

National strategies and continent-wide facilitation for the implementation of Open Science practices in Africa



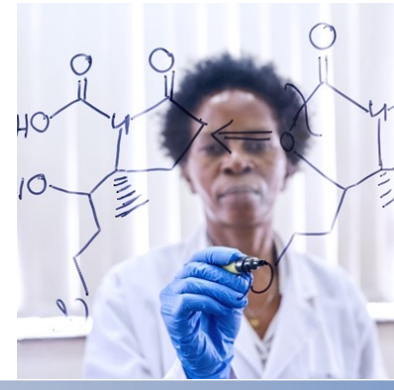
Dr Nokuthula Mchunu
Deputy Director

African Open Science Platform (AOSP) - Vision and Strands

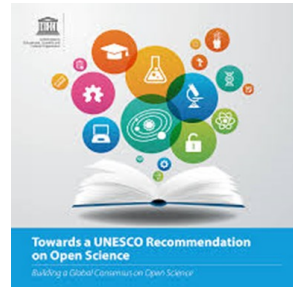


“African scientists are at the cutting edge of contemporary, data-intensive science as a fundamental resource for a modern society. They are innovative global exponents and advocates of Open Science and leaders in addressing African and Global Challenges.”

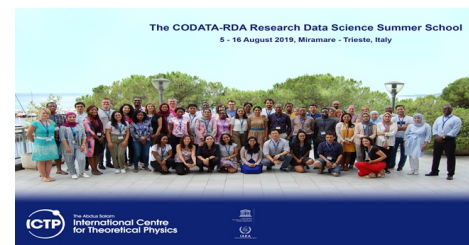
- ✓ Develop a **federated network of computational facilities and services**, software tools and advice on policies and practices of research data management,
- ✓ Develop **Data Science and AI Institute** spanning and embedded at African institutions,
- ✓ Promote **collaboration on African priority application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



AOSP Strategy & Implementation Imperatives



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



ROADMAP:

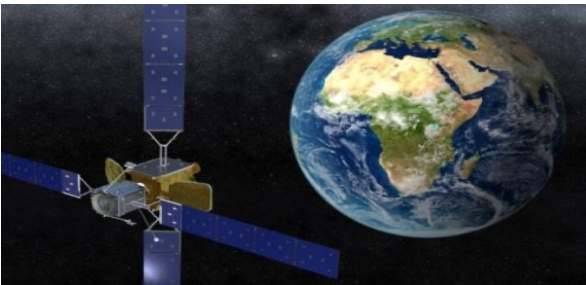
Towards development of a regional Space Science and Technology Strategy

- ✓ Establishment of regional multi-disciplinary Space Science Technical Working Group, including participation by Strategic Partners
- ✓ Establish a network of regional space science experts
- ✓ Draft Regional Space Science Strategy and Implementation Plan and Regional Outreach and Awareness Programme on Space Sciences
- ✓ Identify regional priority flagship projects for implementation using Cyber –Infrastructures and Space Applications (e.g. climate change and environment, disaster risk reduction, food security, industrialization)

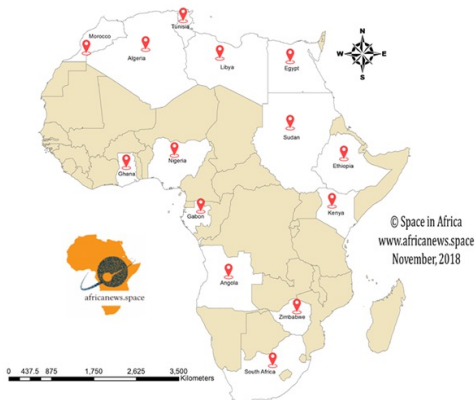


Courtesy of SADC





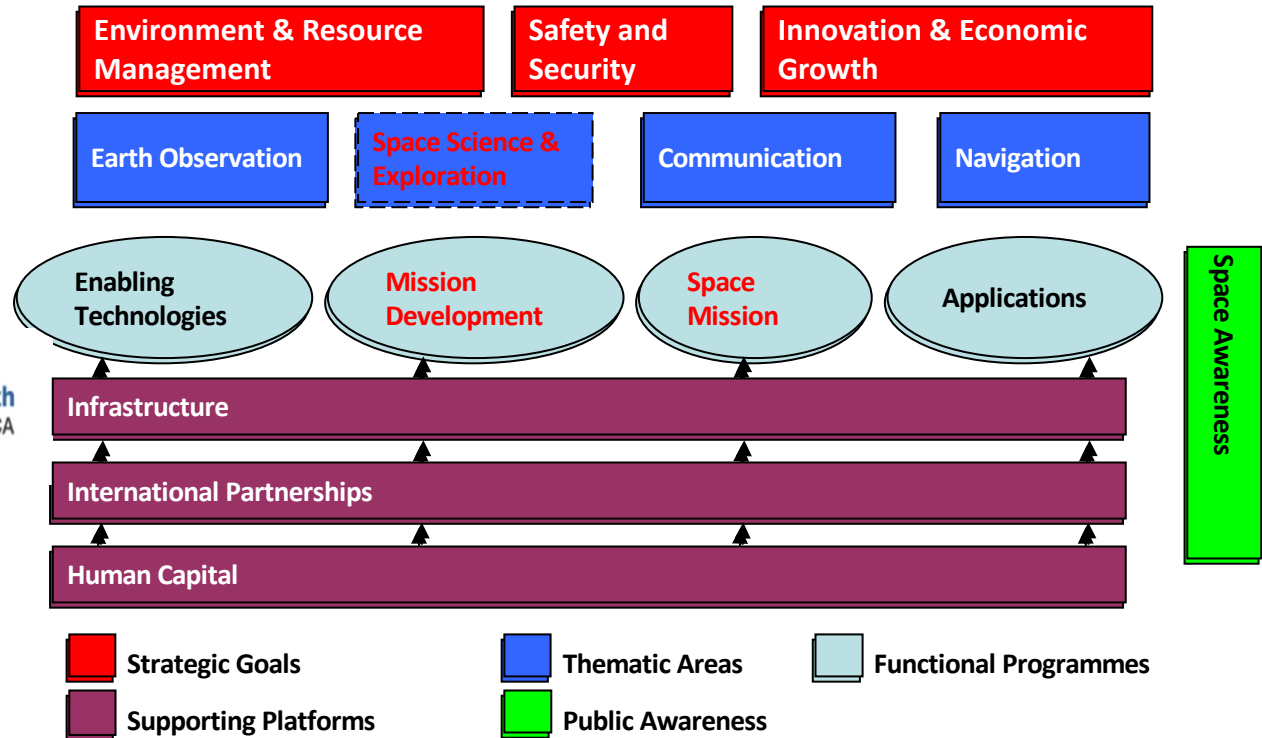
Earth Observations for Africa



Source: AU

Opportunities through Space Sciences

STATUTE OF THE AFRICAN SPACE AGENCY



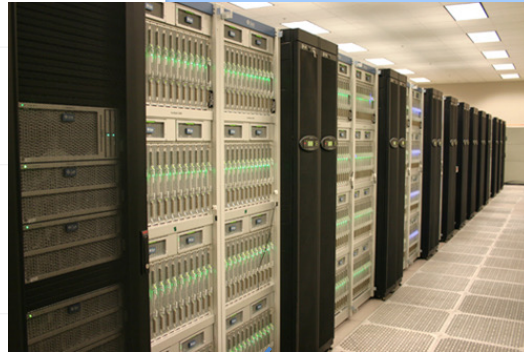
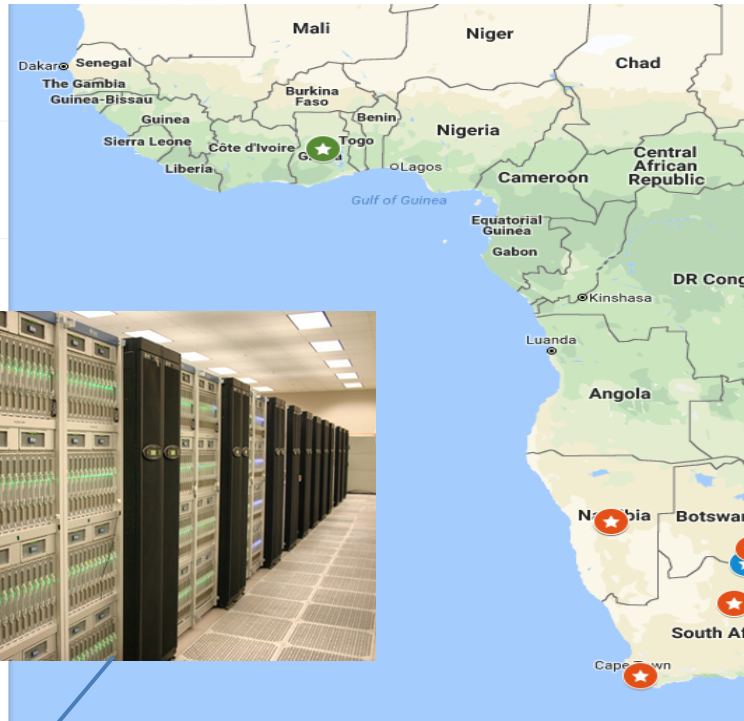
Source: CASC

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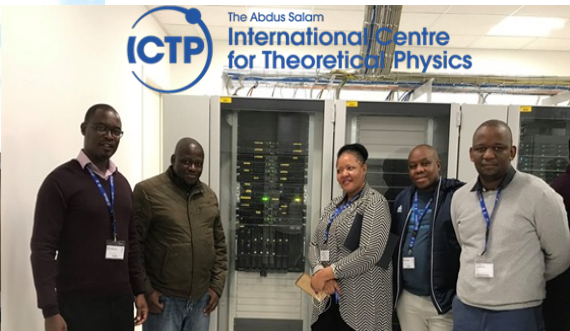
SADC HPC Ecosystems Project Map

- HPC Cambridge Sites
 - All items
- Planned sites
 - All items
- HPC Ranger Sites
 - All items
- Possible sites
 - All items
- HPC C6100 sites
 - All items
 - Ghana



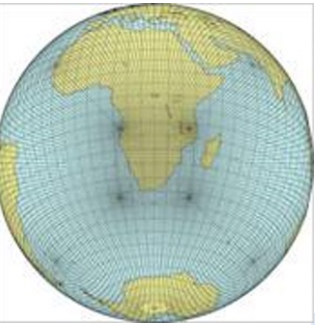
2014 Deployment – Ranger (AMD ,16C, 32GB per Node)

2018 Deployment – Stampede (Xeon Phis, 16C, 32GB per Node)



SADC Cyberinfrastructure Weather and Climate

- Multi-Hazard Early Warning Systems
- Observations,
- Modelling,
- Dissemination



$$\frac{DV}{Dt} = -\frac{1}{\rho} \nabla p - f k \times V - gk + F$$

$$\frac{D\rho}{Dt} = -\rho \nabla \cdot V$$

$$c_p \frac{DT}{Dt} - \alpha \frac{Dp}{Dt} = 0$$



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DATA SCIENCE JOURNAL

Reading: A Regional Project in Support of the SADC Cyber-Infrastructure Framework Implementation: Wea...

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Practice Papers

A Regional Project in Support of the SADC Cyber-Infrastructure Framework Implementation: Weather and Climate



South African Risk and Vulnerability Atlas
(Initiative for 10 Year Global Change Grand Challenge)
<https://sarva.saeon.ac.za/>

Weather and Climate Implementation Project*

Climate Research for Development (CR4D**) Fellowship
Improving weather and climate early warnings in Southern Africa

*SADC Cyber-Infrastructure(CI) Framework & SADC STI response to Climate Change Framework

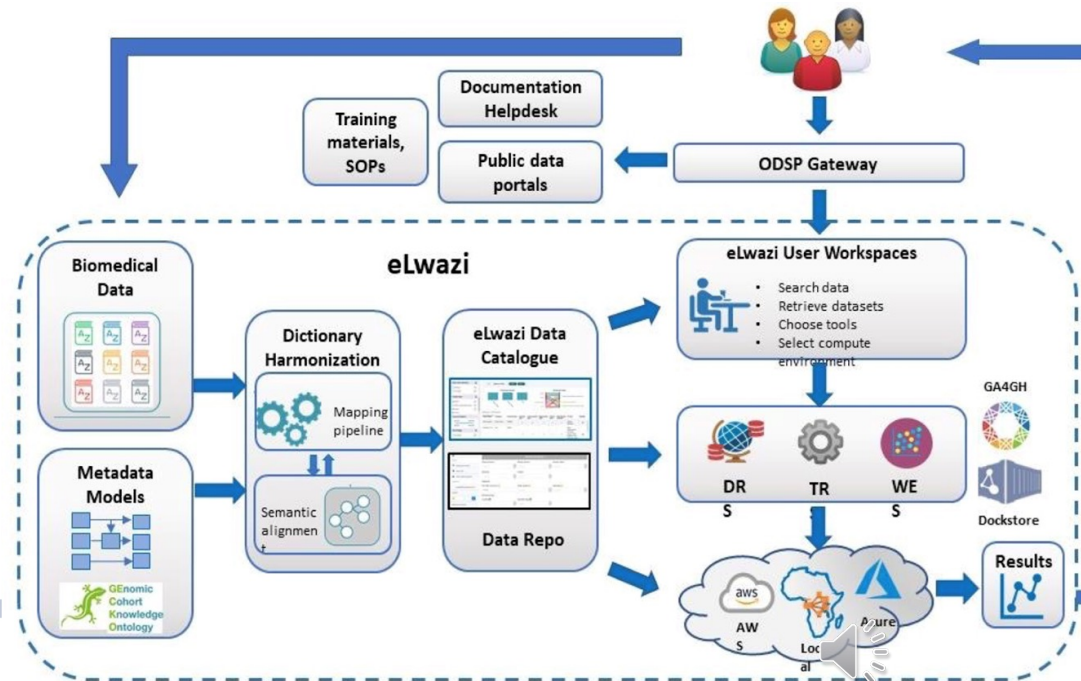
*African Academy of Sciences (The AAS),
UK Department for International Development (DFID) Weather and Climate Information SERVICES for Africa (WISER) programme Africa Climate Policy Centre (ACPC) of the United Nations Economic Commission for Africa



Health: 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



<http://www.eresearch.uct.ac.za/eresearch/news/elwazi>

<https://reporter.nih.gov/project-details/10311568>



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