

Development Of The African Open Science Platform (AOSP)

Towards a Continental Open Science Vision



Policy | Infrastructure | Data | Access | Skills | Incentives | Collaborations | Partnerships |

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Topics

1. Science for Transformation in the Digital Era

- African Landscape
 - Cyberinfrastructure Ecosystems
 - Open Science
- AOSP Overview
 - Strategy and “Roadmap”
 - Value Proposition

2. AOSP Operationalisation Management

- Structure - Hub and Spoke Model
- Regional Nodes
- Prominent Programmes and Partnerships
- Other Activities

The World In Africa

The True Size of Africa

A small contribution in the fight against rampant *immappancy*, by Kai Krause

Graphic layout for visualization only (some countries are cut and rotated)
But the conclusions are very accurate: refer to table below for exact data

COUNTRY	AREA x 1000 km ²
China	9.597
USA	9.629
India	3.287
Mexico	1.964
Peru	1.285
France	633
Spain	506
Papua New Guinea	462
Sweden	441
Japan	378
Germany	357
Norway	324
Italy	301
New Zealand	270
United Kingdom	243
Nepal	147
Bangladesh	144
Greece	132
TOTAL	30.102
AFRICA	30.221

In addition to the well known social issues of *illiteracy* and *innumeration*, there also should be such a concept as *"immappancy"*, meaning *insufficient geographical knowledge*.

A survey with random American schoolkids let them guess the population and land area of their country. Not entirely unexpected, but still rather unsettling, the majority chose *"1-2 billion"* and *"largest in the world"*, respectively.

Even with Asian and European college students, geographical estimates were often off by factors of 2-3. This is partly due to the highly distorted nature of the predominantly used mapping projections (such as *Mercator*).

A particularly extreme example is the worldwide misjudgement of the true size of *Africa*. This single image tries to embody the massive scale, which is larger than the *USA*, *China*, *India*, *Japan* and *all of Europe*..... combined!

Top 100 Countries

Area in square kilometers, Percentage of World Total
Sources: Britannica, Wikipedia, Alamy 2010

	AREA km ²	%	
1	Russia	17.098.242	11,53
2	Canada	9.984.670	6,70
3	China	9.596.961	6,42
4	United States	9.629.291	6,40
5	Brazil	8.514.877	5,70
6	Australia	7.692.024	5,20
7	India	3.287.283	2,30
8	Argentina	3.790.490	2,50
9	Kazakhstan	2.724.990	1,90
10	Sudan	2.505.813	1,70
11	Algeria	2.381.741	1,60
12	Congo	2.344.858	1,60
13	Greenland	2.186.086	1,50
14	South Arabia	2.149.690	1,40
15	Mexico	1.964.378	1,30
16	Indonesia	1.850.360	1,30
17	Libya	1.759.540	1,20
18	Iran	1.628.750	1,10
19	Mongolia	1.564.100	1,10
20	Peru	1.285.216	0,90
21	Chad	1.284.090	0,86
22	Niger	1.267.090	0,85
23	Angola	1.248.790	0,85
24	Mali	1.240.192	0,83
25	South Africa	1.220.337	0,82
26	Colombia	1.141.748	0,76
27	Ethiopia	1.104.300	0,74
28	Bolivia	1.098.581	0,74
29	Mauritania	1.025.500	0,69
30	Egypt	1.002.990	0,67
31	Tanzania	945.087	0,63
32	Nigeria	923.768	0,62
33	Venezuela	912.650	0,61
34	Harvillia	824.116	0,55
35	Mosambique	801.180	0,54
36	Paraguay	786.095	0,53
37	Turkey	783.562	0,53
38	Chile	756.102	0,51
39	Zambia	752.612	0,51
40	Myanmar	676.678	0,46
41	Algeria	652.060	0,44
42	Somalia	637.657	0,43
43	France	632.824	0,43
44	C. African Rep	622.984	0,42
45	Ukraine	603.000	0,41
46	Madagascar	587.641	0,39
47	Botswana	582.000	0,39
48	Kenya	580.367	0,39
49	Yemen	527.966	0,35
50	Thailand	513.120	0,34
51	Spain	505.992	0,34
52	Turkmenistan	488.100	0,33
53	Cameroon	475.442	0,32
54	Papua New Guinea	462.843	0,31
55	Uzbekistan	447.400	0,30
56	Morocco	446.150	0,30
57	Sweden	441.270	0,30
58	Iraq	436.317	0,29
59	Paraguay	406.752	0,27
60	Zimbabwe	390.757	0,26
61	Japan	377.900	0,25
62	Germany	357.114	0,24
63	Rep. of Congo	342.000	0,23
64	Finland	338.419	0,23
65	Vietnam	331.212	0,22
66	Malaysia	330.803	0,22
67	Norway	320.802	0,21
68	Côte d'Ivoire	322.463	0,22
69	Poland	312.686	0,21
70	Oman	309.500	0,21
71	Italy	301.336	0,20
72	Philippines	300.000	0,20
73	Burkina Faso	274.222	0,18
74	New Zealand	270.467	0,18
75	Gabon	267.668	0,18
76	Western Sahara	266.000	0,18
77	Bosnia	256.369	0,16
78	Guinea	245.857	0,17
79	United Kingdom	242.800	0,16
80	Uganda	241.038	0,16
81	Ghana	238.539	0,16
82	Romania	238.391	0,16
83	Laos	236.800	0,16
84	Guyana	214.969	0,14
85	Belarus	207.600	0,14
86	Kyrgyzstan	196.651	0,13
87	Senegal	196.722	0,13
88	Syria	185.180	0,13
89	Cambodia	181.035	0,12
90	Uruguay	176.215	0,12
91	Ecuador	165.820	0,11
92	Tanzania	160.610	0,11
93	Nepal	142.141	0,10
94	Bangladesh	143.998	0,10
95	Tajikistan	143.100	0,10
96	Greece	131.957	0,09
97	Nicaragua	130.373	0,09
98	North Korea	120.538	0,08
99	Malawi	116.684	0,08
100	Eritrea	117.800	0,08
TOP 100 TOTAL		130.632.824	89,34

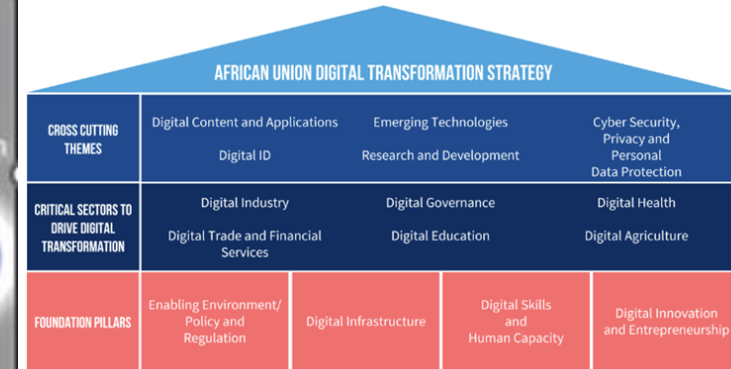


Africa : Developmental Challenges and STI Policy Environment

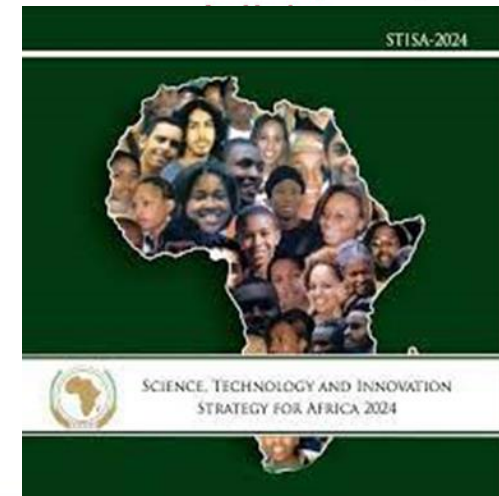
Slide Courtesy of AU



Slide Courtesy of AU



The African Science, Technology and Innovation Indicators (ASTII) Initiative



Science and Technology Diplomacy

“The use of scientific , technological and academic collaborations among countries, regions and societies to address common issues and to build sound international partnerships...”

Source: Scitechdiplohub

Establishment of large research infrastructures that require scientific cooperation of number of countries [that have been opponents in the past?]

Source: SD4DC



Cyberinfrastructure for Collaboration

Cyberinfrastructure Ecosystem



Source: SADC CI Framework

Fig b. 2004-2008

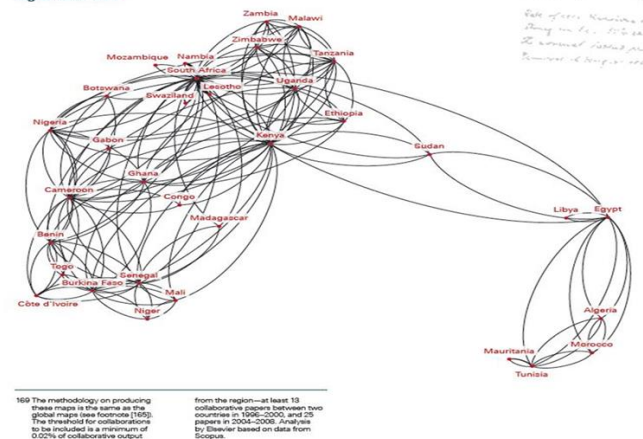
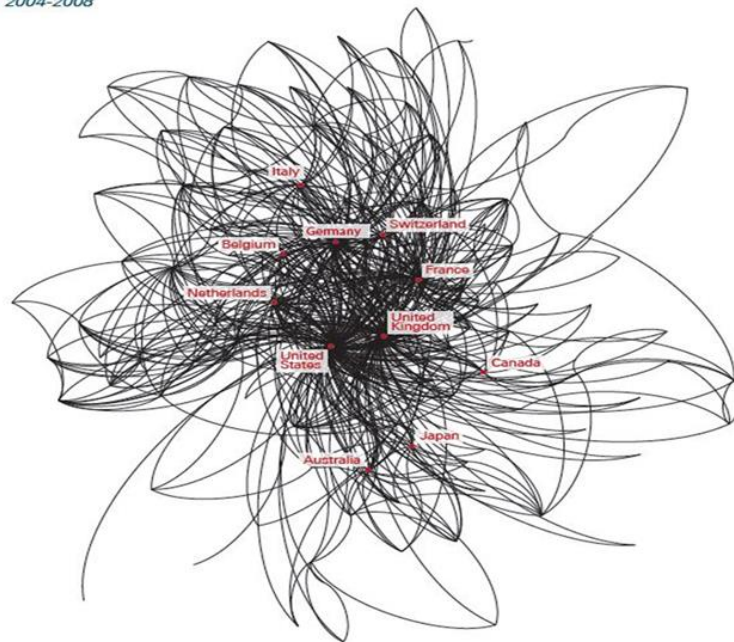
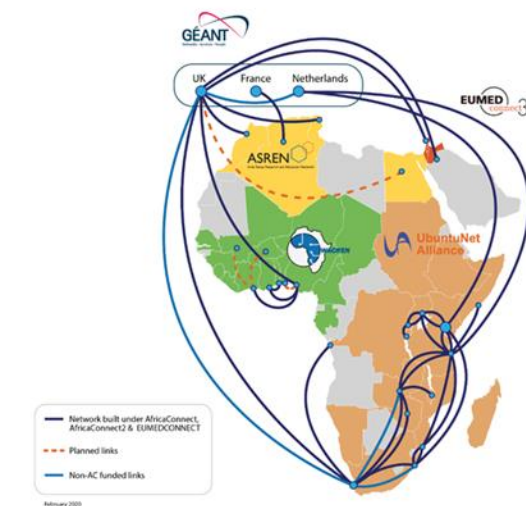
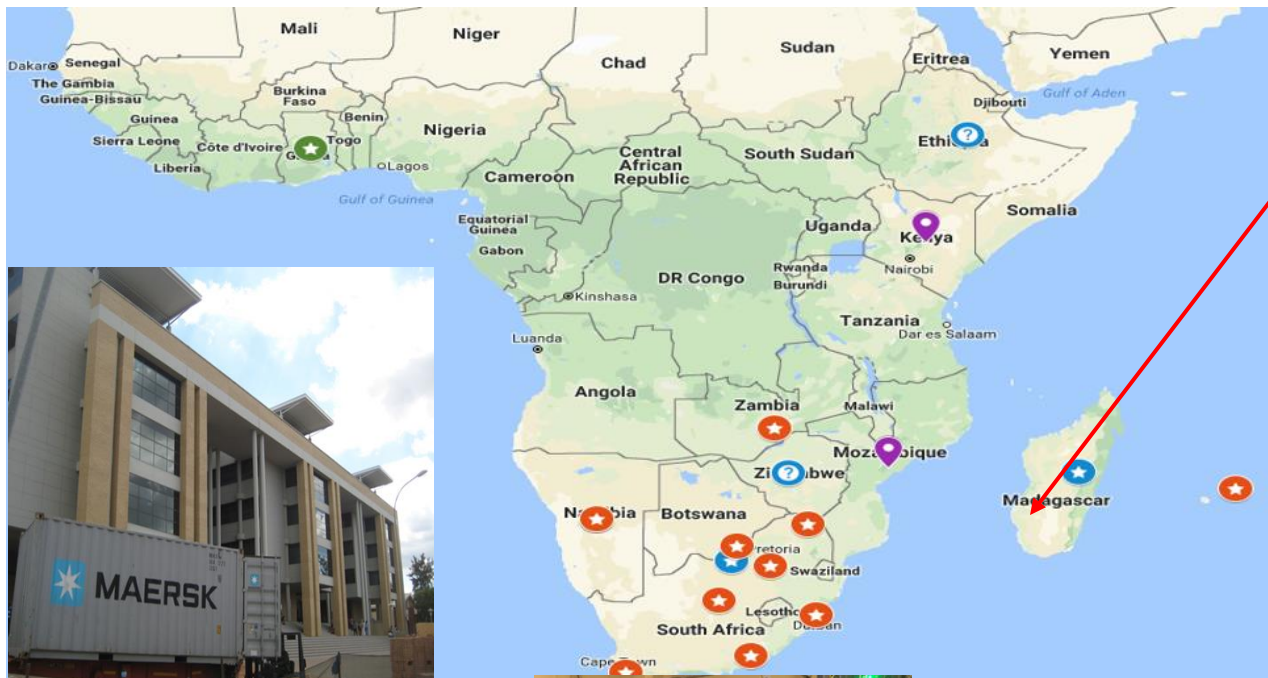


Fig b. 2004-2008





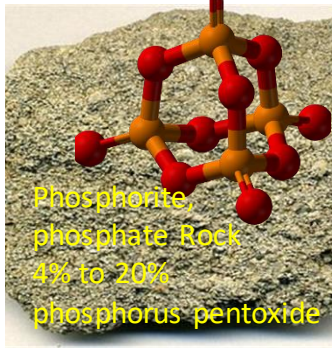
Morocco's UM6P university launches Africa's most powerful supercomputer

3.15 petaflops supercomputer will help conduct research for institutions across Africa

February 22, 2021 By: Graeme Burton 3 Comments

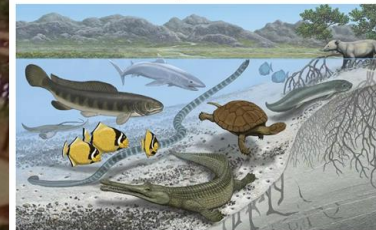


Mohammed VI Polytechnic University in Rabat (UM6P), Morocco has formally opened its new data center, which will host what is the most powerful supercomputer in Africa.



Sahara was home to some of largest sea creatures, study finds

Scientists reconstruct extinct species using fossils found in northern Mali from ancient seaway



Master's Degree Dedicated to
HIGH PERFORMANCE COMPUTING



جامعة الأخوين
AL AKHAWAYN UNIVERSITY

UM6P and Al Akhawavn University Launch a New Master's

Source: <https://www.um6p.ma/>



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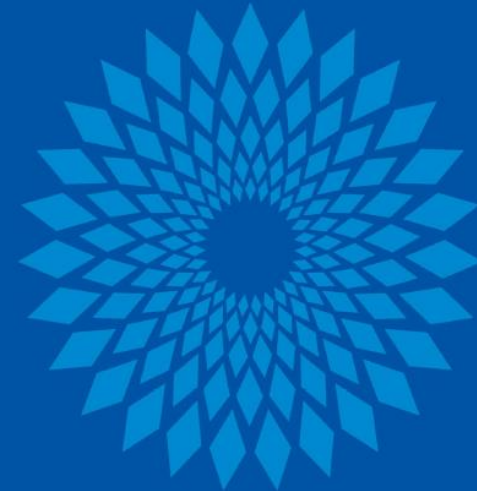
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1. RI policy-makers, including regional authorities, are invited to place RIs at the **forefront of their policy-making**,
2. RI policy-makers and funders are invited to explore the **convergence of responsible policy-making on RIs with other sectorial policy-making** in the areas such as energy, environment, agriculture or health,
3. RI policy-makers and funders are encouraged to consider RIs as a **strategic investment and to take into account that construction of RIs embedded in regional and national strategies** holds a great potential to accelerate socioeconomic development.
4. RI policy-makers and funders are encouraged to treat RIs as a **long-term commitment in order to create a stable, reliable and predictable funding environment**
5. RI managers are encouraged to develop projects of RIs based on robust and sustainable economic models,
6. RI policy-makers, funders and operators are encouraged to **share experiences and exchange good practices internationally**
7. RI policy-makers, funders and stakeholders are encouraged to set up a **dialogue on the principles for the international RI cooperation**

EU2022.CZ

Czech Presidency of the Council
of the European Union



Brno Declaration
on Fostering a Global Ecosystem
of Research Infrastructures

<https://www.icri2022.cz/post/brno-declaration-on-fostering-a-global-ecosystem-of-research-infrastructures.html>



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National
Research
Foundation

African RI Roadmaps Required



- ❑ Relevance of research infrastructures to South African research priorities
 - ✓ The White Paper on Science and Technology
 - ✓ The National Research and Development Strategy
 - ✓ The Ten-Year Innovation Plan
 - ✓ National Development Plan
- ❑ Research infrastructures in the context of scientific domains
 - ✓ Humans and society
 - ✓ Health, biological and food security
 - ✓ Earth and environment
 - ✓ Materials and manufacturing
 - ✓ Energy
- ❑ Selected research infrastructures across scientific domains
 - ✓ Expanded terrestrial and freshwater environment observation network
 - ✓ Network of health and demographic surveillance sites
 - ✓ National centre for digital language resources
 - ✓ Natural science collections facility
 - ✓ Shallow marine and coastal research infrastructure
 - ✓ Material characterisation facility
 - ✓ Solar research facility
- ❑ Implementation
 - ✓ Ordering of research infrastructures for roll-out
 - ✓ Funding requirements
 - ✓ Cyberinfrastructure

UNESCO Recommendation on Open Science

In 2021, at the UNESCO 41st General Conference, 193 Member States adopted the first international standard-setting instrument on Open Science in the form of a UNESCO Recommendation on Open Science.



UNESCO Recommendations

Legal instruments in which “the General Conference formulates principles and norms for the international regulation of any particular question and invites Member States to take whatever legislative or other steps may be required in conformity with the constitutional practice of each State and the nature of the question under consideration to apply the principles and norms aforesaid within their respective territories”.

In adopting the Recommendation, Member States agreed to embrace the culture and practice of OS and committed to reporting on their progress every 4 years



<https://www.unesco.org/en/open-science>

Slide Courtesy of UNESCO Regional Office for Southern Africa



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Key Objectives – Key Areas of Action



Member States are encouraged to prioritise seven areas in their implementation of the *Recommendation*:

1. Promoting a common understanding of OS and its associated benefits and challenges, as well as the diverse paths to OS
2. Developing an enabling policy environment for OS
3. Investing in infrastructure and services which contribute to OS
4. Investing in training, education, digital literacy and capacity-building, to enable researchers and other stakeholders to participate in OS
5. Fostering a culture of OS and aligning incentives for OS
6. Promoting innovative approaches to OS at different stages of the scientific process
7. Promoting international and multistakeholder co-operation in the context of OS with a view to reducing digital, technological and knowledge gaps.

Slide Courtesy of UNESCO Regional Office for Southern Africa

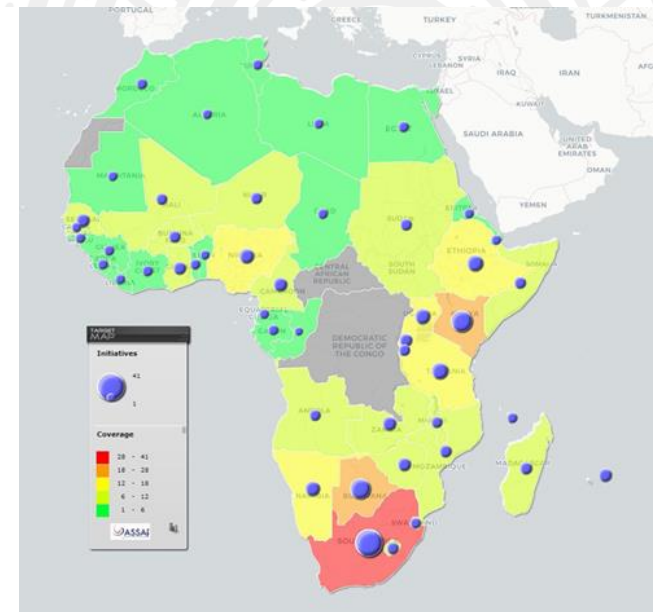
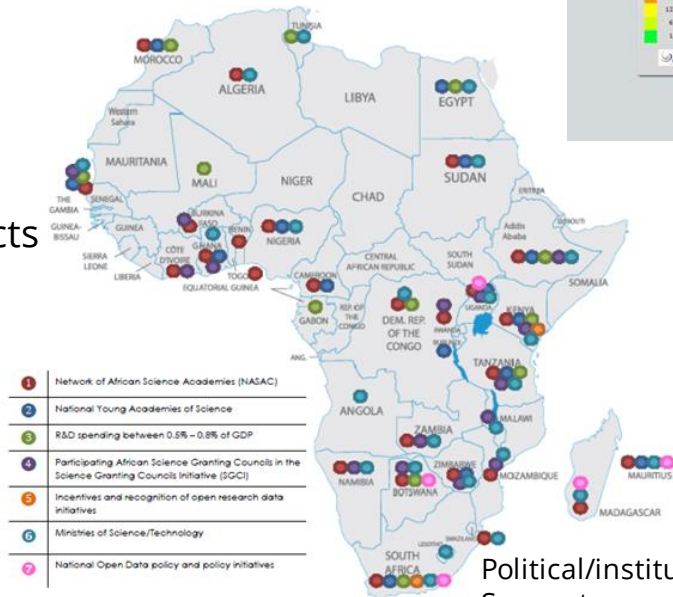
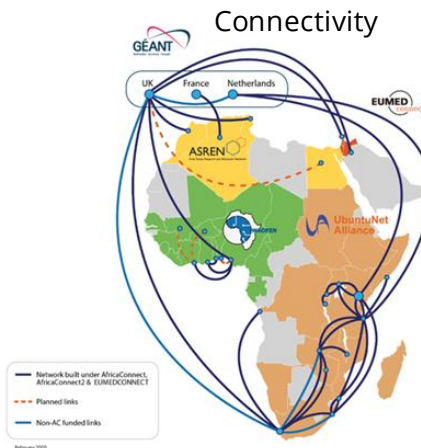
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Open Science Context AOSP Landscape Study

- Status of Open Science (Capacity and Activity)
- Dimensions
 - ✓ Policy
 - ✓ Cyberinfrastructure
 - ✓ Education and Skills
 - ✓ Culture
- Gaps and Key Findings
 - ✓ Enabling Policy
 - ✓ Role Players
 - ✓ Coordination - Data Activity, Projects
 - ✓ Funding
 - ✓ Advancing Open Science
 - ✓ Barriers To Open Science
- Developed Frameworks



Initiatives

Political/institutional
Support

Africa and The Operationalisation of International OS Framework

<https://uneca.org/eighth-session-of-the-africa-regional-forum-on-sustainable-development/about-arfsd-2022>

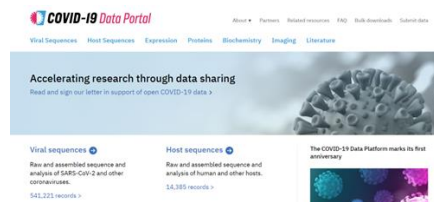


Building forward better: A green, inclusive and resilient Africa poised to achieve the 2030 Agenda and Agenda 2063



"Strengthening STI Institutional Arrangements to Advance Full Implementation of the 2030 Agenda for Sustainable Development in Africa"

- ✓ Operationalisation of international framework of Open Science.
- ✓ Development of National, Continental and Global, Open Science Platforms
- ✓ Joint Action e.g. SDGs, Climate Change, Disaster Risk Reduction, Pandemics and dissemination of information



United Nations

ECA/RFSD/2022/L.1



Economic and Social Council

Distr.: Limited
5 March 2022

English and French only

Original: English

Economic Commission for Africa
Africa Regional Forum on Sustainable Development
Eighth session
Kigali (hybrid), 3-5 March 2022

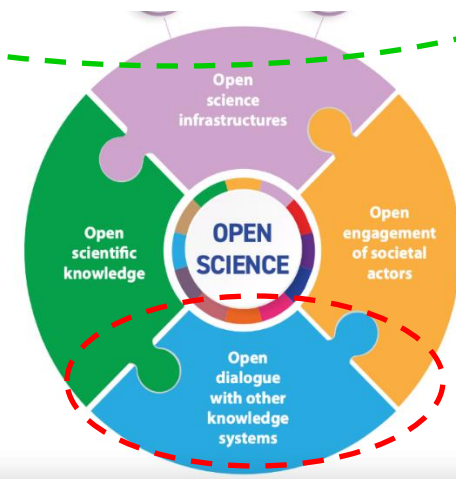
Item 11 of the agenda*

Consideration and adoption of key messages and the Kigali Declaration

Eighth session of the Africa Regional Forum on Sustainable Development: summary, key messages and the Kigali Declaration

(f) To support research to understand and design measures to mitigate the impact of climate change and human activities on oceans and water bodies, given the importance of the United Nations Decade of Ocean Science for Sustainable Development (2021–2030) and noting the need for member States to support the implementation of the Africa Blue Economy Strategy and the 2050 Africa's Integrated Maritime Strategy, as Africa will reap economic benefits from the ocean;

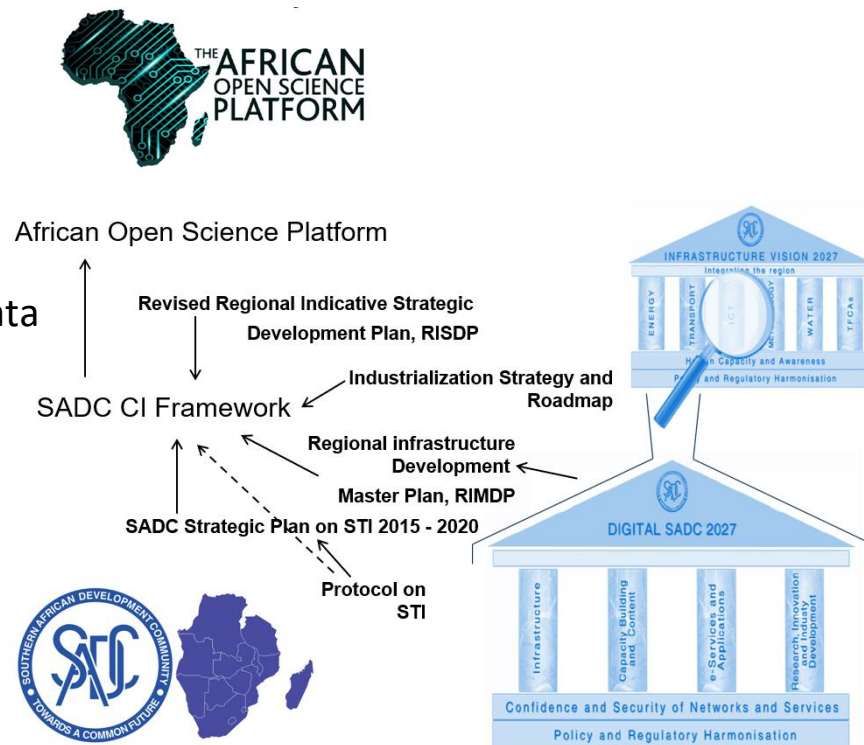
(g) To operationalize the international framework for open science outlined in the Recommendation on Open Science of the United Nations Educational, Scientific and Cultural Organization to enhance the efficiency, inclusivity, reliability and responsiveness of science to societal challenges in Africa and to increase the access of early researchers to be able to publish in indigenous languages;



Gaps In National OS Policy Frameworks



- ✓ Context – Regional, National
- ✓ Science Policy - New vs Amendment?
- ✓ NDPs, Sectors and Policy Interoperability/Linkages?
- ✓ Open Access and Open Data policies first?
- ✓ Trade/Economic Issues - IP/Licensing/Ownership
- ✓ Other legislation – including Data Protection
- ✓ Indigenous Systems - Cultural/Traditional Knowledge
- ✓ FAIR Data/Open Data/Research Data/Government Data
- ✓ Resourcing and Sustainability
- ✓ Infrastructure Support
- ✓ Rewards, Culture and Incentives
- ✓ Harmonization
- ✓ Societal Engagement (e.g. Citizen Science)
- ✓ Education and Skills
- ✓ Stewardship



AOSP OS Policy Tracker

- Country
- Policy Instrument (Policy, Roadmap etc)
- Lead Ministry
- Policy Development process/Methodology
- Policy Pillars
 - IP, Open Access, Open/FAIR Data, Education & Awareness, Rewards & Incentives, Infrastructure, Citizen Science, Advocacy, Resourcing
- Accompanying Instruments (Strategy, Implementation plan etc.)
- Notable Initiatives
- Related Policies

National Open Science Policy Development

■ Draft ■ Adopted ■ inProgress



Example Policy – Ethiopian OA Policy



የኢትዮጵያ ከፍተኛ ትምህርት ሚኒስቴር
Ministry of Science and Higher Education - Ethiopia

NATIONAL OPEN ACCESS POLICY OF ETHIOPIA FOR HIGHER EDUCATION

1. Aims and Scope of the Policy

The Federal Democratic Republic of Ethiopia (FDRE) Ministry of Science and Higher Education is committed to supporting research of high quality and to ensuring that public research spending will lead to a maximum economic and social return. The FDRE Ministry of Science and Higher Education supports the principles of OPENNESS to research outputs and processes as integral to research excellence as well as the sharing and creation of new knowledge.

The policy applies to all research outputs authored/created, or co-authored/co-created, by employees of Ethiopian universities; this includes research outputs of graduate students and PhD students. It complements and does not override the Open Access requirements of research funders as they apply to their funded research.

Researchers and research students have to make themselves visible and findable, using persistent identifiers such as ORCID IDs, and their outputs available on an Open Access basis, if their research resulting entirely or partly from public funding.

For this purpose, the FDRE Ministry of Science and Higher Education has defined the following policy which must be observed by all recipients of public research funding as of June 17, 2019.

2. Rights, Roles and Responsibilities

1. The FDRE Ministry of Science and Higher Education supports the National Academic Digital Repository of Ethiopia (NADRE) as the aggregated national repository for publications, underlying research data that proof the validity of the related publication and open educational resources. Institutional repositories for publication and research data should be open for harvesting through NADRE.

2. The Universities will provide an Open Access service to inform and advise authors about their options and publishers' and funders' requirements, to administer any University funds available to pay for Gold Open Access and to manage to develop the institutional repository in support of Green Open Access.

3. Final peer reviewed manuscripts will be made available by the University Libraries in compliance with publishers' requirements.



1

- Aims and Scope
- Roles and Responsibilities
 - Government Ministry of Science and Higher Education
 - National Academic Digital Repository Ethiopia (NADRE)
 - Universities
 - University Libraries
- Open Access to Publications
- Open Access to Research Data
- Licensing
- Resourcing for training and awareness
- Policy Review

Government Actions Examples



[Administration](#)

[Priorities](#)

[The](#)

AUGUST 25, 2022

OSTP Issues Guidance to Make Federally Funded Research Freely Available Without Delay



▶ [OSTP](#) ▶ [NEWS & UPDATES](#) ▶ [PRESS RELEASES](#)

Today, the White House Office of Science and Technology Policy (OSTP) updated U.S. policy guidance to make the results of taxpayer-supported research immediately available to the American public at no cost. In a [memorandum](#) to federal departments and agencies, Dr. Alondra Nelson, the head of OSTP, delivered guidance for agencies to update their public access policies as soon as possible to make publications and research funded by taxpayers publicly accessible, without an embargo or cost. All agencies will fully implement updated policies, including ending the optional 12-month embargo, no later than December 31, 2025.



Dr. Jean-Claude Burgelman
Editor in Chief, Frontiers Policy Labs

In my view this new policy gains important parity with European policy and in doing so positions the US as 'joint-leader' in the global policy push for fully open access science. It means a significant portion of the world's population will be able to exploit the benefits of open science. I have little doubt that the impact and import of the Nelson Memo will trickle down to – and shape concrete action from – universities, large foundations, and the broad data communities in the US.

To gauge the likely impact of the Nelson Memo and to add to this international policy debate, we invited experts – rather as we did in response to last year's [recommendations from UNESCO](#) – to share their views here: on the policy's symbolic importance, for the US and



"For the Global South, and the African continent specifically, the efficiency and productivity gains from open science present a compelling case for government research funding in the context of limited resources."

Dr. Tshiamo Motshewaga
Director
The African Open Science Platform



Supporting the OSTP memorandum "Ensuring Free, Immediate, and Equitable Access to Federally Funded Research"

Publishers:

Copernicus Publications
eLife
Frontiers
JMIR Publications
MDPI
Open Library of Humanities
PeerJ
PLOS
Ubiquity Press

Source: <https://policylabs.frontiersin.org/content/commentary-white-house-guidance-on-scientific-research>

Source: <https://www.whitehouse.gov/ostp/news-updates/2022/08/25/ostp-issues-guidance-to-make-federally-funded-research-freely-available-without-delay/>



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AOSP and Regional STI Policy Alignments

Open Science

SADC/ET-STI /1/2023/1C
22 June 2023



Joint Meeting Of Ministers Of Education And Training And Science,
Technology And Innovation

20 – 23 JUNE 2023
JOINT HYBRID MEETING
DEMOCRATIC REPUBLIC OF CONGO

Decision 14: Promotion of Open Science and Open Access

- 15.4 Ministers are invited to urge Member States to:
- (i) take into account international standard-setting instruments such as the UNESCO Recommendation on Science and Scientific Researchers and the UNESCO Recommendation on Open Science when designing or revising STI policy and legal frameworks with a view to achieving the UN 2030 Agenda for Sustainable Development and the AU Agenda 2063: ***"The Africa We Want"***
 - (ii) support and advocate for the inclusion of the norms and standards of the UNESCO Recommendation on Science and Scientific Researchers in the upcoming Science, Technology and Innovation Strategy for Africa (STISA) 2024 review;
 - (iii) engage the Secretariat and UNESCO for technical support to participate in the follow up actions on the "Strengthening Science, Technology and Innovation Systems for Sustainable Development in Africa" project; and
 - (iv) participate in the activities, programmes and engagements of the African Open Science Platform.
- 15.5 Ministers are invited to direct the Secretariat:
- (i) working with UNESCO to develop a draft regional Framework and Guidelines on Open Science taking into account the values and principles of the 2021 UNESCO Open Science Recommendation, and report progress at the next meeting in June 2024;
 - (ii) working with the African Open Science Platform and UNESCO to implement capacity building, awareness and advocacy programmes on Open Science in the region; and
 - (iii) working with UNESCO to promote and track the implementation of the 2021 UNESCO Recommendation on Open Science in the region and report progress annually at the meeting.
- 15.6 Ministers are invited to commend the Republic of Malawi for being nominated as the host for the Southern Africa African Open Science Node.

AOSP and Regional STI Policy Alignments Cyberinfrastructure

SADC/ET-STI /1/2023/1C
22 June 2023



Joint Meeting Of Ministers Of Education And Training And Science,
Technology And Innovation

20 – 23 JUNE 2023
JOINT HYBRID MEETING
DEMOCRATIC REPUBLIC OF CONGO

Decision 10: Implementation of SADC Cyber-Infrastructure Framework

- 11.8 Ministers are invited to note and commend the progress made towards the implementation of the SADC Cyber-Infrastructure Framework during the periods 2022 and 2023 to date in the areas of human capacity development, research and development, Cyber-Infrastructure roll out and policy exchange.
- 11.9 Ministers are invited to direct the Secretariat:
- (i) to convene a multi-sector engagement technical meeting of experts to develop a regional programme of action to promote scientific and industrial development in key priority regional sectors (such as mining, energy, education, health, transport, agriculture etc.) through the use of cyber-infrastructure facilities and services and report at the next meeting in 2024;
 - (ii) working with the SADC Cyber-Infrastructure Steering Committee and International Cooperating Partners to provide support to the Member States who still need to establish their national High Performance Computing platforms and programmes including establishment of their National Research and Education Networks (NREns);
 - (iii) working with the SADC Cyber-Infrastructure Steering Committee to produce a report documenting the region's advancements, successes and challenges over the past ten years in developing capacities and capabilities and establishing infrastructures in the area of cyberinfrastructure and report at the next meeting in 2024;
 - (iv) working with the SADC Cyber-Infrastructure Steering Committee to develop regional model guidelines and specifications on establishing national cyber-infrastructure facilities and services to and report progress at the next meeting in 2024; and
 - (v) working with the Centre for High Performance Computing in South Africa to convene a Ministerial session during the annual High Performance Computing Conference in celebrating the ten (10) years implementation of the SADC Cyber-Infrastructure Framework.
- 11.10 Ministers are invited to commend:
- (i) Namibia for establishing and launching the UNESCO Chair on Secure High-Performance Computing for Higher Education and Research on 27 July 2022, at the Namibia University of Science and Technology (NUST); and
 - (ii) Dr Mary Jane Bopape from (South Africa) for being awarded the honorary award by the Ghana based Humanitarian Awards Global (HAG), during an awards ceremony held on 27 August 2022 in Accra, Ghana to recognise her work of service and achievements on the SADC weather and climate pilot project carried out in the period 2019/20-2021 as part of the implementation plan of the SADC CI framework.
- 11.11 Ministers are invited to urge Member States to take up opportunities offered by the SADC Cyber-Infrastructure programme and initiative in order to develop their national capacities and capabilities in High Performance Computing to advance scientific research and innovation.

AOSP and Regional STI Policy Alignments Application Programmes – Space Sciences

SADC/ET-STI /1/2023/1C
22 June 2023



Joint Meeting Of Ministers Of Education And Training And Science,
Technology And Innovation

20 – 23 JUNE 2023
JOINT HYBRID MEETING
DEMOCRATIC REPUBLIC OF CONGO

Decision 18: Regional Space Science and Technology programme

- 19.7 Ministers are invited to note the outcomes and recommendations of the second regional experts meeting on space science and technology which was held on 16th June 2023.
- 19.8 Ministers are invited to endorse the establishment of the proposed regional multi-disciplinary Space Science & Technology Technical Working Group (SSTTWG), membership comprising the following member states and partners: Malawi, Democratic Republic of Congo Mozambique (Troika Member States) Angola, Botswana, Namibia, South Africa, Seychelles, Tanzania, Zambia, Zimbabwe and SADC Secretariat) including participation by Strategic Partners such as (FEWSNET, AfriGEO, Chair of SADC Shared Satellite Programme), AUC, AUDA-NEPAD, UNESCO, SASSCAL, AOSP (Eswatini as observer for purposes of learning).
- 19.9 Ministers are invited to direct the Secretariat to:
- (i) develop Terms of Reference to guide the work of the Space Science & Technology Technical Working Group (SSTTWG);
 - (ii) work with the Space Science & Technology Technical Working Group to conduct a regional needs and cost benefit assessment on space science and technology which will inform the development of a draft regional strategy and action plan on space science and technology and report progress at the next meeting; and
 - (iii) work with industry, academia and international cooperating partners and industry to implement and support human capital development programmes on space science and technology at all levels.
- 19.10 Ministers are invited to urge Member States to:
- (i) strengthen cooperation and partnerships in spaces sciences for shared and coordinated investments in satellite development, launching and implementation of joint common missions on research and innovation and human capita development;
 - (ii) launch programmes on space sciences and technology for the youth especially targeting girls to promote their interest and skills development;
 - (iii) join the African Group on Earth Observations (AfriGEO) and the Group on Earth Organization (GEO) to leverage socio-economic benefits offered by earth observation; and
 - (iv) participate in the upcoming earth observation meetings such as the AfriGEO in September 2023 in Namibia and the GEO Ministerial Summit in South Africa in November 2023.

AOSP – Overview (1)

AOSP is an Open Science Diplomacy platform **stimulating interactivity** and creating opportunity through the development of **efficiencies of scale**, **building critical mass** through **shared capacities**, **amplifying impact** through a **commonality of purpose and voice**, and to engage in Global Commons to address continental and global challenges through **joint action**

- ✓ **Operationalization of the UNESCO Open Science Recommendations**, sharing best practices, development of continental research commons,
- ✓ **Enhancing and entrenching dialogue** on open science, skills development, infrastructure , sustainability and resourcing in Africa,
- ✓ **Promotion of development of interoperable** and aligned open science policy frameworks,
- ✓ **Showcasing African Research** addressing developmental agenda and societal impacts,
- ✓ **Coordination and creating linkages** between open data and open science programmes across disciplines across continents and promoting **Open Science Diplomacy**,
- ✓ **Contribution to the development** of global standards, community of practice,
- ✓ Plugging in to **global architecture for international open science framework**,
- ✓ **Pragmatic incremental approach in implementation.**

Overview (3) - (AOSP) - Vision and Strands



“African scientists are at the cutting edge of contemporary, data-intensive science as a fundamental resource for a modern society. They are innovative global exponents and advocates of Open Science and leaders in addressing African and Global Challenges.”

- ✓ Develop a **federated network of computational facilities and services**, software tools and **advice on policies and practices** of research data management,
- ✓ Develop **Data Science and AI Institute** spanning and embedded at African institutions,
- ✓ Promote **collaboration on African priority application programmes** – ranging from health, biodiversity, disaster risk reduction, agriculture and open innovation ,resilient cities, indigenous knowledge etc.,
- ✓ Create **a Network for Education and Skills in data and information**,
- ✓ Create a **Network for Open Science Access and Dialogue**.

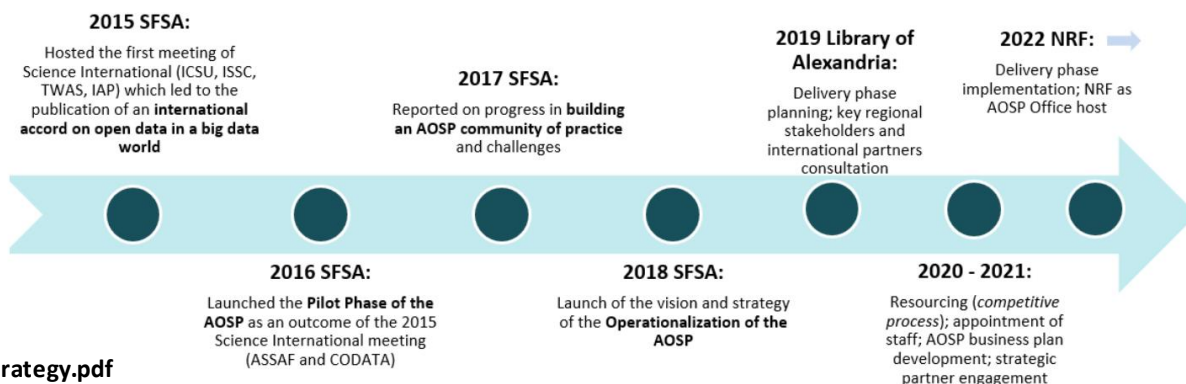


Overview (4) - AOSP Strategy & Implementation Elements

- Governance
- Platform Management
- Stakeholder Engagement
- Resource Mobilisation
- Operations
- Enabling Activities
- Application Activities
- Monitoring & Evaluation Framework



AOSP Evolution



<https://aosp.org.za/wp-content/uploads/2023/05/AOSP-Strategy.pdf>

Roadmap/Business Plan (1) - Elements

1. Roadmap

- ✓ Required to implement the AOSP strategy and objectives
- ✓ Driven by the AOSP Coordinating hub and directed by the AOSP Governing Council

2. Planning and Implementation Timeframe

3. Financial Framework

4. Partnership Categories

5. Work Packages

6. Directorate Resources

Business Plan (2) – Operational Priorities

1. Data and Infrastructure Strands

○ ***Hard Infrastructure***

- ✓ Strand 1: A federated network of computational facilities and services

○ ***Soft Infrastructure***

- ✓ Strand 2: Policies, practices, and tools of research data management
- ✓ Strand 3: A Data Science and AI Institute at the cutting edge of data analytics

2. Programme Strands

○ ***Network of excellence in open science***

- ✓ Strand 4: Science programmes: e.g. cities, disease, biosphere, agriculture & food
- ✓ Strand 5: A Network for Education and Skills in data & information
- ✓ Strand 6: A Network for Open Science Engagement, Dialogue and Policy, including issues on open access

Business Plan (3) – Time Frame

1. Phase 1: 3 years (2022-2023):

- ✓ Year 1 priorities.
 - Appointment of Director and support staff,
 - Development of a business plan and Workplan,
 - Enhancing international awareness,
 - Plan and initiate first fund-raising approaches,
 - Engage with African partners in each of the 5 nodal regions,
 - Engage with potential federated infrastructure partners,
 - liaise with African Union.
- ✓ Establishment of the Governing Council (See AOSP Strategy) - <https://aosp.org.za/resources/>
- ✓ Year 2-3 priorities
 - Develop value proposition,
 - Membership structure,
 - Create regional nodes,
 - Sequential start-up of the activities of strands 1-6.

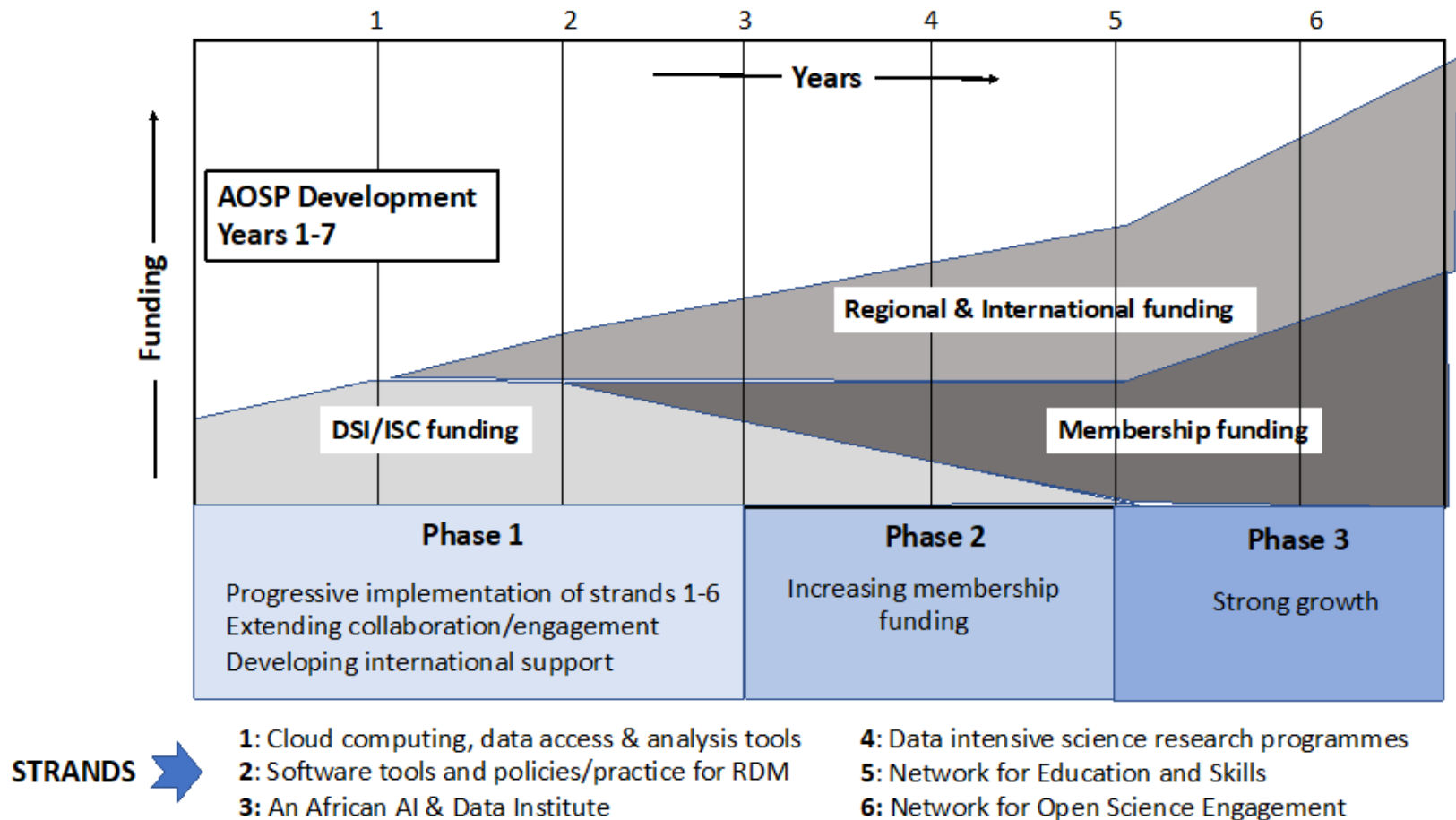
2. Phase 2: 2024 - 2025:

- ✓ Increase the proportion of funding from African members of the Platform, and
- ✓ increase project-based funding from external funders.

3. Phase 3 – Beyond 2025

- ✓ Strong growth and Impact

Business Plan (4) – Financial Framework & Sustainability



Business Plan (5) – AOSP Partnerships Categories

1. Users

- African scientists,
- Scientific groups or citizens that utilise the resources of the Platform for scientific purposes

2. Community of Practice

- This comprises all those bodies that could contribute to the operational work of the Platform
 - ✓ African bodies that operate scientific infrastructures or research programmes
 - ✓ African scientific societies
 - ✓ International bodies that support data-intensive science

3. African Community Support

- Bodies that can provide political, strategic or financial support to the Platform
 - ✓ African Union, **RECS (e.g SADC)**, Individual States, Association of African Universities, African Development Fund etc.

4. International Community Support

- Can potentially provide support from beyond Africa in political, scientific and financial terms
 - ✓ ISC, UNESCO, OECD, World Bank



Business Plan (6) – Work Packages

1. WP1: Creating awareness

- Through strong online presence (website/portal)
- With the potential African community of support
- With the potential community of practice
- With the private sector
- Policy makers and society

2. WP2: Platform infrastructures (strands 1-3)

- Strand 1: A federated network of computational facilities and services
- Strand 2: Software tools and advice on policies and practices of research data management.
- Strand 3: A Data Science and AI Institute at the cutting edge of data analytics.
- **(Seek collaboration with willing partners, seeking funding to fill critical gaps and extend capabilities)**

3. WP3: Delivering programmes (strands 3-6)

- Strand 4: Science programmes
- Strand 5: Education and skills programmes
- Strand 6: Societal engagement, dialogue and policy

Business Plan (7) – Work Packages

1. WP4: Funding and fundraising

- Seed funding
- Funding from “membership”
 - ✓ A national contribution made by a government
 - ✓ Institutional membership of the platform,
 - ✓ A hybrid model
- External funding by non-members (e.g. foundations), Africa or beyond.
 - ✓ Potentially projects of Strands (e.g 3-6)
 - ✓ Regional Nodes to lead funded projects
 - ✓ Projects to have continental footprint, reach and high collaboration network connectivity
- Public Sources and leveraging existing funding lines
 - ✓ Contribution to infrastructure
 - ✓ Projects
- Private Sources
 - ✓ Project Funding

2. WP5: Strategy, coordination and control

- Director , Managerial roles and the AOSP coordinating directorate
- Roles as defined in job functions and descriptions



AOSP Value Proposition

1. Benefits of Partnering with AOSP

- ✓ Governments, Institutions, Researchers, Development partners, funders and donors, Regional and continental Bodies

2. How AOSP Delivers on its Mandate

- ✓ Providing advice on policy, infrastructure, data, human capital development and incentive schemes to support open science
- ✓ Supporting implementation of UNESCO Open Science recommendations,
- ✓ Facilitating access to network – infrastructure , education and skills, funding, open science dialogue

3. AOSP Partnership Modalities

- ✓ Programme partner through regional AOSP Nodes (including theme focused and training initiatives)
- ✓ Shared networks through access to a large diverse network of networks,
- ✓ Government support through national open science policy development and modalities for implementation of UNESCO Open Science Recommendations

4. AOSP Sustainability Approach

- ✓ Membership subscription
- ✓ Support from developing partners, funders and science granting councils
- ✓ Support from Industry
- ✓ Alignment with existing national and regional academic institutional programmes

AOSP Management



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AOSP Governing Council



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Current

NEWS

Call for nominations for Members of the Governing Council of the African Open Science Platform

The African Open Science Platform (AOSP) is now receiving nominations for its first Governing Council.



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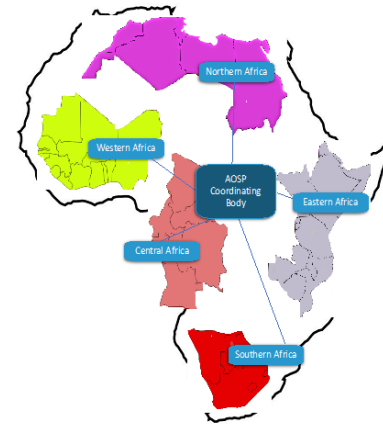
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GC - Responsibilities and scope of work

- ✓ To provide **strategic advice** on Open Science engagements in Africa and the further strategic development of the AOSP, including plans to implement the AOSP strategy;
- ✓ Advise on appointments of AOSP **Technical Working Groups**;
- ✓ Provide **strategic leadership** and develop priorities agendas and associated activity and business plans for implementation of the AOSP;
- ✓ Support the **development of networks** in national, regional, and global systems of scientific priority setting and funding;
- ✓ Build **connections and collaborations** with major national, regional, and international science and data initiatives;
- ✓ **Build linkages** with influential decision-makers, policy-makers and leading scientists on a national and regional level;
- ✓ Serve in an **advocacy role** for the platform;
- ✓ Advise on and **support fundraising** initiatives;
- ✓ The Governing Council shall meet at least twice per year.

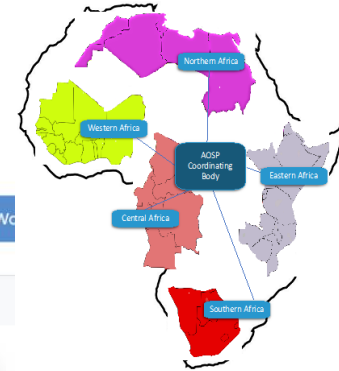


AOSP Operational Model (1) – AOSP Hub



1. **AOSP Hub (Directorate/Coordinating Body)** Hosted at the NRF
2. **Centralised coordination** between regional nodes and work strands
3. AOSP Director and core staff
4. **Responsibilities**
 - **Lead** - development and implementation of the scientific and organisational objectives of the AOSP Strategy
 - ✓ by providing effective, responsive, and efficient administration and support,
 - **Oversight** - overall strategic direction, planning, coordination, administration, and evaluation functions of the AOSP Hub and the regional nodes,
 - **Build** - effective governance system, guided by the AOSP Strategy and the Governing Council,
 - **Mobilise** - Resources from stakeholders (incl., public, private and development partners) working closely with regional nodes,
 - **Nurture** - a wide network of stakeholders, including civil society, policymakers, and business to support the AOSP position and influence.

AOSP Operational Model (2) – AOSP Nodes



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Wo

CALL FOR EXPRESSIONS OF INTEREST

Establishment of the African Open Science Platform (AOSP) Regional Nodes

Applications Submitted 15 January 2023



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<https://www.nrf.ac.za/call-for-expression-of-interest-establishment-of-the-african-open-science-platform-aosp-regional-nodes/>



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The African Open Science Platform appoints three regional nodes

<https://www.nrf.ac.za/the-african-open-science-platform-appoints-three-regional-nodes/>

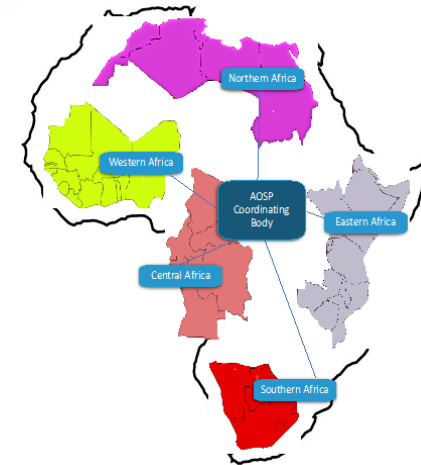
Role of Nodes

- ✓ Programme delivery and implementation
- ✓ Coordination
- ✓ Policy
- ✓ Resource Mobilisation
- ✓ Education and skills programmes
- ✓ Societal engagement and dialogue

NRF in the News

Press Release

🕒 June 19, 2023



What Makes a Good Node?

❑ Value addition

- ✓ **Strong potential and capability to host** the regional nodes and value addition to the AOSP secretariat
- ✓ **Adequacy and sufficiency of the provided expertise** for supporting and facilitating a regional node
- ✓ Comprehensive understanding of **open science policies and programmes**
- ✓ **Research and coordination expertise** within the African region, and multi-stakeholder networks
- ✓ **Capability to collaborate** with other African/international institutions, in the context of Open Science in the chosen thematic area

❑ Expected impact of open science project

- ✓ **Quality and feasibility** of the expression of interest
- ✓ Adequate potential for **uptake of results** including quality of the **knowledge sharing approach** with appropriate stakeholder engagement, capacity development and communication strategy.

❑ Quality and efficiency of the implementation

- ✓ Objectives as well as the related work plan
- ✓ Adequacy, feasibility, and coherence of the various proposed activities for the AOSP
- ✓ Strong science technology and innovation networks, both public and private

Node Selection

1. Applications

- 16 Institutions, 10 Countries
- All RECS – SADC, EAC, ECOWAS, ECCAS

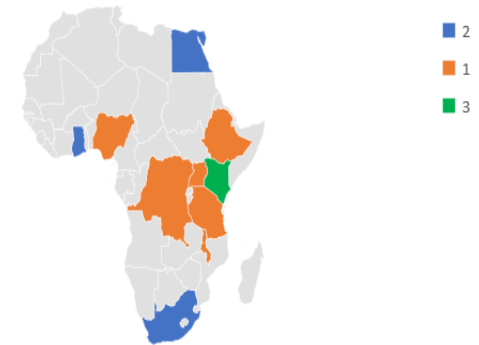
2. Selection Criteria

- Institutional Profile
- Research and coordination expertise and multi-stakeholder networks
- Quality of physical and IT infrastructure
- Capacity to collaborate with other African/international institutions, in the context of Open Science thematic area
- Institutional and operational arrangements,
- Proposed Workplan for the regional node

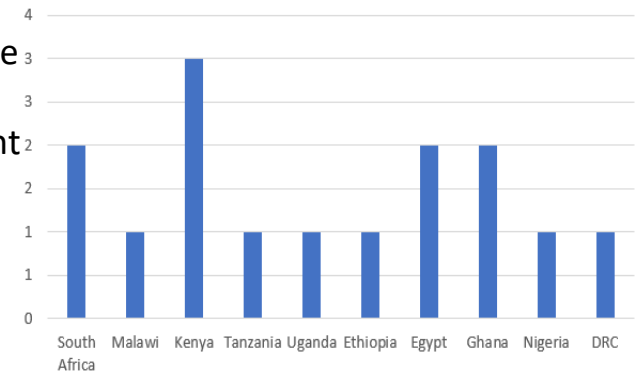
3. Decision

- Three Nodes in this 1st Call round:
 - NORTH(Egypt) - Egyptian National Authority for Remote Sensing and Space Sciences (NARSS),
 - EAST (Kenya), African Institute for Capacity Development (AICAD),
 - SOUTHERN (Malawi) UbuntuNet Alliance
- Three Programme partners (TODO)
 - ✓ **Strand 3:** A Data Science and AI Institute
 - ✓ **Strand 5:** Education and skills programmes
 - ✓ **Strand 6:** Societal engagement, dialogue and policy.

Regional Nodes - Geographical Spread



Number of Applications



Application Programmes - Projects

Potential Projects?

Cross-cutting issues including Gender, Youth, Environment and **Climate Change, and Disaster Risk Management**; and Strategic Management of RISDP 2020–2030.

7 Years to 2030 for SADC RISDP

RISDP Infrastructure Development (Meteorology Sector)



SADC DISASTER PREPAREDNESS AND RESPONSE
STRATEGY AND FUND

2016 - 2030

Enhancing coordination for effective disaster preparedness, response and resilience

- **Institutional Support to African Climate Institutions Project (ISACIP)**
 - ✓ Strengthening the capacity of African climate institutions in the **generation of relevant climate information**.
- **Monitoring for Environment and Security in Africa (MESA)**
 - ✓ Promoted the use of satellite **Earth Observation (EO) data** for environmental monitoring and sustainable development.
- **Climate Services Centre (CSC)**
 - ✓ implementing Southern African Regional Climate Services for Disaster Resilience (SARCIS-DR) project, **Satellite and Weather Information** for Disaster Resilience in Africa (SAWIDRA) project
 - ✓ Strengthen capacity to **generate and disseminate climate information** in response to climate-induced disasters
 - ✓ Capacity in **numerical weather prediction** and **regional climate models** for seasonal climate forecasting
- **Early Warning System (EWS)**
 - ✓ Providing operational **regional climate information services** for monitoring and forecasts of all facets of seasonal climate conditions;
 - ✓ developing and distributing meteorological, environmental, and hydro meteorological products
- Outlines the preparedness and response **strategy** and **fund** for the SADC region. Three priorities:
 - ✓ understanding risk and **disaster management information systems**;
 - ✓ strengthening disaster preparedness and response planning;
 - ✓ establishing the regional disaster preparedness and response fund.
- Part of global and regional efforts to enhance resilience to disasters.



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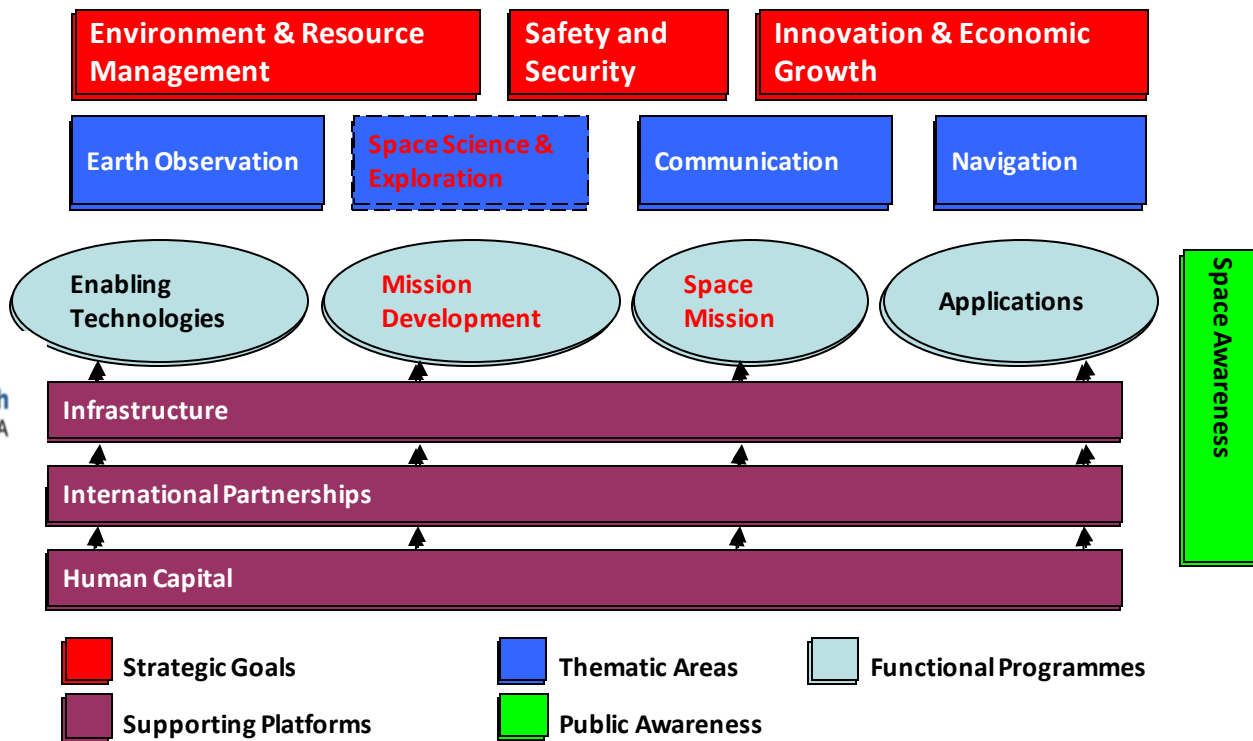
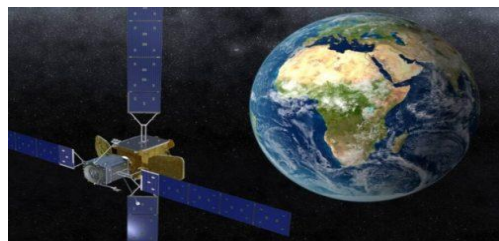


Space Sciences



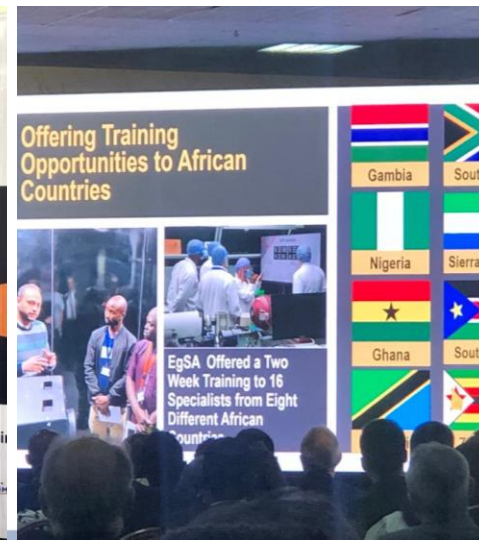
Source: AU

STATUTE OF THE AFRICAN SPACE AGENCY



Source: CASC

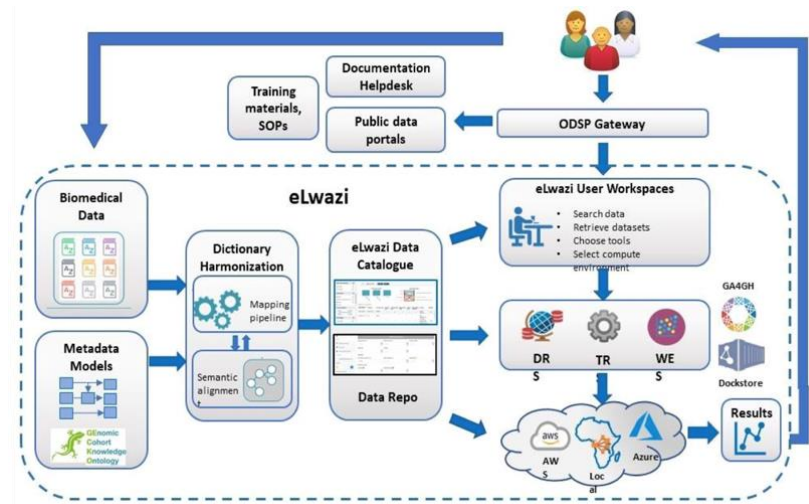
African Dialogue: Space For Africa's Development





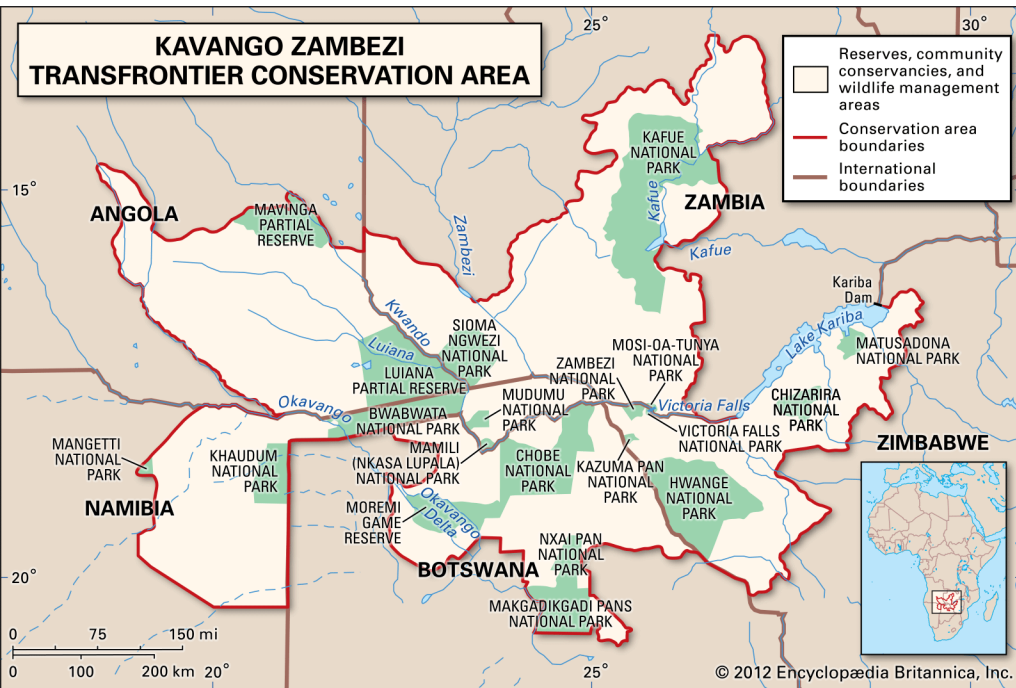
○ eLwazi Open Data Science Platform and Coordinating Center

- ✓ Genomics Research in Africa, Genomic Data, Data Science
- ✓ Aims to provide a flexible, scalable open data science platform for the DSI-Africa consortium (NIH Project) to find and access data, select tools and workflows and run analyses on a choice of computing environments, all through easy-to-use workspaces.
- ✓ UCT eResearch collaboration with H3ABioNet to build an Open Data science Platform
- ✓ H3ABionet = large Pan-African bioinformatics network of 27 institutions in 17 countries
- ✓ Scalable for Pan African Footprint
- ✓ Can promote Open Science practices



<https://elwazi.org/>

Biodiversity and platforms



JRS Biodiversity Foundation

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- ✓ Data relating to biodiversity are often lost and misplaced
- ✓ Should be used to inform conservation management decisions
- ✓ ORBIS can offer a platform where stakeholders can access data
- ✓ Provide training on data management, access and analysis
- ✓ Work with stakeholders to develop useful, tailored system
- ✓ Currently able to handle species occurrence point data
- ✓ Expand to incorporate wide variety of data types (images, GPS data, maps, pdfs)

ORBIS: Okavango Repository for Biodiversity Data Planning <https://jrsbiodiversity.org/grants/okavango-research-institute-2020/>



SUSTAINABLE DEVELOPMENT GOALS



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Key Partnerships



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1. Partnerships

☐ UNESCO – AOSP

- ✓ Joint Programming (e.g Activities - Policy Development, Dialogue etc)
- ✓ UNESCO Open Science Steering Committee and OS Recommendations Implementation

☐ ISC – AOSP

- ✓ Engagement on AOSP Governance
- ✓ Joint Programming - Leveraging ISC OS joint programming and opportunities for funding

☐ AOSP- NREns

- ✓ MoU with Ubutunet Alliance (NREns)
- ✓ Infrastructure

☐ AOSP-RECS Joint Programming

- ✓ e.g. SADC OS Agenda – Regional Policy Development? , Regional Indicative Strategic Plan RSIDP 2020-2030 Planning (long term)?

☐ AOSP – Funders

- ✓ Leveraging Science Granting Council Initiative (SGCI) Africa
- ✓ Leveraging NFR co-partners
- ✓ Identifying applying funding opportunities
- ✓ Other strategic partners - **SADCICPs?**



2. Positioning and Stakeholder Engagement

☐ AOSP – Global Engagements

- ✓ Draft MoU between Global Open Science Commons Research Infrastructures (2023 – 2025)
- ✓ All Events – very active on local, regional and global platforms



3. Other Activities – Events

- ☐ Conferences
- ☐ World Science Forum
- ☐ Open Science Workshops
- ☐ Open Science Conference Committees
- ☐ Open Science Advisory Boards
- ☐ Open Science Journals
- ☐ Representing African Perspectives

A banner for the STI Forum. At the top, it says "STI FORUM" in blue letters. Below that, "TOWARDS EQUITABLE SCHOLARLY PUBLISHING FOR SDGs AND BEYOND" is in black letters. Underneath, "2 May 2023 | 10.00AM - 11.30AM ET (New York Time)" is in blue letters. At the bottom, there are five circular portraits of the panelists: Dr. Chris Bourg, Dr. Ana Persic, Dr. Tshiamo Motahegwa, Dr. Virginia Barbour, and Mr. Thanos Giannakopoulos. Above the portraits are icons for the first five Sustainable Development Goals (SDGs).

1 NO POVERTY 2 ZERO HUNGER 3 GOOD HEALTH AND WELL-BEING 4 QUALITY EDUCATION 5 GENDER EQUALITY

STI FORUM

TOWARDS EQUITABLE SCHOLARLY PUBLISHING FOR SDGs AND BEYOND

2 May 2023 | 10.00AM - 11.30AM ET (New York Time)

Dr. Chris Bourg, Director of Libraries, MIT
Dr. Ana Persic, Program Specialist, UNESCO
Dr. Tshiamo Motahegwa, Director, AOSP
Dr. Virginia Barbour, Director, Open Access Australasia
Mr. Thanos Giannakopoulos, Chief Librarian, UN Library

This virtual panel side event is hosted by the United Nations Dag Hammarskjöld Library and UNESCO.

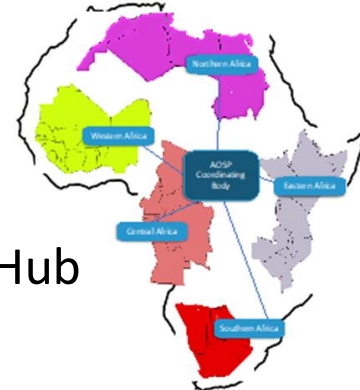


United Nations

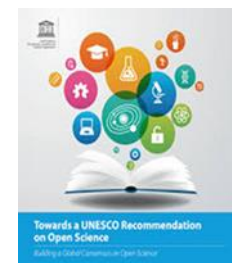
Dag Hammarskjöld Library



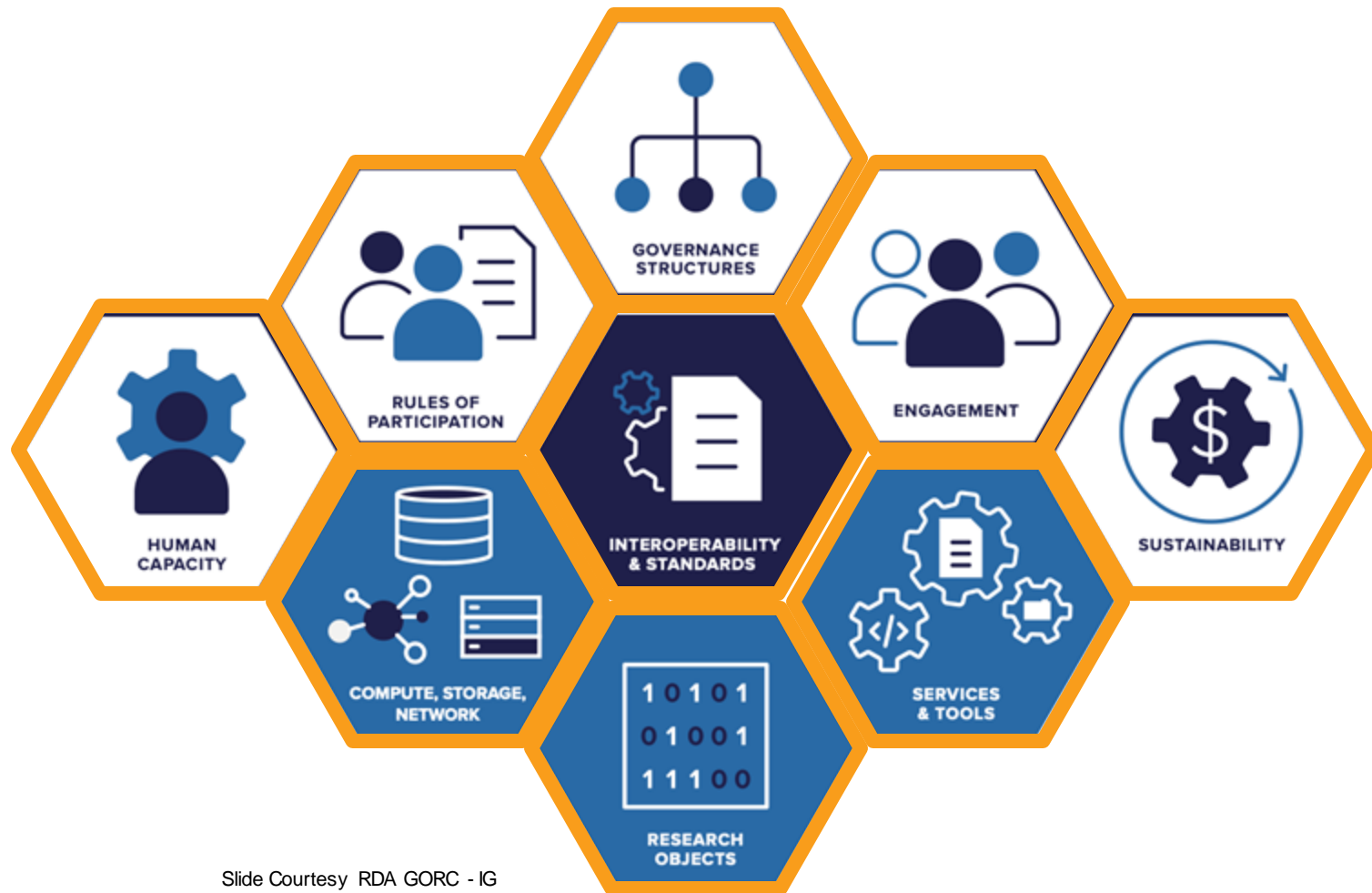
Summary of Status AOSP



1. Operationalisation of the AOSP Strategy and AOSP Coordinating Hub Office
2. Gap Analysis
3. Positioning, Awareness, Outreach and Stakeholder Engagement
4. AOSP M&E Framework
5. Process to establish Regional Nodes
6. The AOSP Governing Council
7. Resource Mobilisation - Value Proposition, SGCI synergies
8. Leverage Regional/National/international Open Science Initiatives and Networks
 - a. Supporting Open Science Policy Development
 - b. Open Access
 - c. Data
 - d. Capacity Building and Training – *Partnerships for training*
 - e. Application Programmes



Global Open Research Commons: Essential Elements AOSP Assessment?



Slide Courtesy RDA GORC - IG



Thank you



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