering

- Earth Observation Satellites
- Space Architecture
- Navigation and Positioning Satellites
- Satellite Communication
- Cubesat Design
- Space Mission analysis and design
- Aerodynamics
- Mechanics of Flight
- Aircraft design
- Heat Transfer
- Airframe design and flight dynamics
- Space Systems
- Softwares and applications

Space Architecture







Systems Design Courses

Information and Communication

- Big Data
- Satellite Communication
- Upstream and Downstream
- Cybersecurity Algorithms
- Quantum Technology

Space Policy

- Space Governance
- International Treaties
- OuterSpace Legal Landscape
- Space Traffic Management
- Commercial human Spaceflight
- National Space Policy
- Lunar Activities

Entreupreunarship

- Commercial Space Economy
- Space Market in Emerging Countries
- Project Management
- Space Business Opportunities and Start-Ups
- Investment in Space Exploration
- Space Market Infrastructre
- Private Public Partnership

Space Biology

- Overview of Plant Biology, Microbiology, Cell and Molecular Biology, Devlopmental Reproductive and Evolutionary biology
- Transfer of knowledge and technology to the understanding of life on Earth
- Cutting-edge biological technologies to facilitate spaceflight research
- Integrated physiological models for biology in Space
- Mechanisms and Network governing biological processes in the space environement
- How biological systems repond, acclimate and adapt to the space environment

Space Medecine

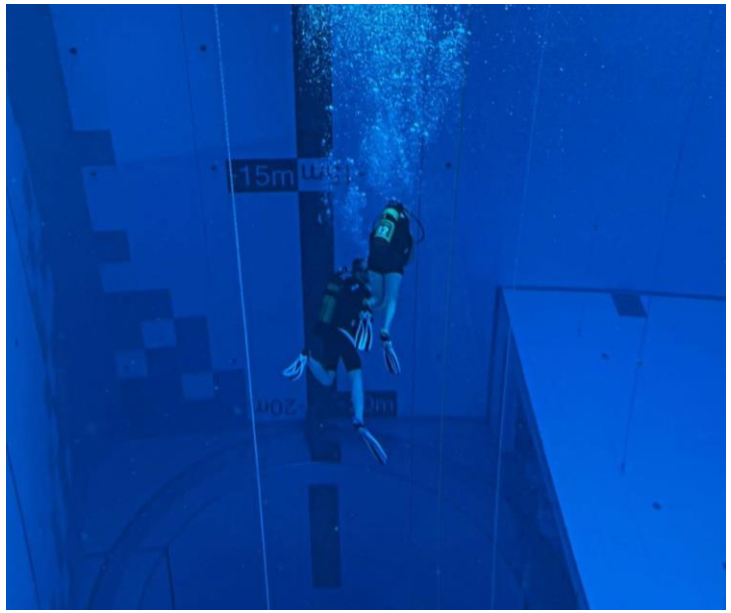
- Identification and evaluation of medical risks (including radiation) associated with Low Earth Orbit and Deep Space vehicles/habitats.
- Optimization of in-flight exercise countermeasures (for ISS and Exploration).
- Evaluation and optimization of non-exercise management of astronaut health.
- Identification, development, validation and implementation of medical technologies and strategies to mitigate medical risks associated with spaceflight.
- Optimization of post-flight rehabilitation strategies.
- Evaluation of the suitability and applicability of ground-based analogues of micro- and hypo gravity

Projects

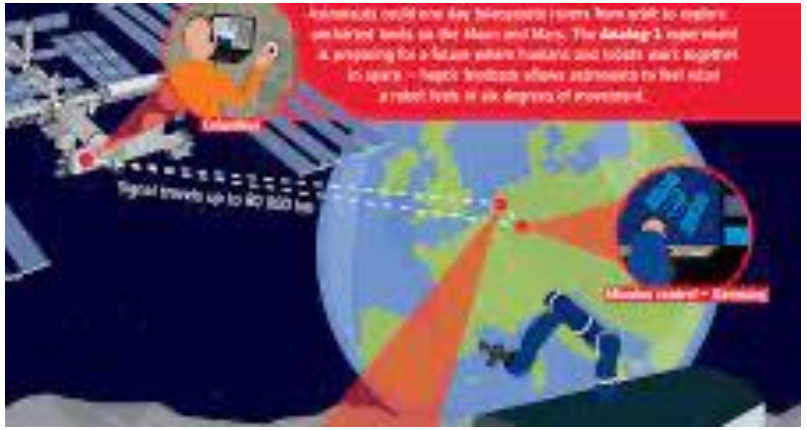

HUMBISAT
1ST PAN-AFRICAN NANOSATELLITE

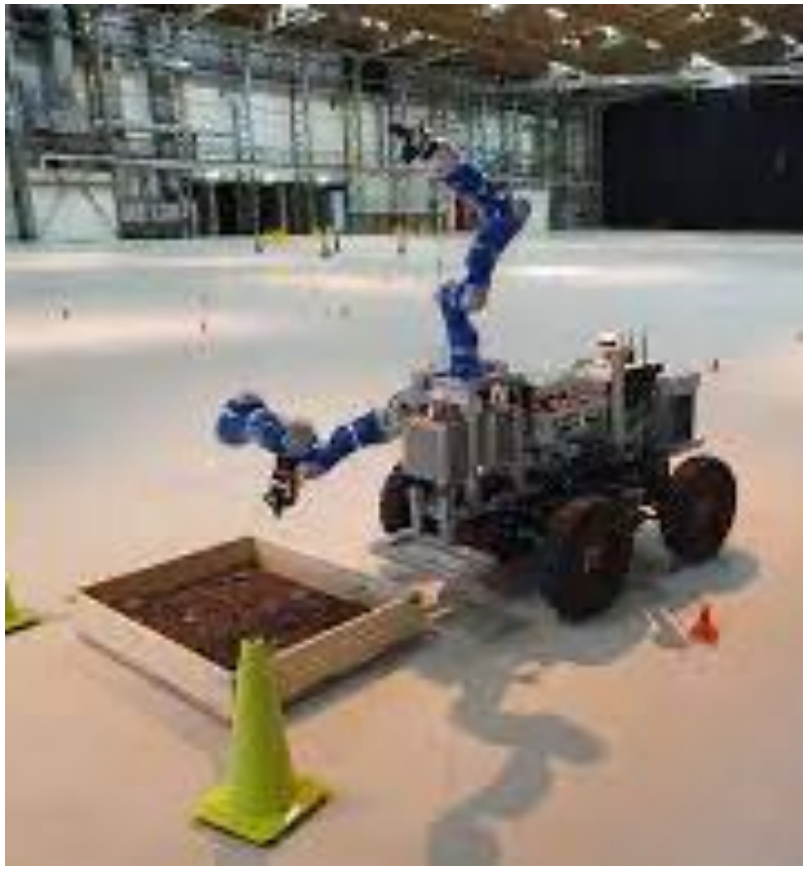

HumbiSat is a Nano-Satellite development and Capacity building program that aims at developing in 3 parts iterative process.


DO YOU
CODE
WELL
?
/ Humbisat



Trainings





ANALOG Missions

Bigger Scale

Young Africans will have access to Open-source Space Courses and projects

Awareness raised – Creation of the new African Space Society

Diverse Careers in space – Space Exploration

Mentorship

Discussions with stakeholders

National Space Strategy – Involvement in the Space Exploration Projects


5TH
AFRICAN
SPACE
GENERATION
WORKSHOP
SOUTH AFRICA
2021

Thank you

SGAC Photo Gallery

Space Generation Advisory Council

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