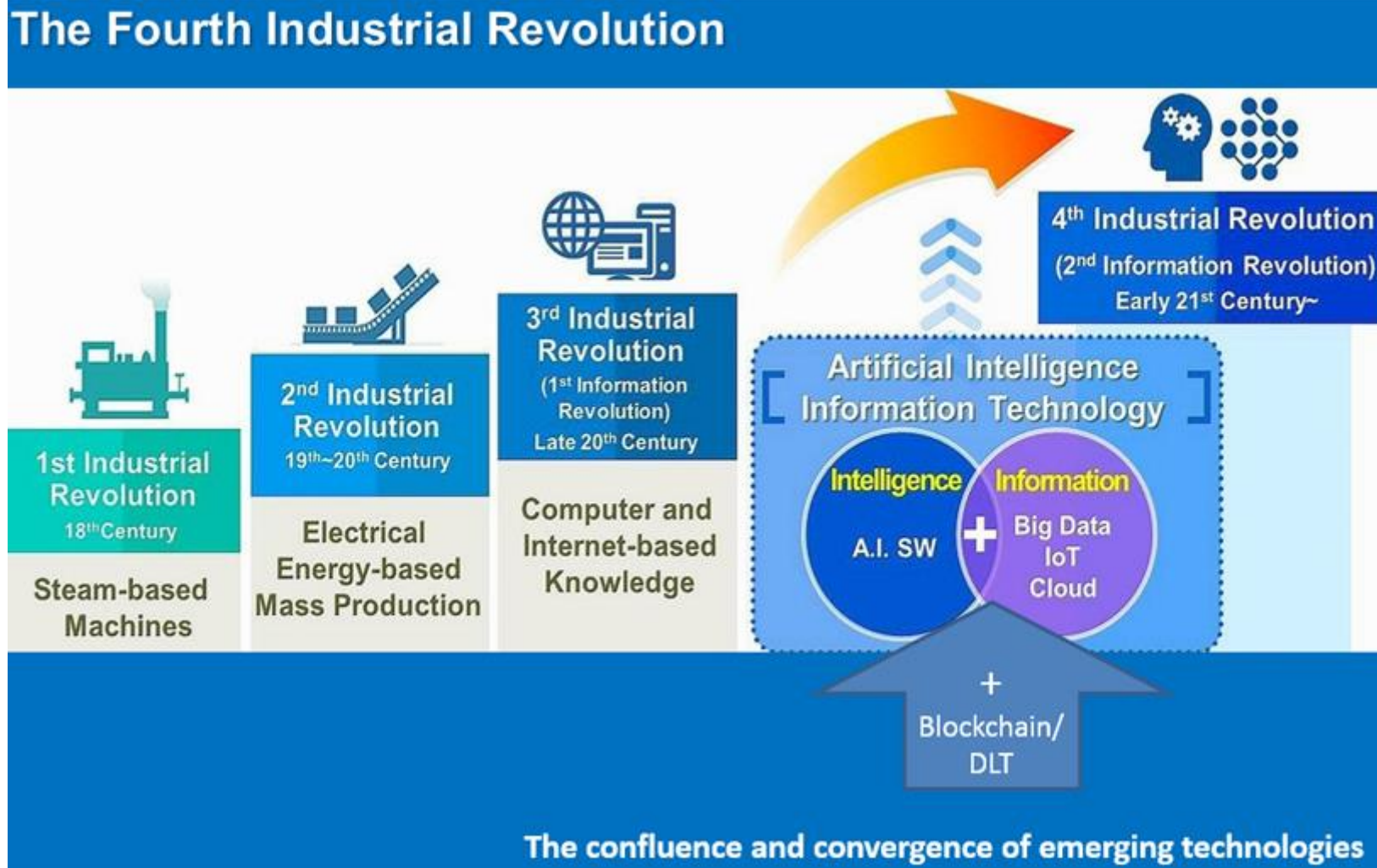# Developments in African Cyberinfrastructure and Open Science Platforms - Supporting RSTI in 4IR

Policy | Infrastructure | Data | Skills | Collaborations| Partnerships

Tshiamo Motshegwa, Computer Science Department,
University of Botswana
motshegwat@ub.ac.bw

4iR - How we got here, how to get there

The Fourth Industrial Revolution
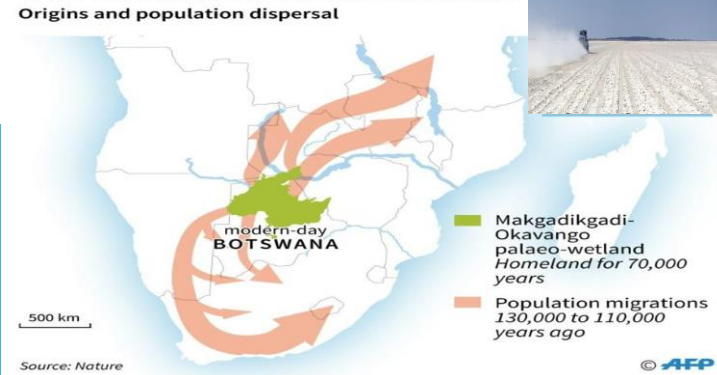
1st Industrial Revolution
18th Century
Steam-based Machines

2nd Industrial Revolution
19th~20th Century
Electrical Energy-based Mass Production

3rd Industrial Revolution
(1st Information Revolution)
Late 20th Century
Computer and Internet-based Knowledge

Artificial Intelligence Information Technology

Intelligence
A.I. SW

Information
Big Data
IoT
Cloud

4th Industrial Revolution
(2nd Information Revolution)
Early 21st Century~

+ Blockchain/DLT

The confluence and convergence of emerging technologies

Source: William Genovese, Huawei

Why is Africa Still Poor?

Source: History Scope

Here's Why African Countries Are So Poor

Source: RCVJ
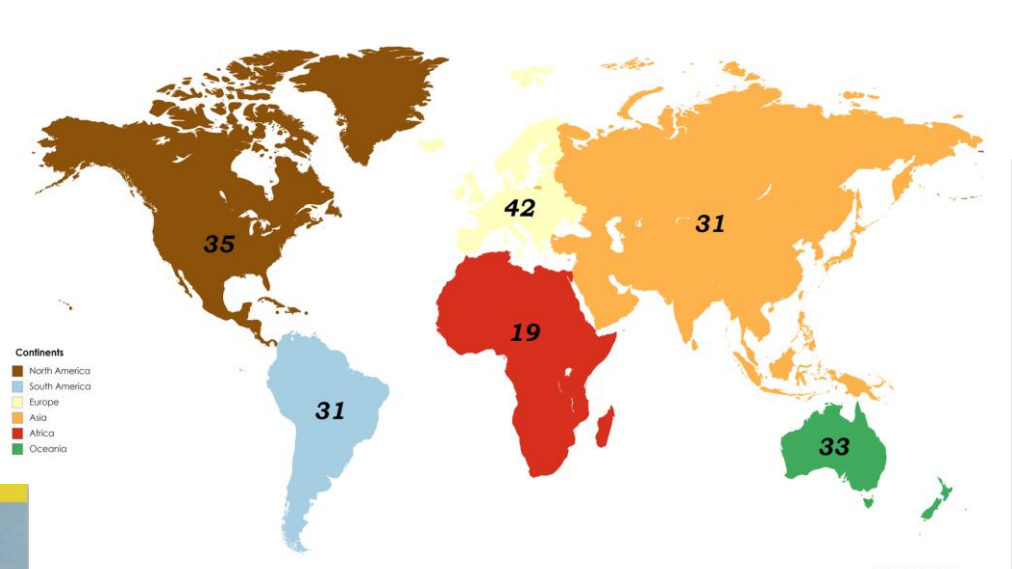
African potential and priorities through Open Science

4IR for SDGs

Use Cases & Initiatives

UNCTAD | Prosperity for all

About | Topics | Projects | Publications | Meetings | Statistics | COVID-19
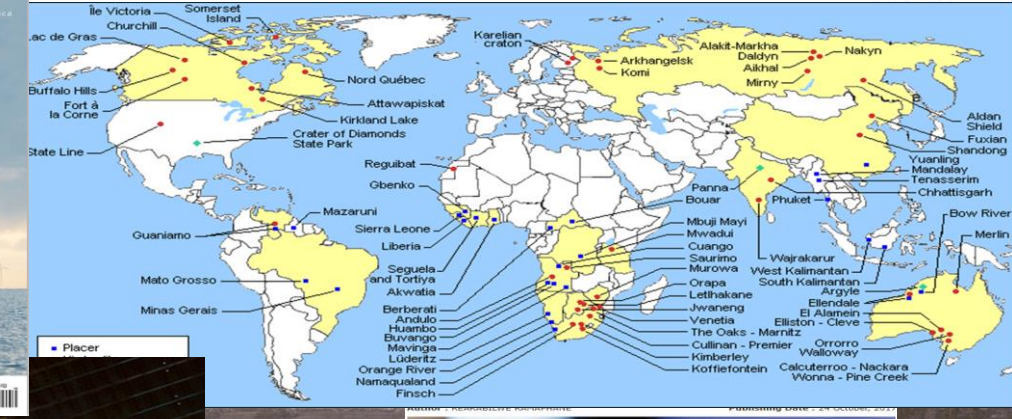
Harnessing the promise of blockchain to change lives

02 March 2021   https://unctad.org/news/harnessing-promise-blockchain-change-lives

World Bank Digital Economy for Africa Diagnostics - state of the digital economy to assist with planning

☐ Digital Infrastructure

☐ Digital Public Platforms

☐ Digital Financial Services

☐ Digital Business

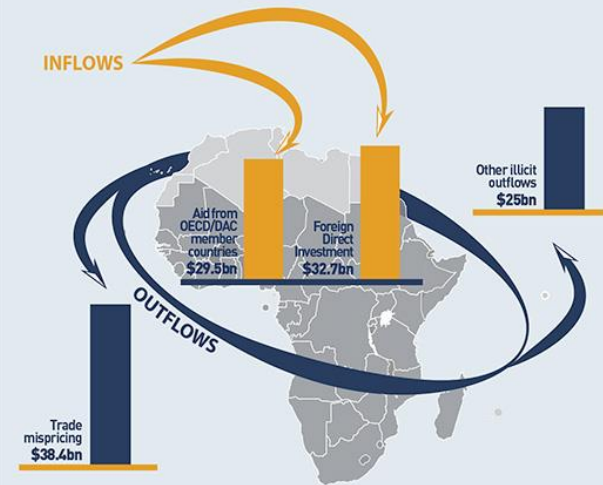☐ Digital Skills   https://www.worldbank.org/en/programs/all-africa-digital-transformation

#DE4A
Digital Economy
for Africa Initiative

Illicit Cash Flows Starving SDGs

Illicit Financial Numbers and Drivers?

Illicit Financial Flows?

Joint African Union Commission/United Nations Economic Commission for Africa (AUC/ECA) Report Of The High Level Panel On Illicit Financial Flows From Africa

Caveat – Technology Double Edged Sword

world development report 2016

BACKGROUND PAPER

Digital Dividends

Do Digital Technologies Facilitate Illicit Financial Flows?

Tatiana Tropina
Max Planck Institute for Foreign and International Criminal Law

Table 1 Nexus of Digital Technologies and Illicit Financial Flows: The Structure of the Study

|	Earning	→	Transfers	→	Use
	Sources: • Laundering proceeds of crime • Abuse of power • Market/regulatory abuse • Tax abuse		**Stages:** • Placement • Layering		**Integration:** Integration of the laundered assets into the legal financial system
How digital technologies facilitate illicit financial flows	• Digital underground economy: cybercrime and "crime as a service" • Migration of traditional organized crime online • Embezzlement and fraud in the telecom sector		Combination of: • Online and mobile banking: slicing and automation of transactions • Electronic payments via unregulated intermediaries • Digital/cryptocurrencies: ensuring anonymity • E-commerce: manipulation of supply of goods • Online gambling/online betting		• Offshore electronic bank and investment accounts • Fake e-commerce companies • Offshore online casinos • Terrorist financing
How digital technologies help address the problem of illicit financial flows	• Tackling crime activities: detection, prevention, digital investigations • Increase transparency and public scrutiny to reduce corruption • Speed up introduction of e-government systems in areas such as tax administration or customs		• Monitor suspicious transfers • Trace illegal transfers • Better information exchange (digital platforms, automatic exchange of information) • Facilitate due diligence		• Ex-post identification of illicit sources • Databases of beneficial ownership • Leaks of electronic data transfer trails and electronic documents to the attention of public and competent authorities

Fight Against IIF With Blockchain?

Blockchain and the Fight Against Illicit Financial Flows

Source: PolicyCorner

Tracing Diamonds on Blockchain

Jwaneng, mine, Botswana

- ❑ Kimberly Process – Reducing flow of Illicit Diamonds

- ❑ TRACR™ supply chain tracing of diamonds from mine to point-of-sale

- ❑ Potential for uptake and future application across the mineral and natural resources sector

- ❑ Promising technological solution to the problem of illicit financial flows and mis-invoicing

Source : Tracr
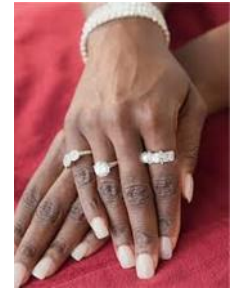
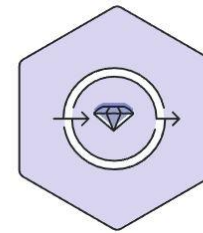End to end connectivity in the Diamond Industry assures trust

Provenance

The origin of a diamond is essential in understanding it has been sustainably produced and its quality guaranteed

Authenticity

Verifying a natural diamonds authenticity is assurance of its value

Traceability

Each step in a diamond's life adds to its uniqueness and gives insight into the rarity of a diamond gemstone
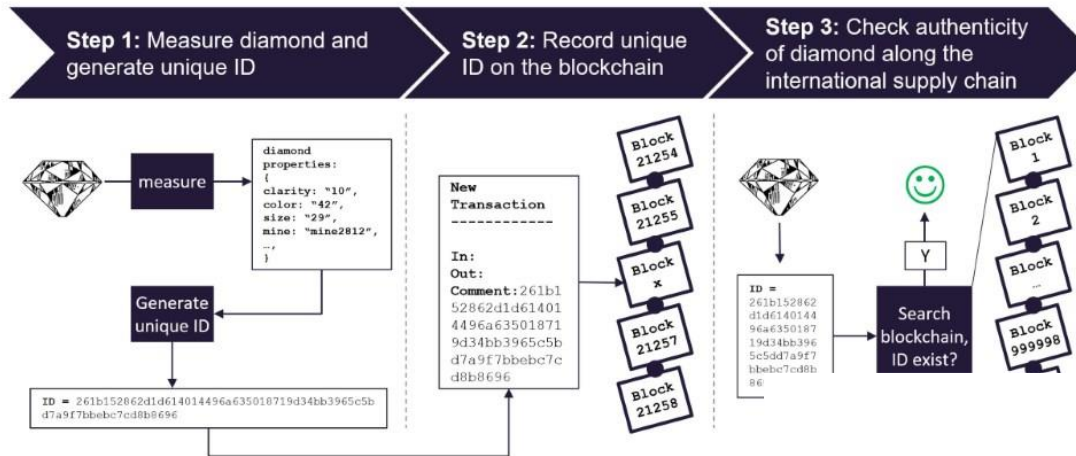
How it works? What are the challenges?

Source : Tracr - httpps://www.tracr.com/
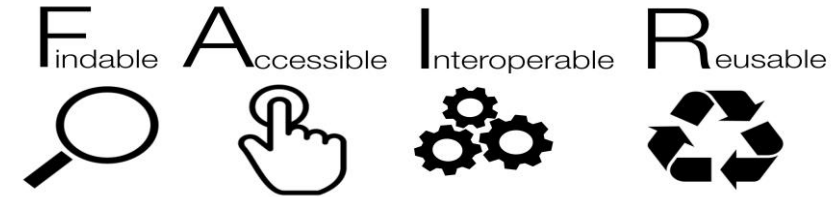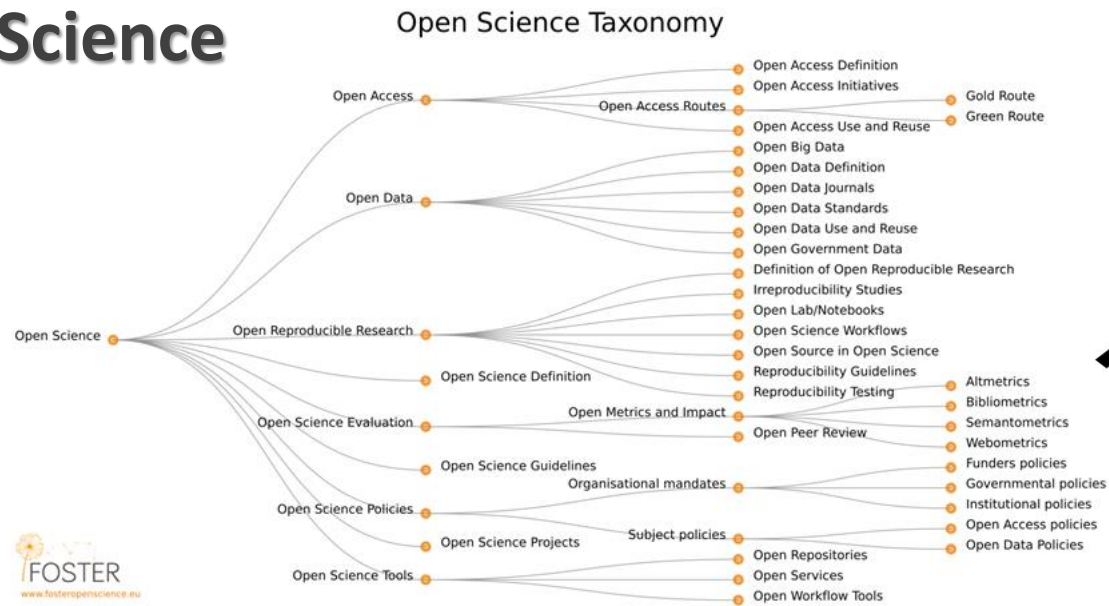

Source: dr-reinbacher

- Policy lagging behind technological developments?
- Fear of loosing Control
- Skills
- Infrastructure

Open Science

Open Science Taxonomy

Findable **A**ccessible **I**nteroperable **R**eusable

FOSTER — FACILITATE OPEN SCIENCE TRAINING FOR EUROPEAN RESEARCH

- Open access to research literature.

- **Data that is as Open as possible, as closed as necessary.**

- **FAIR Data (Findable, Accessible, Interoperable, Reusable).**

- **Data is a recognised and important output of research.**

- A culture and methodology of open discussion and enquiry (including methodology, lab notebooks, pre-prints).

- Data code and analysis processes are shared for reproducibility.

- **Engagement with society and the economy in research activities (citizen science, co-design / transdisciplinary research, interface between research, development and innovation).**
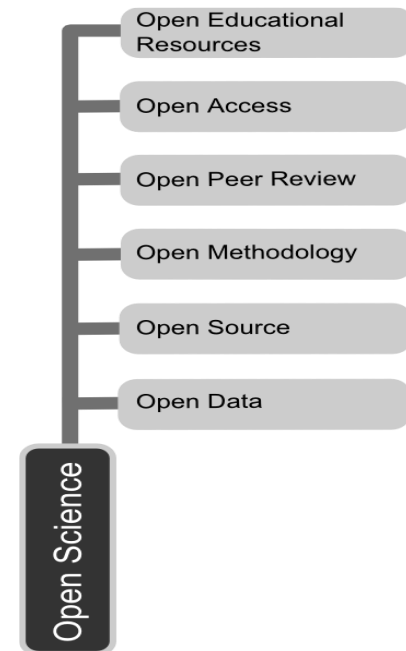
Why Open Science / FAIR Data?

- **Good scientific practice depends on communicating the evidence.**
  - Open research data are essential for reproducibility, self-correction.
  - Academic publishing has not kept up with age of digital data.
  - Danger of an replication / evidence / credibility gap.
  - Boulton: to fail to communicate the data that supports scientific assertions is malpractice
- **Open data practices have transformed certain areas of research.**
  - Genomics and related biomedical sciences; crystallography; astronomy; areas of earth systems science; various disciplines using remote sensing data…

  - **FAIR data helps use of data at scale, by machines, harnessing technological potential.**
  - Research data often have considerable potential for reuse, reinterpretation, use in different studies.
- **Open data foster innovation and accelerate scientific discovery through reuse of data within and outside the academic system.**
  - Research data produced by publicly funded research are a public asset.
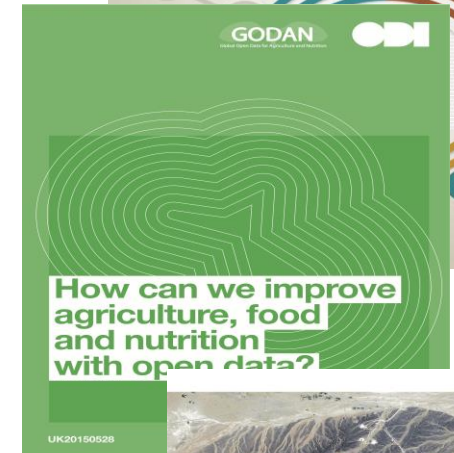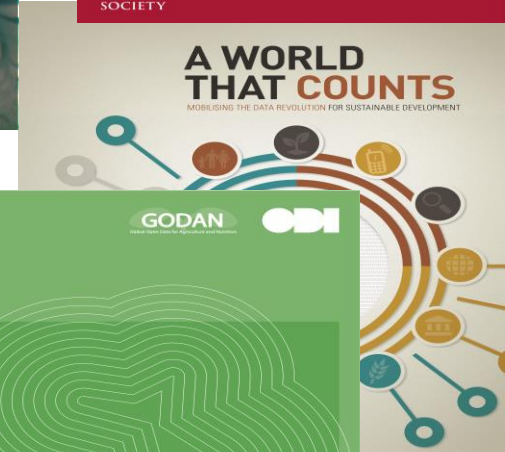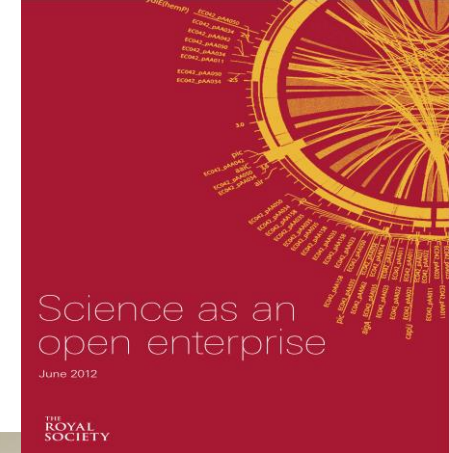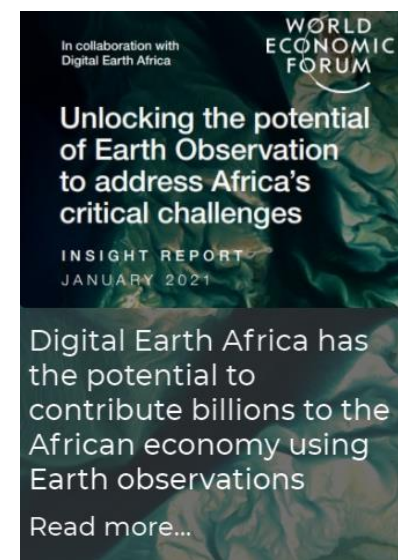
Open Science and FAIR Data:
Benefits for Stakeholders

- **Government and Innovation / Development**
  - Increased impact from investment in activities relating to data; economic, innovation and research benefits.
  - Partnerships for research, development and innovation around co-design, Open Science and FAIR data.
- **Research Institutions:**
  - Development of data capacity and data skills;
  - Not losing valuable data (stored on hard drives, not annotated or reusable);
  - Shop window of research activities and expertise (Open Access, Open Data / FAIR Data)
  - Capacity to build research schools around data assets and skills, attract international collaboration and investment.
  - Build case for 'data sovereignty', data (re-)patriation.
- **Researchers:**
  - Increased data skills, expertise in FAIR data builds competitive edge.
  - Citation advantage of Open Access / Open Data.
  - Culture of certain research disciplines is already strongly in favour of Open Data / Open Science.

Patterns and trends - Research collaborations
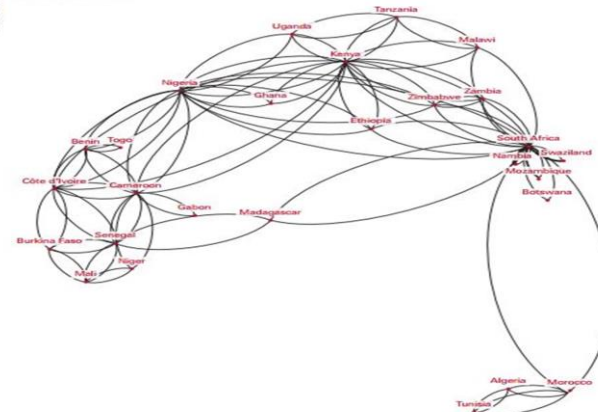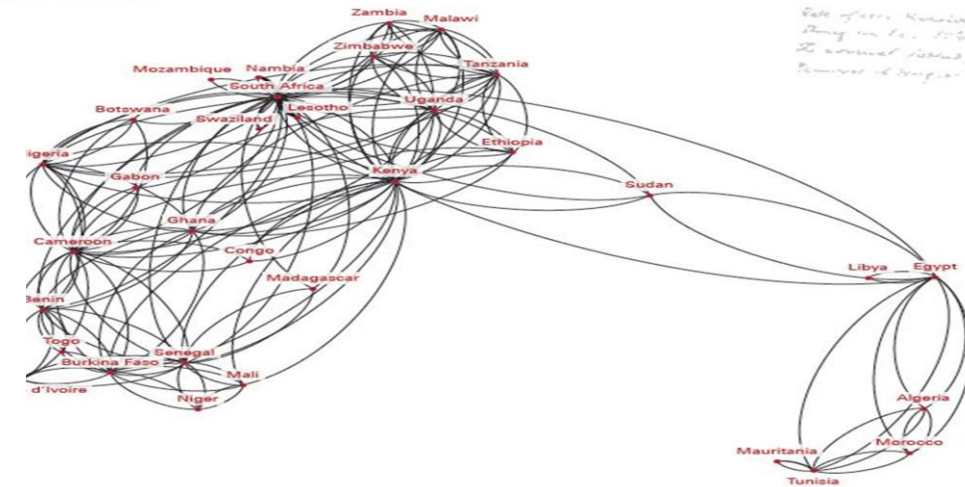
Knowledge, Networks and Nations

Global and Continental Open Science Platforms – RSTI and Collaborations in Digital Era

Open Science Platforms

- Global Open Science Cloud (GOSC)
  - Supporting research collaborations across continents
  - Assist in addressing global science challenges – e.g UN Sustainable Development Goals (SDGs), climate change, infectious diseases and coordination of global disaster risk reduction etc

- European Open Science Cloud (EOSC)
  - "Digital Single Market" strategy - building a competitive data and knowledge economy in the European Union powered by cyberinfrastructures
  - EOSC - an environment for hosting and processing research data to support EU wide science collaborations

Creating African Open Science Platforms for Addressing African Challenges Through Open Science

Why an African Open Science Platform?

STI Strategy of Africa 2024

8 Priorities for the African research community – will be requiring data, data sharing, openness (as open possible, as closed necessary) and collaboration:

- disease prevention & control;
- climate resilience (disaster risk);
  - environmental protection (biosphere, hydrosphere);
  - food and nutritional security;
  - smart resilient cities;
  - achieving sustainability goals;
- improved knowledge production;
- improved intra-Africa research collaboration.

UNECA Africa Regional Forum

"T[t]he creation of an African platform for research and innovation exchange will enable the dissemination of goal-relevant African research and innovation to governments and citizens. It could form the basis for linking researchers and innovators with the funding required to scale up their work. The proposed platform would showcase and share Africa's efforts to develop goal-relevant research and innovation and could be coordinated with the Global Innovation Exchange." – Dakar (2018)

Addressing the UN SDGs

"... Africa's common objectives and commitment to collective actions to develop and use science and technology for the socio-economic transformation of the continent and its integration into the world economy."

- Africa Consolidated Science and Technology Plan of Action (2005)

African Open Science Platform - Vision and Strands

"*African scientists are at the cutting edge of contemporary, data-intensive science as a fundamental sesource 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.

https://zenodo.org/record/1407488

Regional Platforms – e.g. SADC CI

Revised Regional Indicative Strategic Development Plan, RISDP

Industrialization Strategy and Roadmap

SADC Cyberinfrastructure Framework

Regional infrastructure Development Master Plan, RIMDP

SADC Strategic Plan on STI 2015 - 2020

Protocol on STI
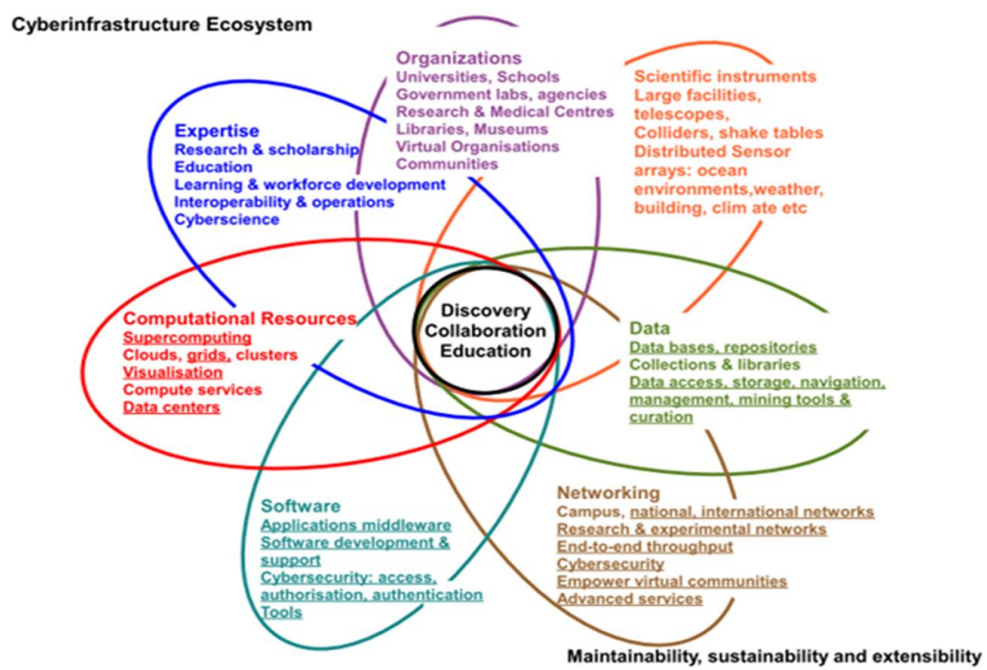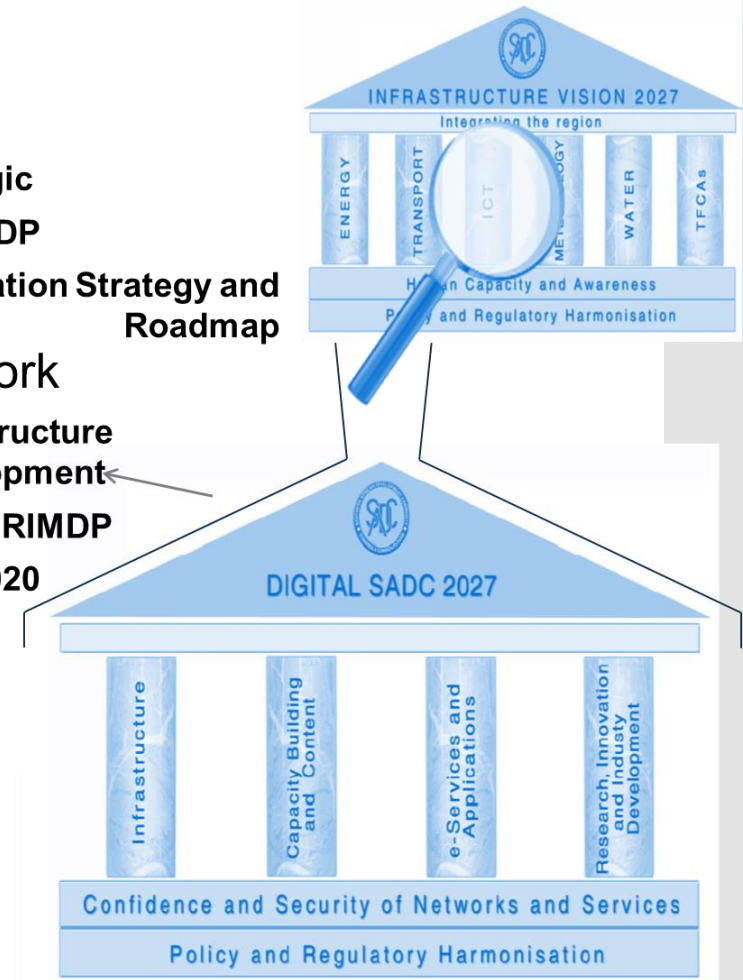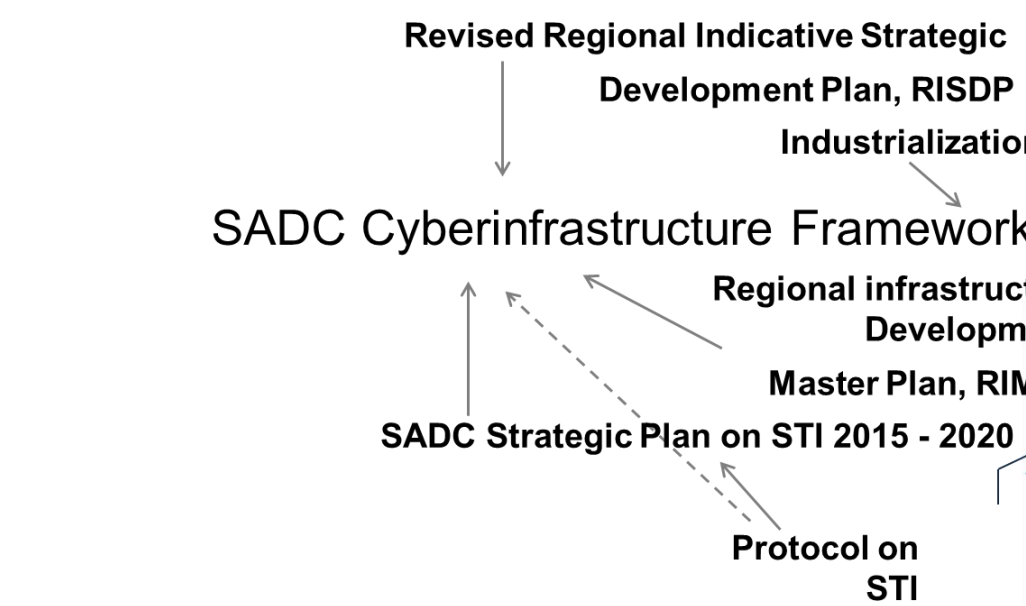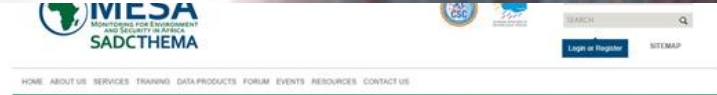
SADC HPC ECOSYSTEMS Project Map

- HPC Cambridge Sites
  - ⭐ All items
- Planned sites
  - 📍 All items
- HPC Ranger Sites
  - ⭐ All items
- Possible sites
  - ❓ All items
- HPC C6100 sites
  - ⊕ All items

2014 Deployment – Ranger

2018 Deployment – Stampede
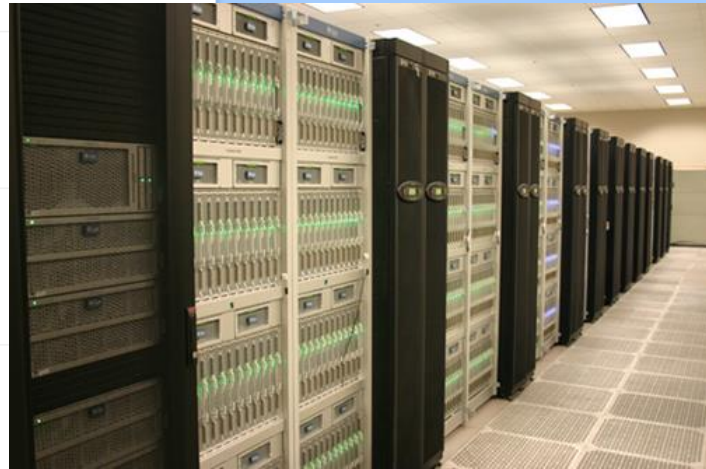
CODATA-RDA School of Research Data Science

- Contemporary research – particularly when addressing the most significant, interdisciplinary research challenges – increasingly depends on a range of skills relating to data.

- **These skills include the principles and practice of Open Science; research data management and curation, how to prepare a data mana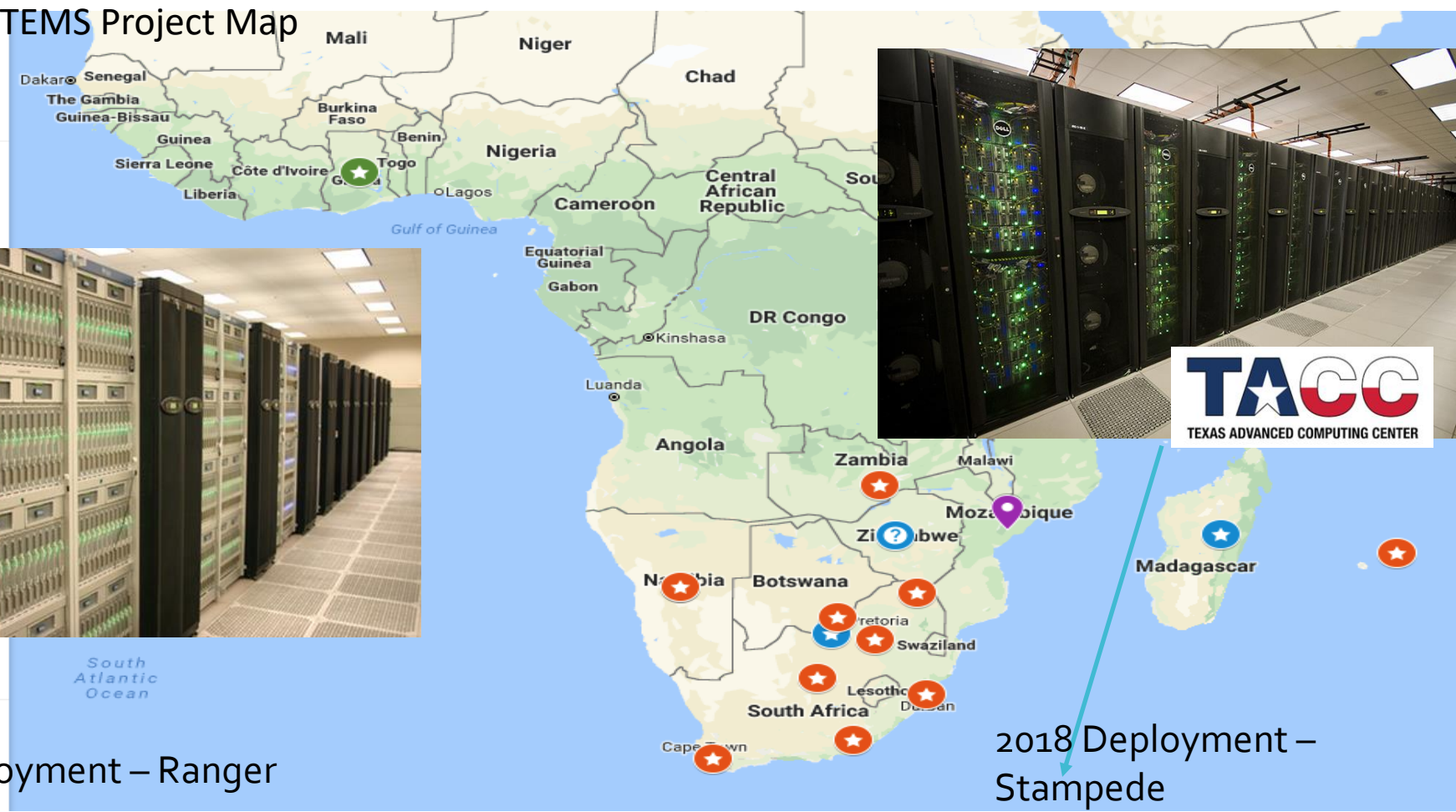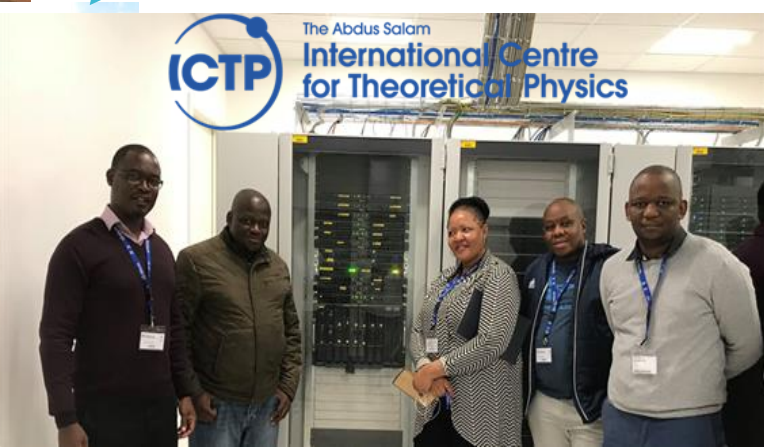gement plan and to annotate data; software and data carpentry; principles and practices of visualisation; data analysis, statistics and machine learning; use of computational infrastructures.** The ensemble of these skills, relating to data in research, can usefully be called 'Research Data Science'.

- Advanced workshops, following the foundational school.

- National or regional schools, organised with local partners

The CODATA-RDA Research Data Science Summer School
9 - 21 July 2017
Miramare, Trieste - Italy
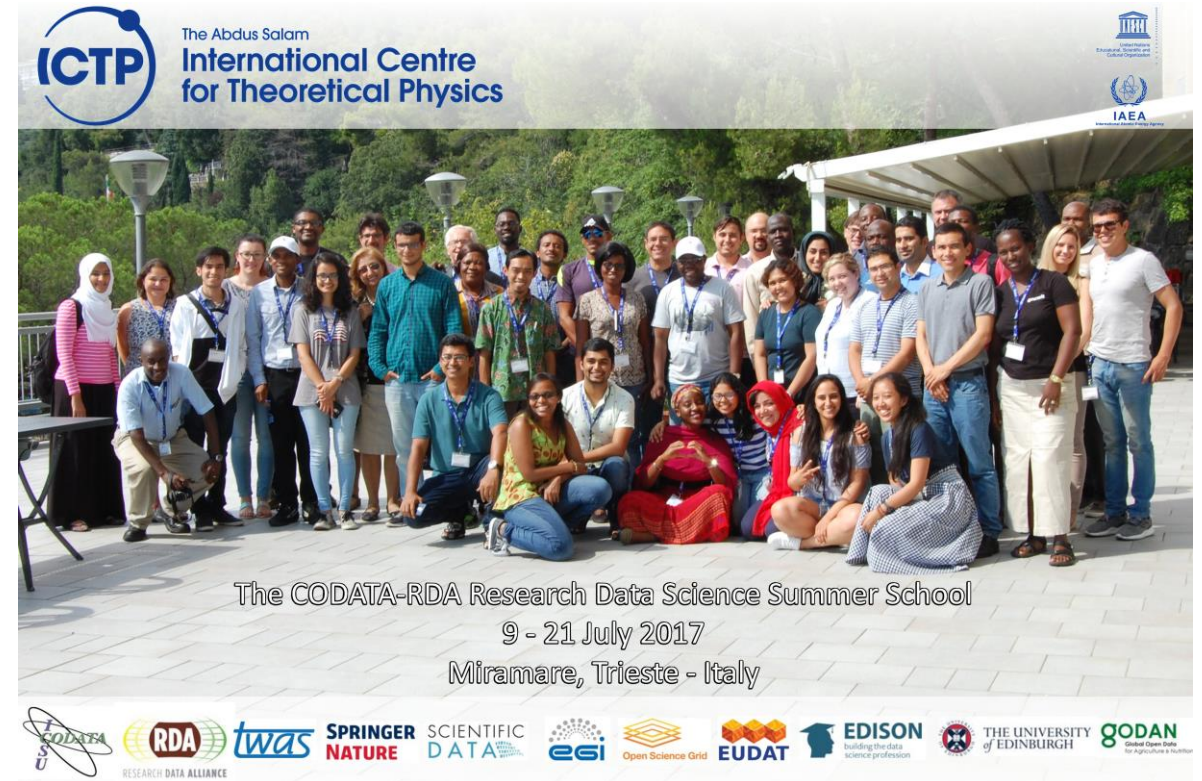
SADC CI Projects(e.g. Weather & Climate)

- Weather extremes – political boundaries
  - Idai (Mozambique, Malawi, Zimbabwe)
  - Dineo (Mozambique, South Africa, Zimbabwe, Botswana)

- Regional collaboration necessary
  - Data sharing & Infrastructure limitations
  - Increase Research Output
  - Human capital development

- Ongoing projects
  - SADC CI – learning the use of HPC systems together
  - African Development funded project: Southern African Regional Climate Information Services for Disaster Resilience Development (SARCIS-DR) – servers deployed to most Meteorological Services

RESEARCH ARTICLE

Sensitivity of Botswana Ex-Tropical Cyclone Dineo rainfall simulations to cloud microphysics scheme [version 1; peer review: awaiting peer review]

Charles Molongwane [1], Mary-Jane M. Bopape [2], Ann Fridlind [3], Tshiamo Motshegwa [4], Toshihisa Matsui [5], Elelwani Phaduli [2], Bigani Sehurutshi [4], Robert Maisha [2]

[1] Botswana Department Meteorological Services, Gaborone, 00267, Botswana
[2] South African Weather Service, Pretoria, South Africa
[3] Goddard Institute for Space Studies, National Aeronautics and Space Administration, New York, New York, NY 10025, USA
[4] Department of Computer Science, University of Botswana, Gaborone, Botswana
[5] Mesoscale Dynamics and precipitation lab, NASA Global Space Flight Center, Greenbelt, Maryland, MD 20771, USA

Article

Convection parametrization and multi-nesting dependence of a heavy rainfall event over Namibia with Weather Research and Forecasting (WRF) model

Sieglinde Somses [1]*, Mary-Jane M. Bopape [2], Thando Ndarana [3], Ann Fridlind [4], Toshihisa Matsui [5], Elelwani Phaduli [2], Anton Limbo [6], Shaka Maikhudumu [6], Robert Maisha [2] and Edward Rakate [7]

[1] Namibia Meteorological Services; Private Bag 13224, Windhoek, Namibia
[2] South African Weather Service, Pretoria, South Africa
[3] University of Pretoria, Pretoria, South Africa
[4] Goddard Institute for Space Studies, National Aeronautics and Space Administration (NASA), 2880 Broadway, New York, NY 10025, USA
[5] Mesoscale Dynamics and Precipitation Lab, NASA Global Space Flight Centre, Greenbelt, MD 20771, USA
[6] University of Namibia, Private Bag 13301, Windhoek, Namibia
[7] Centre for High Performance Computing, Council for Scientific and Industrial Research, Pretoria, South

DATA SCIENCE JOURNAL

Bopape, M-JM, et al. 2019. A Regional Project in Support of the SADC Cyber-Infrastructure Framework Implementation: Weather and Climate. *Data Science Journal*, 18: 34, pp. 1–10. DOI: https://doi.org/10.5334/dsj-2019-034

PRACTICE PAPER

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

Mary-Jane Morongwa Bopape[1], Happy Marumo Sithole[2], Tshiamo Motshegwa[3], Edward Rakate[4], Francois Engelbrecht[5], Emma Archer[6], Anneline Morgan[7], Lwando Ndimeni[8] and Joel Botai[1]

[1] South African Weather Services, Centurion, ZA
[2] National Intergrated Cyber-Infrastructure System (NICIS), Council for Scientific and Industrial Research (CSIR), Cape Town, ZA
[3] Department of Computer Science, Faculty of Science, University of Botswana, Gaborone, BW
[4] Centre for High Performance Computing, NICIS, CSIR, Cape Town, ZA
[5] School of Geography, Archaeology and Environmental Studies, University of Witwatersrand, Braamfontein 2000,

South African Weather Service

Slide courtesy of Dr MJ Bopape - SAWS

National Platforms (e.g. Botswana)

#BW Government Priorities

[Some HE. Inaugural Speech Points Feb 2018]

- ❑ Education, Skills development & alignment
- ❑ Enhanced youth employment
- ❑ Investment in ICT
- ❑ Digitisation (Digital Transformation?) information (Data) driven decision making
- ❑ Declaration of assets
- ❑ Finance sector meeting needs
- ❑ Taxes

National Priorities & RSTI Policies (MOTE)

Botswana National Policy Landscape

❑ Vision 2036 & Botswana's SDGs Roadmap

❑ Botswana National S&T Policy (1998), National Research, Science & Technology Plan (2005)

❑ Revised National Policy on Research, Science, Technology and Innovation(2011) + Implementation Plan (2012)

❑ Botswana Space Science Strategy (Draft 2019)
  ❑ Earth Observation & Remote Sensing
  ❑ Planetary Science
  ❑ Astronomy & Astrophysics
  ❑ Supporting platforms (Cyberinfrastructure – Including NRENS)

❑ Botswana Open Data Policy (Desirable)
  • ODOS, Relevant Ministries
  • Opens up opportunities in
    • Open Data & Open Government,
    • Open Data & Open Science - Research , Science , Technology & Innovation
    • Data for Development, Knowledge Based Economy

ICT Policy Landscape (MTC)

Botswana National Policy Landscape

❑ Maitlamo -Botswana's National ICT Policy (2004)
  ✓ Botswana will be a globally competitive, knowledge and information society where lasting improvement in social, economic and cultural development is achieved through effective use of ICT.

❑ National eGovernment Strategy (2011 -2016)
  ✓ "Becoming the integrated Government, by providing universal access to services in a convenient , efficient, transparent and reliable way"

❑ National Broadband Strategy (2018)
  ✓ "Increasing the accessibility of broadband services throughout the country and improving its affordability and reliability"

❑ Cybersecurity Strategy (Ongoing)
  ✓ Protection Structures
  ✓ Electronic signatures

❑ Data Protection act (2018)
  ✓ Data Regulatory Authority

eLegislation, Regulatory Bodies & Infrastructure

Botswana National Policy, Regulation and Infrastructure Landscape

❑ eLegislation
  - ✓ Electronic Commerce & Electronic Signatures Act
  - ✓ Electronic Communications and Transactions Act No. 14 of 2014
  - ✓ Electronic Records (Evidence) Act No. 13 of 2014
  - ✓ Cybercrime and Computer Related Crimes Act (2007) - Reviewed
  - ✓ Electronic Evidence Bill – Reviewed

❑ BOCRA
  - ✓ Communications Regulatory Body
 - ✓ Telecoms, Internet, Broadcasting, etc.
  - ✓ Licensing

❑ BOFINET
  - ✓ > 9200Km Fibre, Mesh network
  - ✓ DWDM equipment(40 wavelengths @ 10Gb capacity each)
  - ✓ Wholesale provider
  - ✓ National and international telecommunication infrastructure
  - ✓ Services all licensed Telco Operators
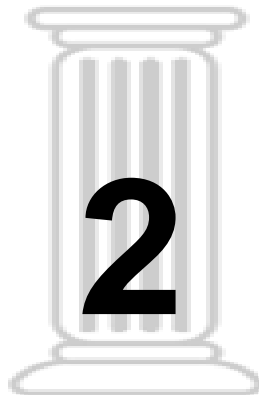
Source: BOFINET 2019 Annual Report

SMARTBOTS: PILLARS OF KNOWLEDGE-BASED ECONOMY
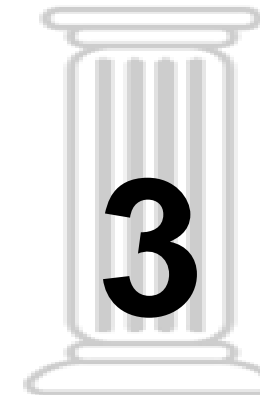
- Digitise Industries
- Integrate Ecosystems
- Industrialise Digital
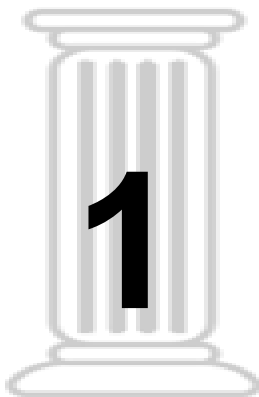
- Reengineer government processes
- Re-architect technology infrastructure
- Transform Services

- Affordable Access
- Digital Literacy
- Participation

1

2

3

DIGITAL ECONOMY FRAMEWORK

DIGITAL GOVERNANCE FRAMEWORK

DIGITAL READINESS FRAMEWORK

Courtesy of SmartBots Team

SmartBots

Our objectives

- Connect the country so that no one is left behind;

- Provide knowledge and tools to compete and build a knowledge workforce;

- Build a citizen/customer experience that is integrated, seamless and trusted… leveraging on digital technologies;

- Co-create data-driven products and services; and

- Prioritise and invest in ideas in order to compete in the global market.

Courtesy of SmartBots Team

SmartBots Strategic Benefits

- Build the internal market
- Assemble Human Capacity
- Become responsive to the global market
- Accelerate Development and take leadership in key markets
- Establish a strong public sector and generate prosperity for all Batswana

Courtesy of SmartBots Team

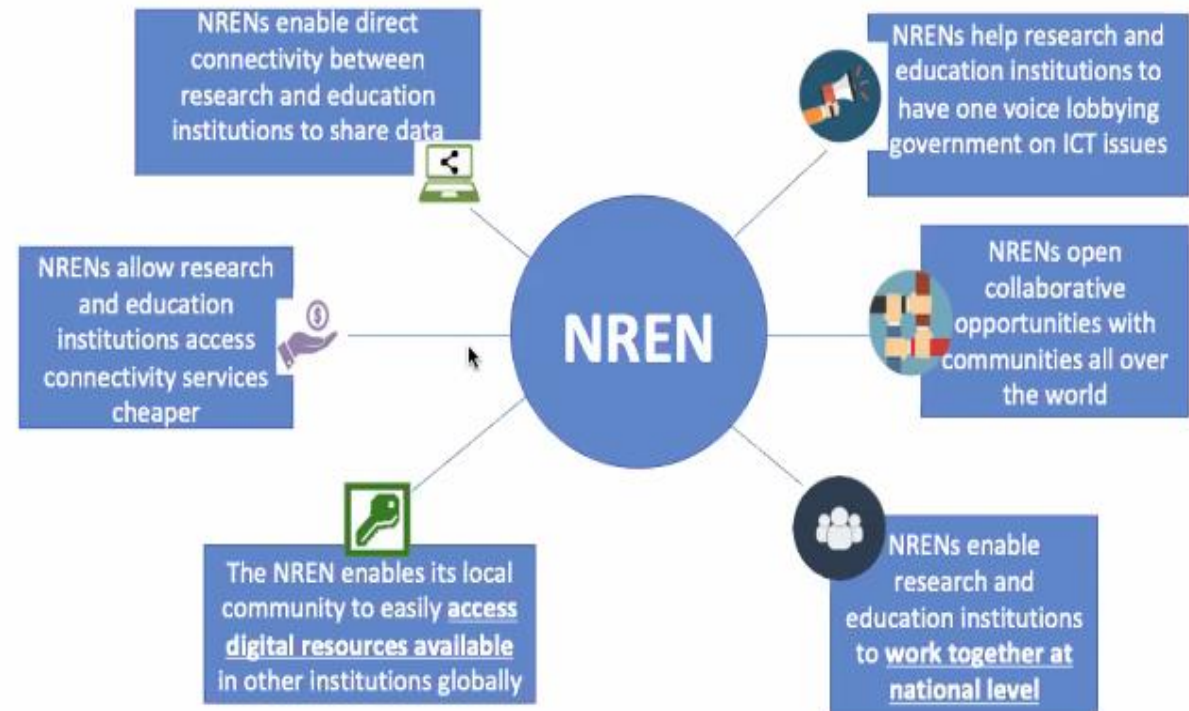**SmartBots**

Education Towards KBE

- Establish within the Digital Innovation Hub the: Science and Innovation School of Excellence
- Improve and develop existing curricula and qualifications
- Become relevant towards developing KB workforce
- Invest in technological development and utilization
- Build institutional capacity and educational skills
- Rollout of NREN
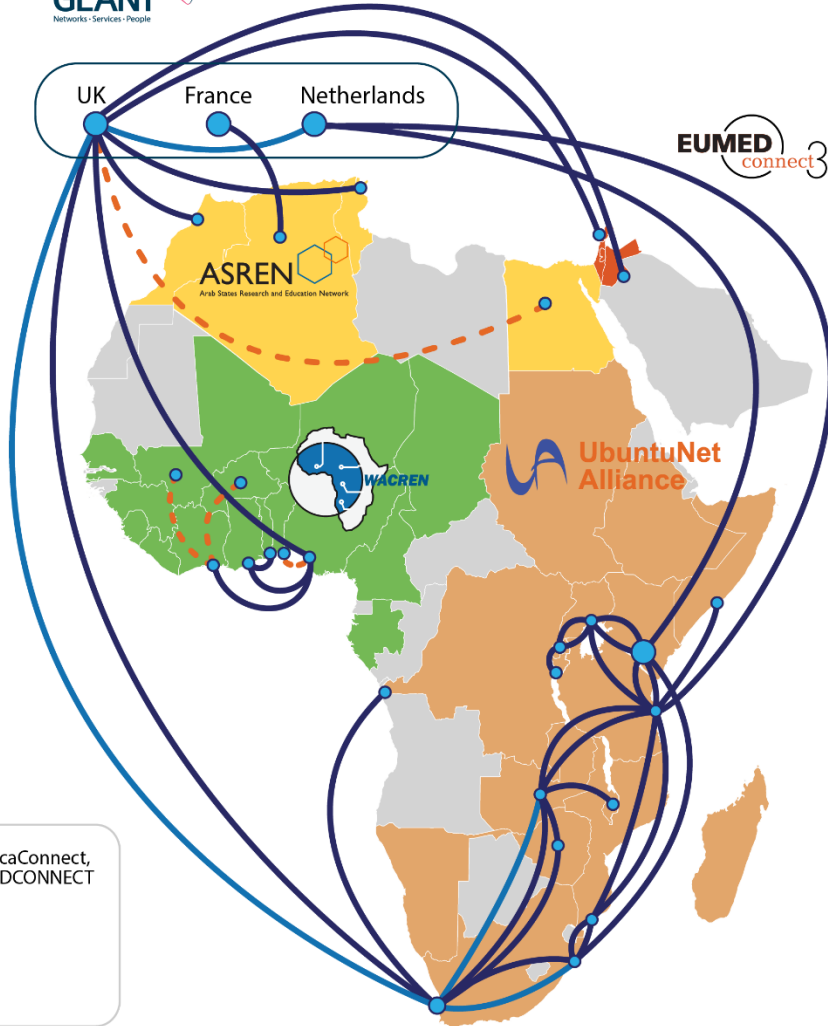- Evaluate the regulatory framework

Courtesy of SmartBots Team

SmartBots

NRENs Overview
What is it?
What is the value?

Why NRENs?

NRENs enable direct connectivity between research and education institutions to share data

NRENs help research and education institutions to have one voice lobbying government on ICT issues

NRENs allow research and education institutions access connectivity services cheaper

NREN

NRENs open collaborative opportunities with communities all over the world

The NREN enables its local community to easily **access digital resources available** in other institutions globally

NRENs enable research and education institutions to **work together at national level**

✓ Connectivity

✓ Community

✓ Collaboration

✓ Services

Update on BotsREN
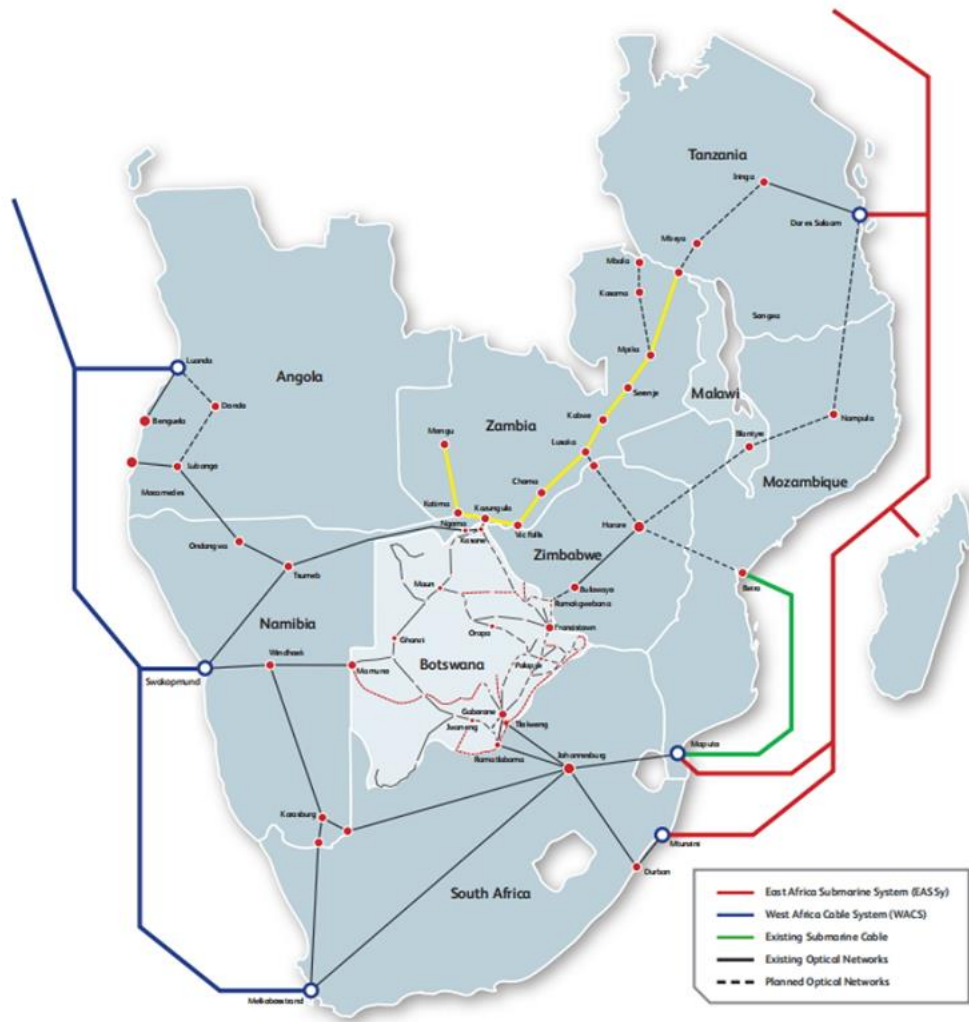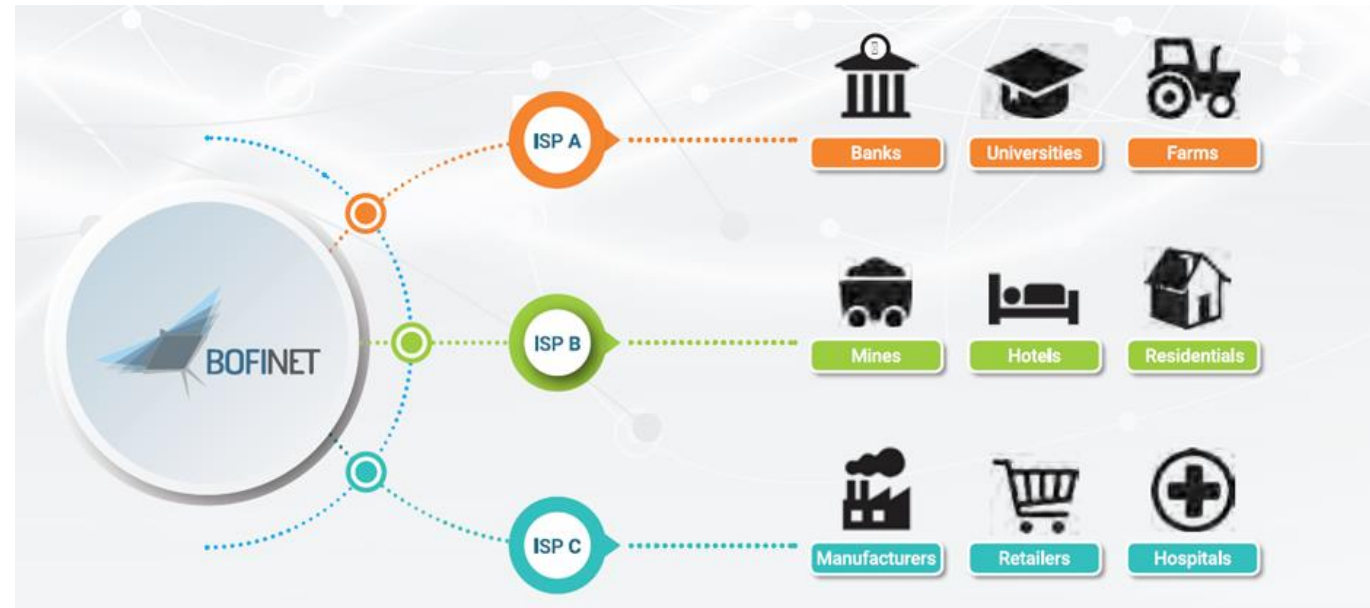

Source: Geant

Source: BOFINET 2019 Annual Report

International Connectivity

BOFINET connects to WACS and EASSY cables

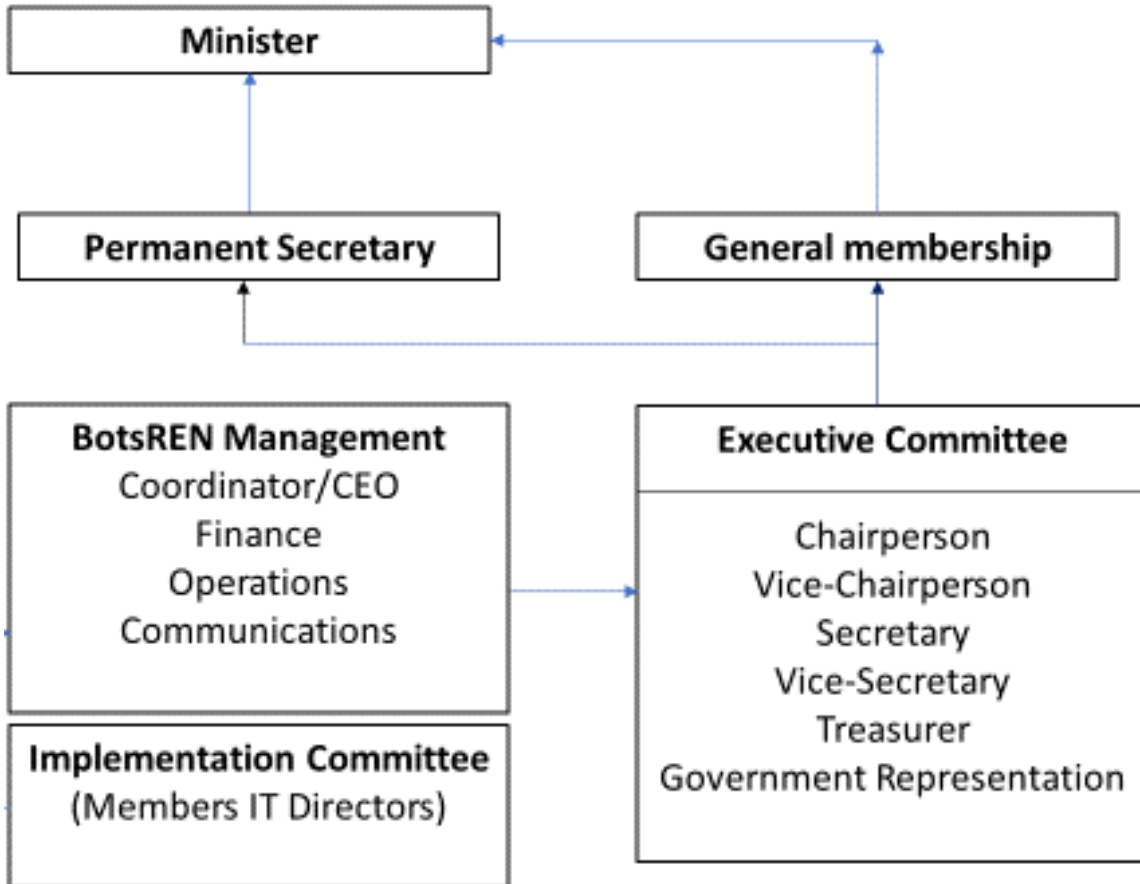# Local Wholesale Provider

BOFINET Service Provider - Consumer Relationship

https://www.bofinet.co.bw/

Update on BotsREN

Minister

Permanent Secretary

General membership

BotsREN Management
Coordinator/CEO
Finance
Operations
Communications

Implementation Committee
(Members IT Directors)

Executive Committee
Chairperson
Vice-Chairperson
Secretary
Vice-Secretary
Treasurer
Government Representation

PROJECT ▾ WORK PACKAGES ▾ PARTNERS ▾ USERS ▾ MEDIA CENTRE ▾ COVID19 IN FOCUS INTRANET FRA

NEWS · NEWS 2021

Botswana Research and Education Network joins UbuntuNet Alliance

Prof. Nelson Torto, Botswana Research and Education Network

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Words: Hastings Ndebvu, UbuntuNet Alliance

The Botswana Research and Education Network (BotsREN) has become a registered member Research and Education Network (NREN) of UbuntuNet Alliance for Research and Education Networking.

UbuntuNet Alliance is an Association of NRENs of Eastern and Southern Africa, connecting them to each other and the general Internet through the UbuntuNet Network.

Botswana Open Data Open Science (ODOS)

- ***Towards a coordinated Open Data Open Science Framework in Botswana***
- Data Legislation, Governance and Policy;
- Coordinated Research Data Cyber-infrastructure;
- Data Innovations & Data for Development;
- Data Awareness and Capacity Building.

INTERNATIONAL DATA WEEK – IDW 2018

Time: 8:30am
Date: 05th to 08th November 2018
Venue: Gaborone International Conference Centre (GICC)

KEYNOTE ADDRESS AND OFFICIAL OPENING by His Excellency, the President of the Republic of Botswana, Dr. Mokgweetsi Eric Keabetswe Masisi.

THEME: "DIGITAL FRONTIERS OF GLOBAL SCIENCE"

INTERNATIONAL DATA WEEK

IDW 2018

Gaborone, Botswana: 5-8 November 2018

Information: http://internationaldataweek.org/

https://www.scidatacon.org/IDW2018/

Digital Frontiers of Global Science

Frontier issues for research in a global and digital age.

Applications, progress and challenges of data intensive research.

Data infrastructure and enabling practices for international and collaborative research.

Data, development and innovation: data as an interface between research, industry, government, society and development.

THUTO KE THEBE

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Themes: research and data; data science and data analysis; data stewardship; policy and practice of data in research; education and data; data, society, ethics and politics; open data, innovation and development; data and cybersecurity

Strengthening Innovation Ecoysystems & Open Innovation

Supporting Innovation Ecosystem Development

KNOWLEDGE
NETWORKS
ENTREPRENEURSHIP

UNIVERSITY of BOTSWANA

Strategic Goal 1: Produce quality well-rounded employable graduates

Strategic Goal 2: Create and deliver high quality applied research and Innovation

Strategic Goal 3: Enhance Economic & Societal Engagement and Impact

Strategic Goal 4: Maximise Revenue and Investments for sustainable growth

Strategic Goal 5: Improve service quality and operational efficiency and effectiveness

Strategic Goal 6: Build employee capabilities to enhance staff accomplishments

Strategic Goal 7: Optimise Institutional performance

Strategic Goal 8: Expand the utilisation of high-tech knowledge resources

Creating a Future for the Knowledge Generation

University Strategy to 2028 and Beyond

One view of a university's innovation ecosystem

Investor Networks

Provide capital and expertise

Accelerate new venture investment

Provide investment generates wealth

Provide networks and mentors

Start-up Firms

Research Infrastructure

Provide R&D partners

Innovative Growth Companies

Provide ideas incubators and smart people

Train and recruit smart people

Provide technology support and training

Recruit and supply smart people

Skilled Talent Pool

Recruit and supply smart people
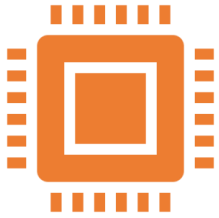
Start Up Economy

Growth Economy

Source: Ed Morrison, Dale Wunderlich

Universities-Industry-Government
Co-Creation Platform

Project Objectives

To upskill students on technology development

To build operational co-creation platform with interfaces to government, industry society through stakeholder proposed flagship projects

To link co-creation platforms for cross border and global interplay

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THUTO KE THEBE

LAUNCHLAB

DEMOLA

UIG Project Implementing partners

Project Achievements

Coding school

- Conducted 10 future skills trainings(Data Science and Machine Learning, Mobile computing, Robotics, Python, Cybersecurity, Smart Farming)

- IBM Skills Academy MoUs – Train the Trainers

- 83 beneficiaries trained (students, industry partners, entrepreneurs)

- Facilitated 36 Botswana Stakeholders for the SAIS Inclusive Innovation training course

- STEM through Astronomy- Engaging in International Astronomical Union Centenary Open Astronomy Schools initiative – Successful IAU100 Proposal, to receive 10 NAOJ Telescopes, to conduct representative school workshops, develop an image sharing virtual observatory and leverage Botswana school connectivity for inclusion

- STEM through Robotics FIRST LEGO League Botswana 2019 and upcoming 2020 Annual Robotics and Coding Tournament workshops. Received Robotics training equipment through FIRST Global Higher Education Network program of first global

- STEM through IOT- Engaging in collaboration with ScienceScope around Iot@School and Digital Makers programme. IoT@School Lessons developed

Open Astronomy Schools

OPEN ASTRONOMY SCHOOLS

A IAU100 Global Project

Jump right in with free cloud access to powerful services and the most prominent open-source technologies, or take advantage of hands-on resources to teach or learn about Artificial Intelligence, Data Science, Blockchain, Security, IoT and more.

Explorer Award

Mastery Award

Instructor Award

Author Award

IBM Skills Academy   Careers   Badges   Frequently Asked Questions

IBM Skills Academy

A training and certification program that is designed to bridge the skill gap between the University and the market industry.
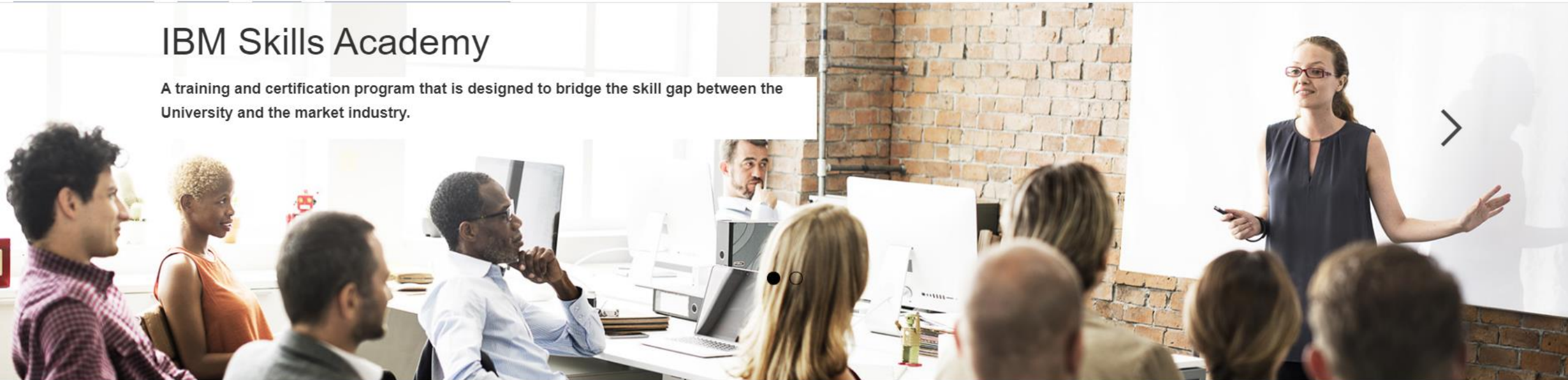
Program Audience   Program Components   Testimonials   Contact Us

What is Skills Academy?

IBM Skills Academy is designed for academia worldwide. The program helps university faculty to provide students with additional skills, giving them an advantage in the job market.

Inhouse Training

SmartHack
Develop GovApp

Are You 18 - 35yrs?
Can You Code?

You and Your Team Stand to Win P100,000

Register to take part in
GovApp Hackathon

Register at
https://skillsranker.bih.co.bw/

Closing date
15 January 2021

for more info
https://skillsranker.bih.co.bw/events

Botswana INNOVATION HUB

SmartBots
"Digital Society Reinvented"

BOTSWANA INNOVATION FUND

OPEN INNOVATION CHALLENGE ON SPACE APPLICATIONS FOR AGRICULTURE AND TOURISM SECTORS

CALL for submissions

AAS The African Academy of Sciences   AESA   AUDA-NEPAD

THE CHALLENGE

The Botswana Innovation Fund, under the Grand Challenges Botswana initiative, in partnership with African Academy of Sciences - Alliace for Accelerating Excellence in Science in AFrica (AESA) is calling on developers and creatives to participate in the open innovation challenge on Space applications for Agriculture and Tourism. We are seeking the best ideas in the downstream application of space technology, including but not limited to utilisation of satellite data, airborne data, UAV data and value-added datasets to provide daily solutions in the sectors. The target solutions will have undergone calibration and validation stages to ensure they are of the right quality and standards. Standard metadata are a must for all spatial products. This is in alignment to the national digital transformation initiatives as well as economic transformation and recovery plans.

The challenge aims to identify locally developed solutions that demonstrate the utilisation of relevant emerging and fourth Industrial Revolution (4IR) related technologies, e.g., Artificial intelligence and Big data analytics in geospatial data benefitting the tourism and agriculture sectors.

THE GOALS OF CHALLENGE

- To design mobile and online based applications and communication tools to support sustainable growth in the agriculture and tourism sectors.
- Facilitate collaboration between start-ups, industry experts, testing and accreditation facilities, knowledge, and skills development practitioners.
- Empower the general public on Agri-tech solutions and encourage participation
- Optimise the use of EO data and its integration with other datatypes to generate impactful solutions

Botswana INNOVATION HUB

Botswana Grand Challenges Launch

Wednesday 24th February 2021
4:00PM Botswana Time (CAT)
5:00PM East African Time (EAT)

Registration Link: http://bit.ly/GrandChallengeLaunch

Project - Strengthening Resilience of Botswana's Innovation Ecosystem through Co-creation and Foresight

How can NRENs power innovations in a 4th Industrial Revolution?

NRENs and Innovation in 4IR

- RSTI globally in the digital era has become fully dependent on cyberinfrastructure,

- NRENs must provide connecting fabric for cyberinfrastructure (Infrastructure, Data, Human Capital and Policies),

- NRENs must provide RSTI Observatories to facilitate coordination,

- NRENs must provide advanced data services , support and address National sovereign capacity and data sovereignty,

- NRENs must engage more with policy makers & policy making – including guidance on institutional policy – e.g. 4iR Strategies,

- NRENs must support industry clusters and University-Industry-Government co-creation platforms,

- An NRENs must facilitate development of locally relevant content and maximise traffic for its consumption,

- NRENs must support widespread technology transfer to society,

- NRENs must support 4iR Skills Development,

- NRENs must promote Data Citizenship (data thinking , data doing and data participation by citizenry) – See *Me and My Big Data Report 2020.*