Positioning the UNOOSA Regional Centres for Global Partnership in Space Exploration and Innovation

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Space Exploration & Innovation

- Discovery and exploration of celestial structures in outer space
  - Astronomers - telescopes
  - Physical exploration
    - Unmanned Robotic space probes and
    - Human spaceflight
- Rationales
  - Advancing scientific research ***
  - National prestige
  - Uniting different nations. ***
  - Ensuring the future survival of humanity, and ***
  - Developing military and strategic advantages against other countries

Soviet Union's Sputnik 1; 4 October 1957

American Apollo 11 mission on 20 July 1969
From Space Race to Space Cooperation

1st Space Station - **Salyut-1 (1971)**  

**International Space Station (ISS)**  
-1998+  
Innovation within a global context—numerous primary and secondary partnerships of countries across the globe

U.S. & Russian astronauts to board Suyuz -FG to ISS  
(March 2019)
Exploring Mars - ‘The Red Planet’

Source: NASA
NanoSatellites Revolution - Making Access to Space Affordable

NanoSatellites: CubeSats, PocketQubes, TubeSats, SunCubes, Picosatellites,

- Affordable access to Space for University researchers
- Low Cost - commercial electronic parts
- Access to space for developing countries
- Accessible to companies of all types and sizes
- Democratise the Space race

Miniature fluxgate magnetometer

Katie Willis (2016) - University of Alberta

Ex-Alta 1 CubeSat

Source: AlenSpace (2019)
The Space is our Global Commons

Our Common Challenge:

• Sustaining the Planet

SDGs (2015)

"People Partnering for Peace and Prosperity on the Planet"
- Albert Inima (2015)
Current Global Agenda to Sustain the Planet Earth

Global Goals: 2015 -2030

- Sustainable Development Goals
- Sendai Framework for Risk Reduction
- Paris Agreement on Climate Change

Solutions

- Highly Qualified Space Scientists and Application developers in National Institutions;
- Space Policy and Space Law Experts

Keys

- Capacity Building in SST
  - To develop Competencies to efficiently respond to societal Challenges
- SDG Goal 17: Partnership
  - ‘To create a world where decisions and actions are informed by coordinated, comprehensive and sustained Earth observations’ (WSSD, 2000)
Common Challenges to the Planet Earth

Suleja, NIGERIA, 2016

Wildfires
Source: ICSMD (2019)

Geomagnetic Storm
Source: NOAA

Example of an Aurora Borealis or Northern Lights. Source: U.S. Air Force

African Regional Centre for Space Science and Technology Education in English
Obafemi Awolowo University, Ile-Ife, Nigeria
Common Challenges to the Planet Earth

Tsunami - Rikuzentakata, Japan (2011)
Source: National Geographic (2019)
Impediments to the Global Agenda Solutions

Natural disaster subgroup classification - CRED (2016)
Impediments to the Global Agenda Solutions

Occurrence of natural disasters per sub-continent in 2016

CRED (2016)
Impediments to the Global Agenda Solutions

Conflicts around the World

The World's Conflicts
United Nations General Assembly Resolutions

37/90 of 10th December 1982 - UNISPACE ’82
‘That the United Nations Office for Outer Space Affairs (UNOOSA), through its Programme on Space Applications should focus its attention, interalia, on building of indigenous capacities for the development and utilization of Space Science and Technology, particularly at the local level”

45/72 of 11 December, 1990 - UN-COPUOS
’That the UN should lead, with the active support of its specialized agencies and other international organisations, an international effort to establish Centres for Space Science and Technology Education at the regional level in existing national/regional educational institutions in the developing countries”

A/RES/50/27, of 6 December 1995 - UN-COPUOS
‘That the Regional Centres for Space Science and Technology Education “be established on the basis of affiliation to the United Nations as early as possible and that such affiliation would provide the Centres with the necessary recognition and would strengthen the possibilities of attracting donors and of establishing academic relationships with national and international space-related institutions”
Regional Centres - Mission/Mandate

- Build Indigenous Capacities in SST Applications
- Create Awareness, Sentitize and Inspire students, lawmakers & the general public on Space;
- Serve as an Educational, Research and Training institution capable of high attainment in SST;
  - Remote Sensing/GIS
  - Satellite Communication
  - Satellite Meteorology/Global Climate
  - Basic Space and Atmospheric Science
  - Global Navigation Satellite Systems (GNSS)

- Boost the growth and capacities of the participating countries.
- Enhance participating countries knowledge, understanding and skills in SST applications
Post Graduate Diploma (PGD) Programme

Curriculum Under Development:
- Satellite Engineering
- Microgravity studies

Distribution by Course Options:
- Remote Sensing/GIS: 59%
- Satellite Meteorology: 3%
- Satellite Communications: 30%
- GNSS: 3%
- Basic Space Science/Atmospheric Physics: 5%

Annual Distribution (2001-2018)

Total number of graduates: 501
### MTech. Programme

#### Course Distribution

<table>
<thead>
<tr>
<th>Session</th>
<th>RS/GIS</th>
<th>SAT COMM</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013/2014</td>
<td>7</td>
<td>11</td>
<td>18</td>
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<tr>
<td>2014/2015</td>
<td>15</td>
<td>2</td>
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<td>2015/2016</td>
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<td>2016/2017</td>
<td>13</td>
<td>7</td>
<td>20</td>
</tr>
<tr>
<td>2017/2018</td>
<td>14</td>
<td>6</td>
<td>20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>95</strong></td>
</tr>
</tbody>
</table>

*Annual Distribution of M. Tech Participants (2013 – 2018) by enrolment*
Centre’s New Facilities

New State-of-the-Art - Lecture Theatres

Smart LF Scanner (A0 Scanner)

HP Designer Jet T520 (A0 Plotter)
2017 Grant Won

Multi-scale Flood Monitoring and Assessment Services for West Africa (MiFMASS)
International Collaboration

EGNOS in Africa-JPO

EGNOS

GMES AND AFRICA

GROUP ON EARTH OBSERVATIONS

INTERNATIONAL COMMITTEE ON GLOBAL NAVIGATION SATELLITE SYSTEMS

EUMETSAT

SAMARA UNIVERSITY
Goal 17 Seeks to strengthen global partnerships to support and achieve the ambitious targets of the 2030 Agendas, bringing together national governments, the international community, civil society, the private sector and other actors.

Capacity Building:
17.9 Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the sustainable development goals, including through North-South, South-South and triangular cooperation.
Technology:

17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism.

17.7 Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed.

17.8 Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology.
Global Partnership - based on the four shared principles of effective development co-operation (Busan Partnership Agreement (S.Korea, 2011):

- Ownership of development priorities by developing countries
- Focus on results
- Inclusive development partnerships
- Transparency and accountability to each other

More than 160 countries and 50+ organisations
Positioning the UNOOSA Regional Centres for Global Partnership

<table>
<thead>
<tr>
<th>Centre</th>
<th>Year</th>
<th>Commission</th>
<th># Countries</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>(1995)</td>
<td>(ESCAP)</td>
<td>16 Countries</td>
<td>2,129,187,125</td>
</tr>
<tr>
<td>Morocco</td>
<td>(1998)</td>
<td>(ECA)</td>
<td>13 Countries</td>
<td>251,000,985</td>
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<tr>
<td>Mexico and Brazil</td>
<td>(2003)</td>
<td>(ECLAC)</td>
<td>2 Countries</td>
<td>338,451,554</td>
</tr>
<tr>
<td>Jordan</td>
<td>(2012)</td>
<td>(ESCWA)</td>
<td>11 Countries</td>
<td>114,565,389</td>
</tr>
<tr>
<td>China</td>
<td>(2014)</td>
<td>(ESCAP)</td>
<td>10 Countries</td>
<td>2,099,956,572</td>
</tr>
</tbody>
</table>

Total Targeted Population UN-2017 Pop. Est. 5,764,952,118 (76.3%)
The Centres:

- Committed to **academic excellence** (PGD, Masters, PhD)
- Established **academic relationships** with national and international space-related institutions
- **Affiliated to the UN** by virtue of UN Resolution A/RES/50/27, of 6 December 1995.
- Targeted to serve the **Developing Countries** of the world (76% of W.pop)
- Have ‘**Observer’ Status** at UN-COPUOS, therefore Potential reliable partners for building space capacity in the regions
- Internship and Secondment/Exchange of staff
- **Incubation of best practice** from industries and other major players through UNOOSA in the Centres
- **Common E-Learning Platform** for delivery of Modules
Positioning the UNOOSA Regional Centres for Global Partnership

UNOOSA:

• Commend the UN for the foresight in commencing the establishment of the RCs 24 years ago!
• To assume Coordinating Status for the RCs - M & E - To give RCs Visibility
• Strengthen the Capability and Status of RCs as major hubs for Regional Capacity Building in Space Science & Technology Education
• Domestication & Ownership - Involvement of Regional Bodies/Organisations e.g. AUC, ECOWAS, IGAD, AARSE, UNECA, etc. Need to ‘relaunch’ (Awareness Creation) the RCs with their involvement along with the Member States. Encourage them to be active in their Regional Centre.
• Regional Centres as a major node in the proposed UNOOSA Capacity Building Network (CBN)
• Global Access to data, Software for teaching and research purposes
Indigenous Skill Acquisition, Utilisation and Retention in Space Science & Technology is key to the Socio-Economic Sustainable Development of any nation.

SDGs Goal 17 - Partnership is key to sustain the Planet Earth

There is a clear evidence of the impact of the UNOOSA-assisted capacity building programme - which has already produced appreciable number of trained personnel.

The Regional Centres are potentially reliable partners for building space capacity in the regions

UNOOSA to call a Special Conference on Space Solutions to the 2030Agendas - inviting the focal persons of the implementing institutions/agencies of the 2030 Agendas.
Thank you

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