



FEDERAL UNIVERSITY LOKOJA

THE 8TH INAUGURAL LECTURE

If you wish to go FAR, go **FAIRy**: Reconnoitering an emerging computing paradigm



Professor Francisca Onaolapo OLADIPO

PhD, FASI, FNCS, FPASRC

Wednesday, November 16th 2022

8TH INAUGURAL LECTURE





FEDERAL UNIVERSITY LOKOJA

THE 8TH INAUGURAL LECTURER



Professor Francisca Onaolapo OLADIPO

PhD, FASI, FNCS, FPASRC

Professor of Computer Science

Former Head of Department of Computer Science

Pioneer Director of Quality Assurance

Pioneer Director, FUL Centre for ICT Training and Development in Partnership with RWEYDF

Vice-Chancellor, Thomas Adewumi University

8TH INAUGURAL LECTURE



PROTOCOL

- All Chancellors Present,
- All Pro-Chancellors Present,
- The Vice-Chancellor, FUL
 - Other Vice-Chancellors Present,
- Deputy Vice-Chancellor Academic,
- Deputy Vice-Chancellor Administration,
- Members of the FUL Governing Council, and those of other institutions present,
- The Registrar,
- The Bursar,
- The University Librarian,
- Provost, College of Health Sciences,
- Deans, Directors and Deputy Deans,
- Professors, Heads of Departments, and other Members of Senate,
- Other colleagues both teaching and non-teaching,
- Other Members of the University Community,
- Gentlemen and women of the Press,
- My friends and family,
- My students, past and present, and other students present,
- Other invited guests and dignitaries,
- Distinguished guests, ladies and gentlemen



God makes all things beautiful in His time



**God has a calendar, and it's not ours.
He has given everything an appointed time**



BACKGROUND

An unexpected possibility



**ANNOUNCED PROFESSOR
OF COMPUTER
SCIENCE, FEDERAL
UNIVERSITY LOKOJA ON
THE 22ND OF JULY 2020**

**Feb,
23rd
2022**

**NOV,
16th
2022**

8TH INAUGURAL LECTURE





Female Director

Director, Quality Assurance,
Director FUL-RWEYDF Centre

Inaugural Lecture

Today, I become the first female
Professor to give an inaugural
lecture in FUL

Vice-Chancellor out of FUL

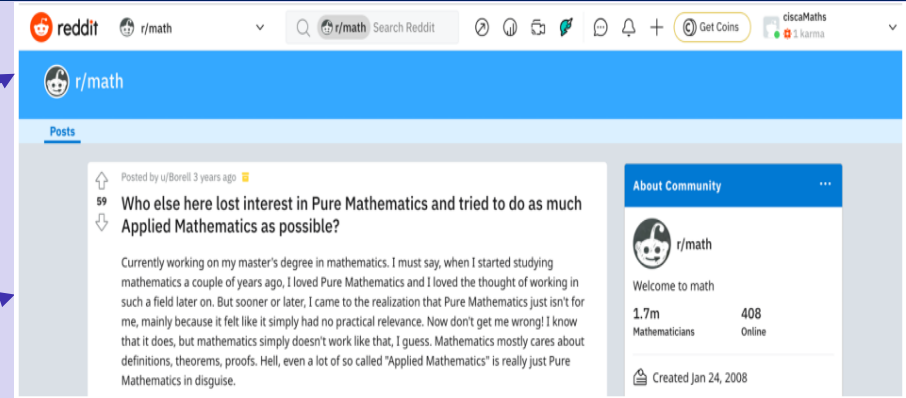
First VC produced from Federal
University Lokoja



My Research Journey Map

A decreased interests in pure sciences: physics, mathematics, computer science

"I just graduated college with a degree in math. I love math, and I think it's a beautiful language. I've never been one for pure math. Maybe I'm different because my goal in life is to help as many people as possible, but I just don't see how that's fully possible with pure math? I'm really not trying to offend anyone!! I'm just trying to understand the other side is all!"



"I did. I lost it after the introduction of the axiom of choice in my real analysis class. I realized I had strayed so far away from reality that I didn't even know what math was anymore. I just finished my BS in Math and minor in CS and now I want to go to grad school for a more applied math route or even a natural science. Some programs I am thinking of are Computational Science, Computational Biology, Molecular Biophysics, or Computational Physics. I still understand the importance of math and think it is elegant, but man I've developed a strong distaste of it over the last two years."

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EXPERTISE: THEORETICAL COMPUTER SCIENCE



FUL-CSC tradition

Motion
design

Software
Reverse
Engineering

Internet
of things

Alg'thms

Physical
Computing

HTML,
CSS, JS

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MY RESEARCH JOURNEY MAP

I enjoyed solving problems –I still do!

● **Doctoral Student**

- Reverse Engineering of Software artefacts (Oladipo & Anigbogu, 2010; Oladipo & Anigbogu, 2011)
- Developed a modernization paradigm for obsolete Software in unsupported technologies
- Develop a novel framework to re-factory object-oriented software systems

● **Post-Doctoral**

- Re-engineering of the Fagan Model for visual software inspection (Oladipo & Ugoh, 2014)
- Re-engineered discarded computers to eliminate e-wastes
- Built a high-performance computer to support campus-wide internet telephony based on a VOIP architecture (Oladipo, et al., 2015; Oladipo & Shittu, 2010)

● **Early-career academic & research**

- Developed my capacities in building domain-specific algorithms and solution techniques (Oladipo & Osigwe, 2011)
- Providing research leadership in the design and construction of complex systems
- Improved the performances of user-centric Ubiquitous Learning Environments through reverse engineering (Oladipo, 2012a) etc.

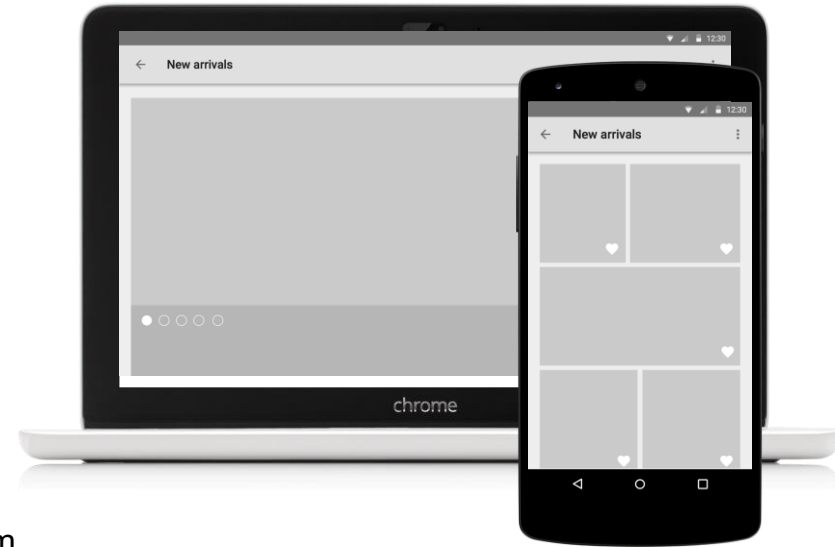


MY RESEARCH JOURNEY MAP

Even as a Professor

Working across the mobile and desktop spaces

- Building scalable computing artefacts which comprises models, software, tools, repos and so on
- Re-engineering the methodologies for data migration (Oladipo & Raiyetumbi, 2015)
- Re-factoring load balancing in a cloud computing environments (Oladipo & Anigbogu, 2016)
- Assess the programming language preferences among female undergraduate CS students in the north-central region of Nigeria (Oladipo, 2016)
- Investigating the issues and perspectives in the software paradigm for Internet Computing (Oladipo, 2016)
- Development of FULang (Oladipo, et al., 2017) and Streak© for scientific programming (Oladipo, & Anawo, 2017)



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Grand Challenge in CS: Finding areas of need and solving 'wicked problems'



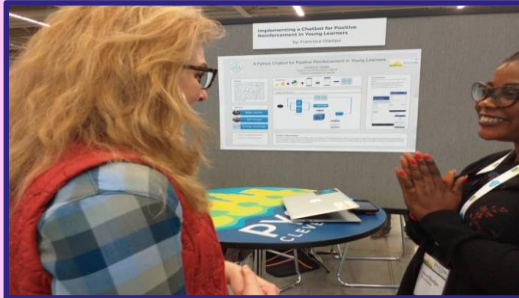
TEACHING CODING IN HOUSTON



IMPROVING e-LEARNING IN ZAMBIA



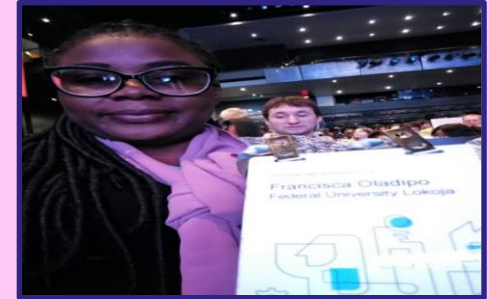
DESIGNING UX MDELS



DEEP LEARNING IN CLEVELAND



FEDERATED LEARNING IN LONG BEACH



IN DOWNTOWN SAN FRANCISCO

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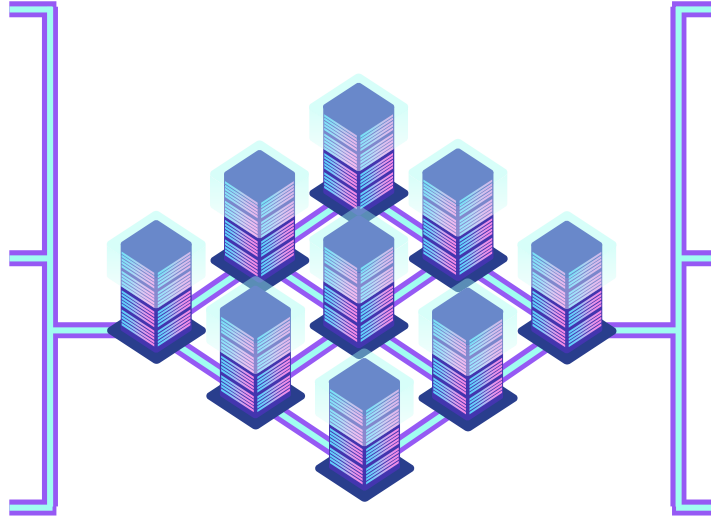


The Journey to Data Science and Computing for Humanity

2017

Heidelberg University,
Germany as a Fellow of
the Heidelberg
Laureate Foundation

Machine Learning
solutions for IDP
camps in Bauchi and
Borno States (Oladipo,
Abdul, 2017)



2018

Developed the CodeEazee Tool
Support for Computational
Thinking in Python (Oladipo &
Ibrahim, 2018)

Development of a software
prototype for leak detection
along petroleum pipeline
distributions in Ibaji Local
Government Area of Kogi
State (Oladipo, et al., 2018)

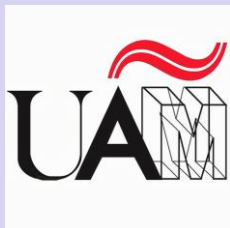
Implementing an integrated
Subscriber Identification
Module (SIM) Registration
(Oladipo & Obansa, 2018)

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The Journey to Data Science and Computing for Humanity

- **FELLOWSHIP**



Universidad
Autónoma de
Madrid, Spain



UNESCO Fellowship
to the Institute of
Analytics and Data
Science



University
of Essex

University of Essex,
UK for the Big Data
Analytics and Data
Science training



Data Science and AI For Social Good (2017-2020)

- Natural Language Processing through documents annotation (Oladipo, *et al.*, 2018),
- Data mining (Oladipo & Jokotoye, 2019; Oogbaju, Okonkwo & Oladipo, 2019),
- Sentiment analysis at the microblog end (Oladipo, *et al.*, 2020a),
- Sentiment Analysis for quality assurance (emughedi, O., Ogbuju, E., Oladipo, F.O., 2022),
- Text extraction (Oladipo & Ajiboye, 2020; Oladipo & Ohiani, 2021),
- Automatic speech recognition (Oladipo, *et al.*, 2021).
- I have also contributed to the data science researches (Ogbuju, *et al.*, 2020; Ogundepo, *et al.*, 2020; van reisen *et al.*, 2021 and Folorunso *et al.*, 2021)
- Exploring the multidisciplinary lessons and sciences of COVID-19 (Oladipo, 2020; Oladipo & Umezuruike, 2020).
- As part of my contributions to machine learning for social good and leveraging on my network as a USA State Department Fellow, I led some research into:
 - Terrorism detection using machine learning (Oladipo & Abdu, 2017; Oladipo, *et al.*, 2020b)
 - Traumatized young children in the IDP camps also got some respite from Reinforcement Learning and Game-based Learning (Oladipo, 2019; Oladipo & Adeiza, 2019).
 - I even ventured into some security research with special focus on the industrial control systems (Ani, *et al.*, 2018).



Ascending the FAIR Stairwell

The journey from Reverse Engineering to FAIR Data Science

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It all started with a question



And more questions



Research Questions



How can we provide access to critical data across locations and across research disciplines?



How can researchers seamlessly have access to data that is 'official'?



How do we ensure data governance in Africa?



How do we protect data ownership while eliminating the anonymity that classifies African countries as 'the rest of the world'?



How do we ensure that all research objects (data, models, methods, implementations, and other artefacts) from African Researchers are **FAIR**?



EVERYTHING RISES AND FALLS ON DATA

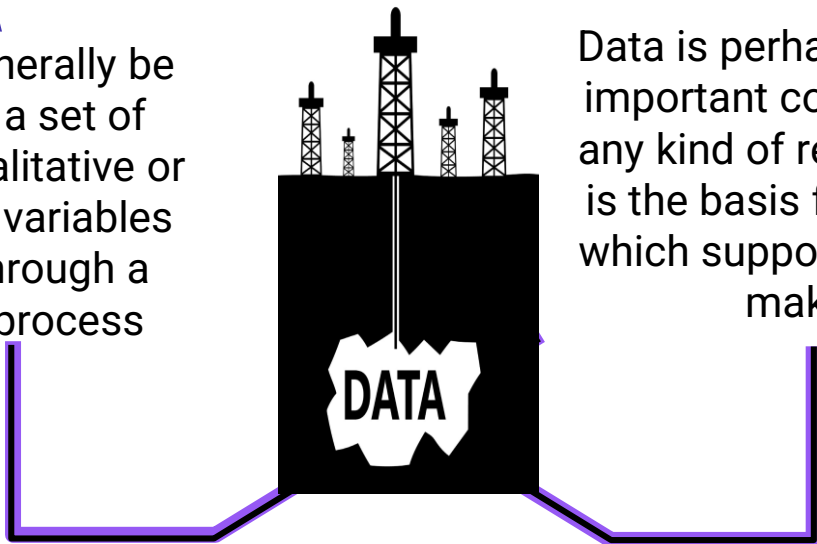


DATA

Data can generally be defined as a set of values of qualitative or quantitative variables obtained through a collection process



Data is perhaps the most important component of any kind of research as it is the basis for analytics which supports decision-making



Regardless of the field of study or preference for defining data (quantitative, qualitative), accurate data collection is essential to maintaining the integrity of research.



Research Data Collection



Data collection: tedious, repetitive, chaotic (Oladipo, 2021; Whyte, 2021)...

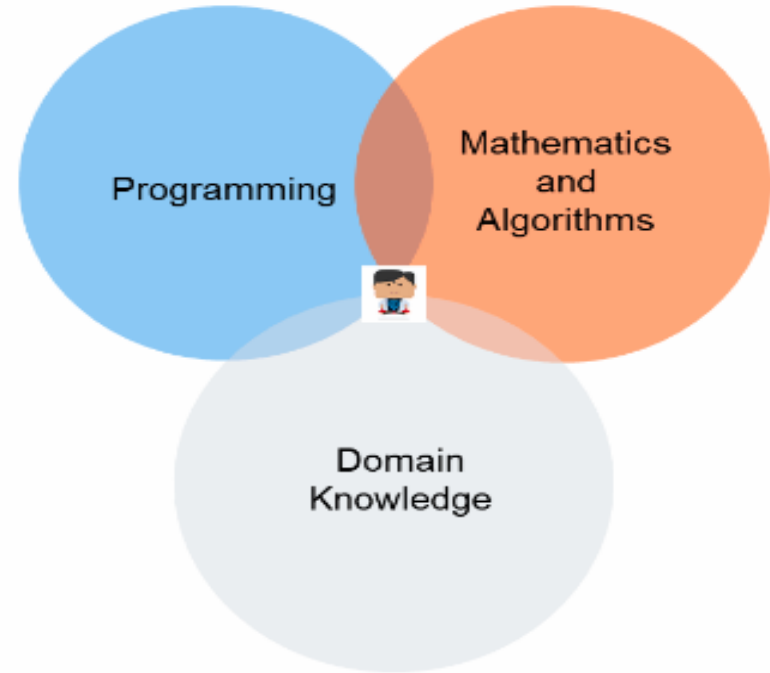


80% of the time on data analysis is spent on cleaning and validating data (Oladipo, 2021)...

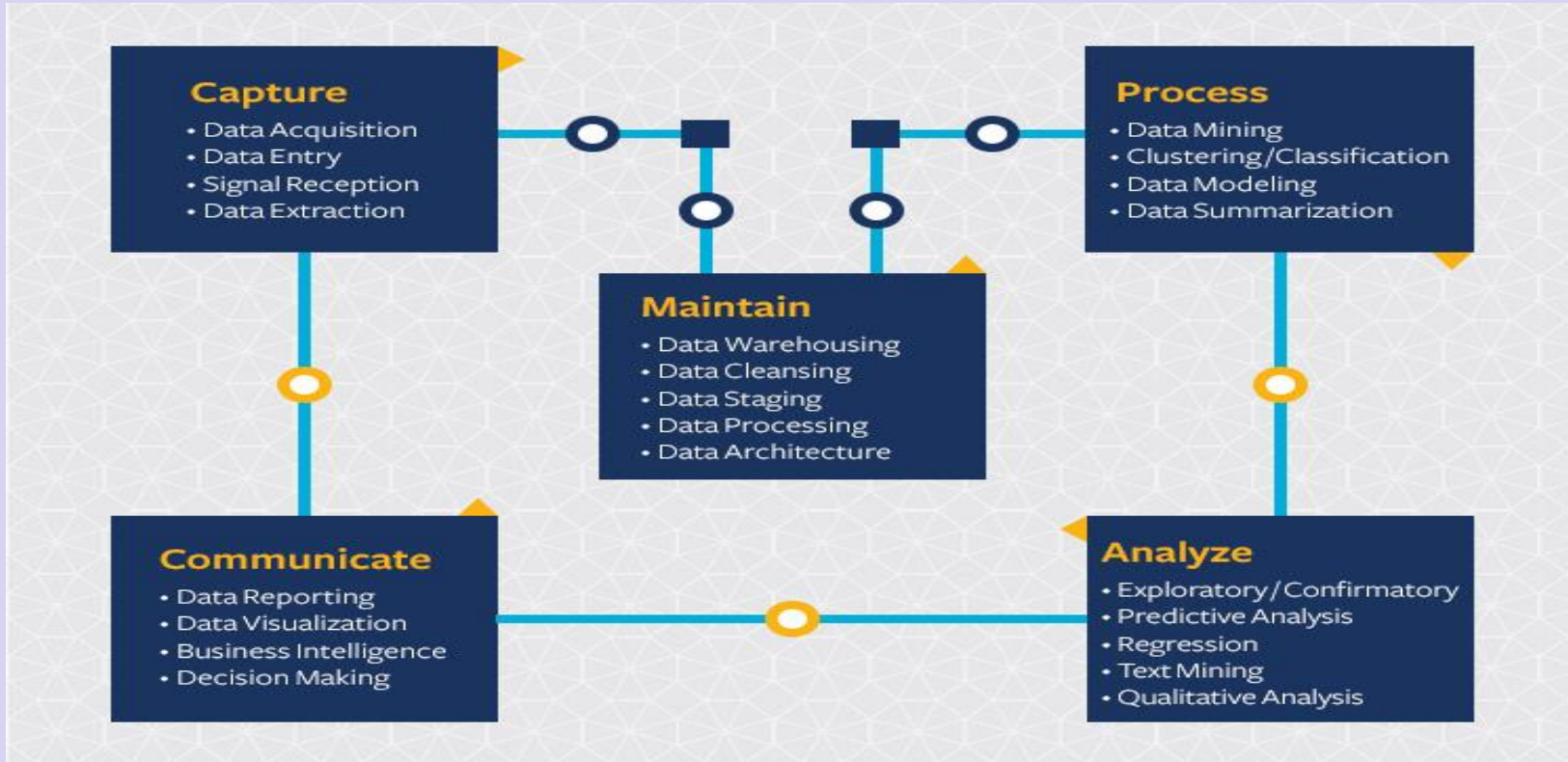


WHAT IS DATA SCIENCE?

A field of study.
combines some domain
aptitude, programming
abilities, and mathematical
and statistical knowledge
to get insights and
experiences from data.



STAGES IN THE DATA SCIENCE LIFE CYCLE



Research Questions



A New Grand Challenge, A New Kind Of Science



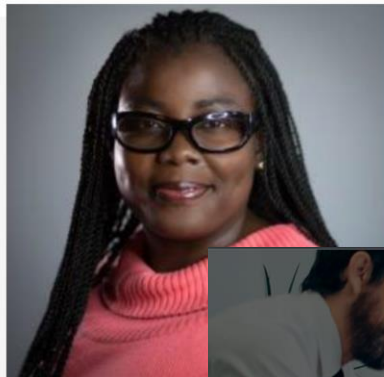
HOME VODAN AFRICA TEAM NEWS CONTACT

Executive Coordinator

Francisca Oladipo is a Professor of Computing at Federal University Lokoja (FUL), Nigeria and the Executive Coordinator VODAN Africa. She currently serves as the pioneer Director of Quality Assurance at FUL.

She had served previously at **Kampala International University (KIU)**, Uganda as the pioneer Director of Research, Innovations, and International relations. Prof. Oladipo serves as the Chief Technical Advisor (Kog) on the **Joint Admissions and Matriculation Board (JAMB)**, and, Facilitator, Africa Centre of Excellence in Technology and Learning (ACETEL), **National Open University of Nigeria**.

As the Executive Coordinator of VODAN Africa, the Initiative has given Africa a place in the fight against the COVID-19 pandemic through the deployment of 10 machine-actionable COVID-19 FAIR Data Points across Ethiopia, Kenya, Nigeria, Tunisia, Uganda, Zimbabwe, and the Netherlands. She is currently leading the expansion of the initiative into Liberia, Tanzania, Somalia, China, Indonesia, and Kazakhstan.



VODAN Africa Board



HOME VODAN AFRICA TEAM NEWS CONTACT

News

Home / VODAN Africa News / VODAN Africa Executive Coordinator, Prof. Francisca Oladipo appointed VC Thomas Adewumi University, Nigeria

VODAN Africa Executive Coordinator, Prof. Francisca Oladipo appointed VC Thomas Adewumi University, Nigeria

Obinna Osigwe 03rd July, 2022 9:29am 2 minutes read

Latest News

 **The GO FAIR Implementation Network Africa (IN-Africa)**
08th November, 2022 12:04pm

 **African FAIR Open Data-driven Research & Services**
08th October, 2022 8:55am

 **VODAN Africa Programme Document 2022-2024**
20th September, 2022 9:20am

 **[Research Paper]: Not Ready for Convergence in Data Infrastructures**
20th September, 2022 8:17am



The Science of FAIR Data

RESEARCH DATA - OPEN BY DEFAULT



The FAIR principles places emphasis on the production of machine-actionable data such that computational systems can Find, Access, Interoperate and Reuse digital research objects with little or no human interference.



The FAIR Pipelines in Research

The challenge recognised that the data collection/production process in Africa is tedious, repetitive, and mostly result in the production of poor quality and unreliable data. The data are usually collected and mostly not published and this cuts across the corridors of arts, humanities, and sciences (Oladipo, 2021; Whyte, 2021).



The FAIRification of Research Data



Australian Research Data Commons

Internet of
FAIR Data
and Services
-
Connecting
Principles



Example

The data is Findable in the Open Science Framework (OSF)

EcoEvoRxiv Preprints

Submit a Preprint Search Donate Sign Up Sign In

The quality of open datasets shared by researchers in ecology and evolution is moderately repeatable and slow to change

AUTHORS
Dominique Roche, Ilias Berberli, Fares Dhane, Félix Lauzon, Sandrine Soeharjono, Roslyn Dakin, Sandra Binning

AUTHOR ASSERTIONS
Conflict of Interest: Yes **Public Data: Available** Preregistration: Available

Download preprint Downloads: 318

Be the first to endorse this work

Abstract
We assessed the quality of 362 open datasets shared by 100

1 The quality of open datasets shared by researchers in ecology and evolution is moderately repeatable and slow to change
2
3
4 Dominique G Roche^{1,2}, Ilias Berberli¹, Fares Dhane¹, Félix Lauzon¹, Sandrine Soeharjono¹,
5 Roslyn Dakin¹, Sandra A Binning²
6
7 ¹ Department of Biology, Carleton University, Ottawa, Canada
8 ² Département de science biologique, Université de Montréal, Montréal, Canada
9 ¹ Institut de Biologie, Université de Strasbourg, Strasbourg, France
10 ¹ Department of Biology, McGill University, Montreal, Canada
11

Figure 5. A publication showing public data (Roche, *et al.*, 2021)

OSFHOME

Search Support Donate Sign Up Sign In

Anonymized data and analysis script

321.3KB Public P 0

Contributors: Dominique Roche, Ilias Berberli, Fares Dhane, Félix Lauzon, Sandrine Soeharjono, Roslyn Dakin, Sandra Binning
Date created: 2021-04-27 03:28 PM | Last Updated: 2021-05-18 05:00 PM
Identifier: DOI 10.17605/OSF.IO/PZYWM
Category: Data
License: CC0 1.0 Universal

Has supplemental materials for The quality of open datasets shared by researchers in ecology and evolution is moderately repeatable and slow to change on EcoEvoRxiv

Files

Name	Modified
Anonymized data and analysis script	
OSF Storage (Canada - Montréal)	

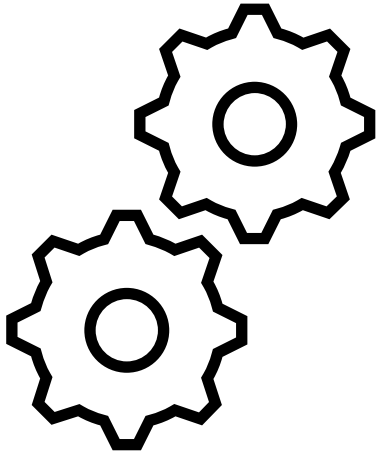
Citation

Tags
data sharing ecology evolution open data open science
public data archiving

Figure 6. Data in OSF Repository



FAIR Tools



- <http://datadryad.org/>
- <https://data.mendeley.com/>
- <http://figshare.com/>
- <https://vivli.org/>
- <http://zenodo.org/>
- <https://osf.io/>
- <https://dataverse.harvard.edu/>



IN FAIRness TO AFRICA



**UNESCO 2021
Most Inspiring Initiative At The 2022
Leiden Science Week
Netherlands**

IMPROVING HEALTH DATA ANALYSIS



**FAIRification of the Research artefacts at
Kampala International University, Uganda
and Federal University Lokoja**

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VODAN-AFRICA Partnership



VODAN Africa Partnerships



Innovative Data Management in Africa

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In FAIRness to Africa

Innovation Approach developed in VODAN-A



Data is locally repositied, aggregated through federated analytics

Provides the strongest possible safeguards on protection of data subject

Initialization of community-wide ontology collaboration

Involving domain experts from local clinics

Localized data generation through metadata templates

At the point-of-care, in a portable and secure virtualized environment

Cross-clinic interoperability

Data stewards guide the entire process



VODAN Africa Architecture – Health Data

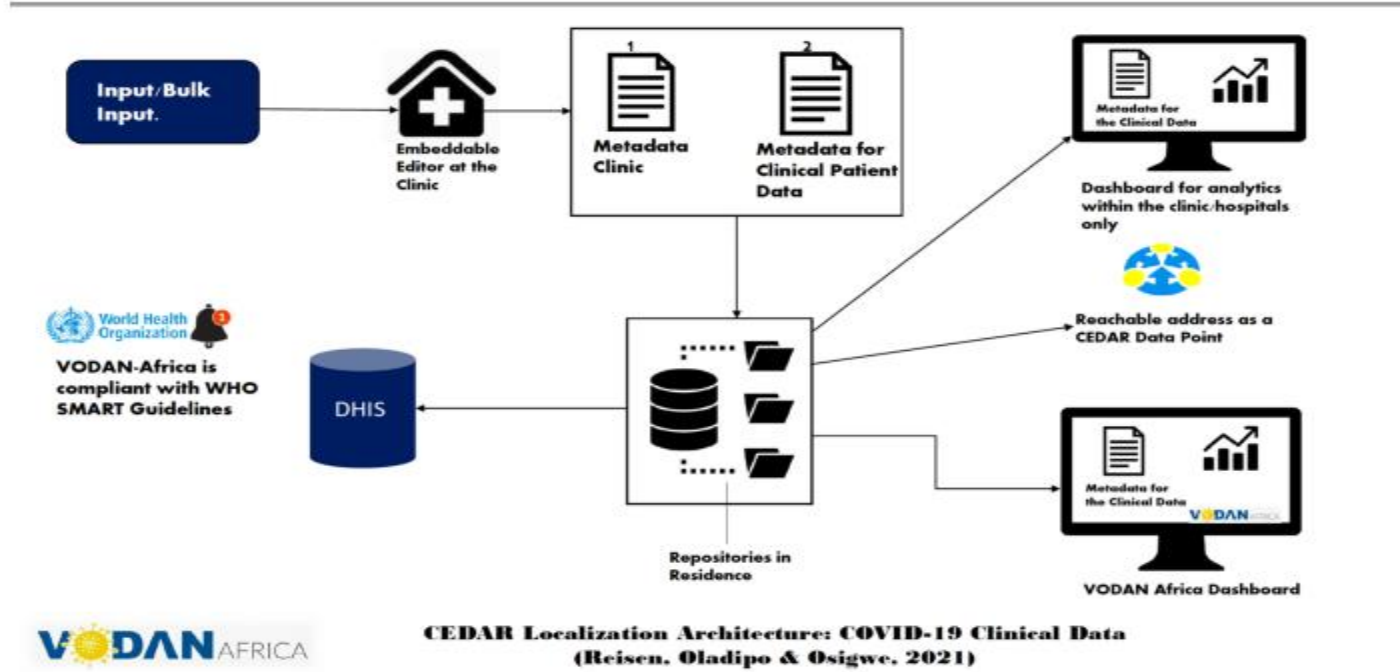
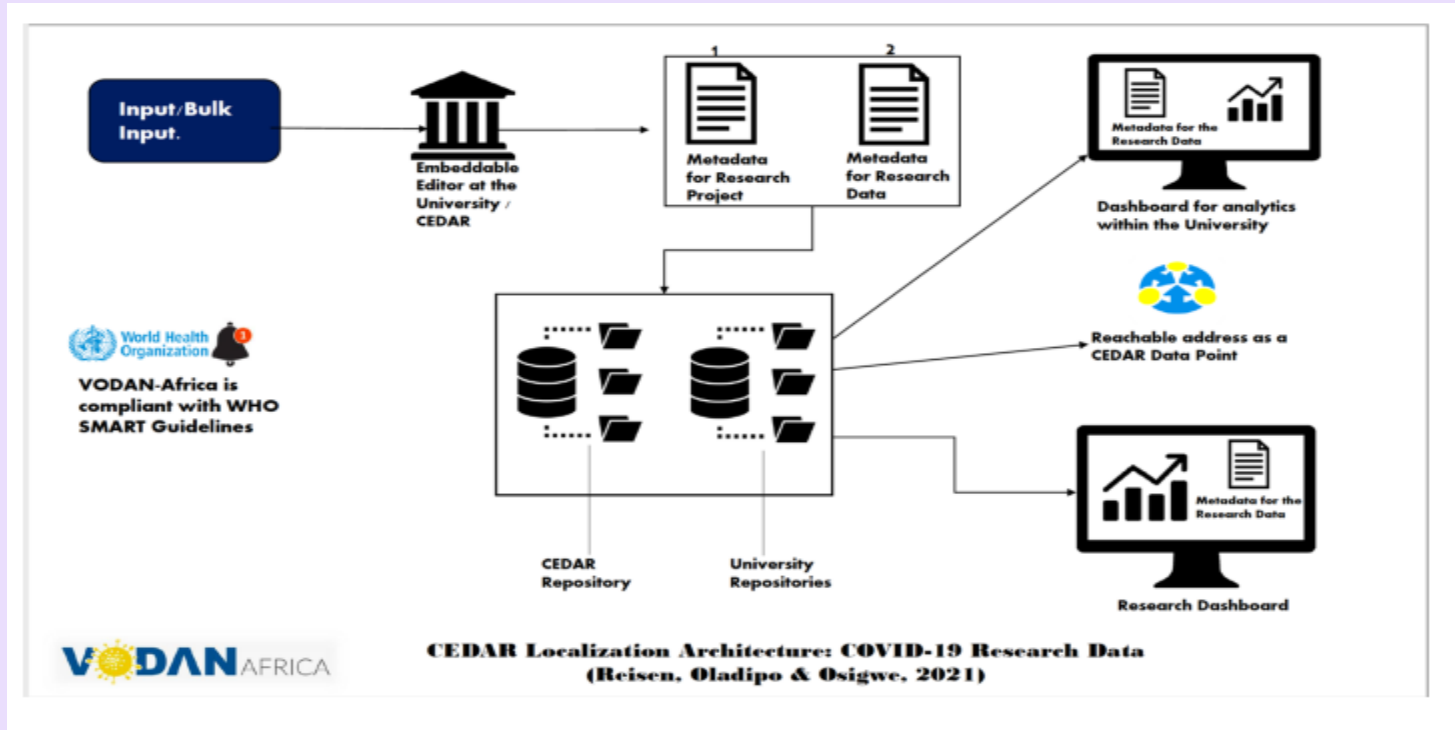


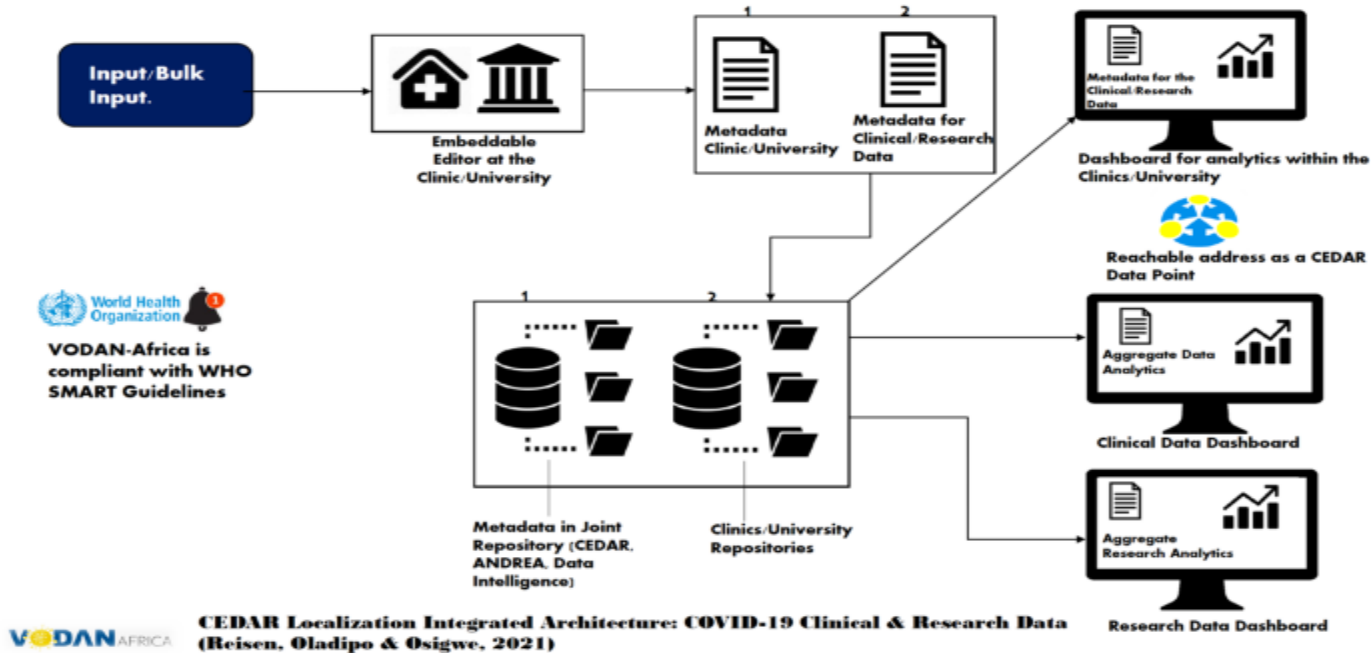
Figure 8. Clinical Data FAIRification Architecture



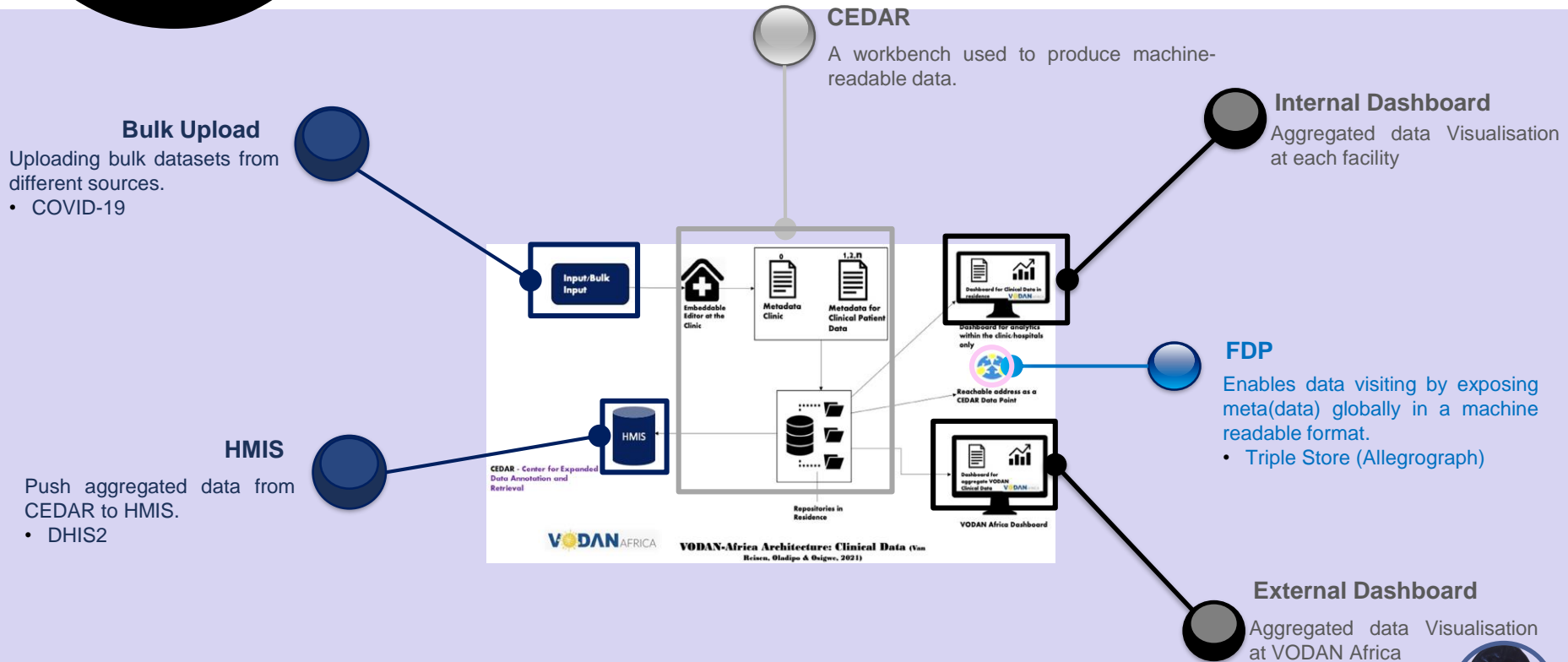
VODAN Africa Architecture – Research Data



VODAN Africa combined Architecture

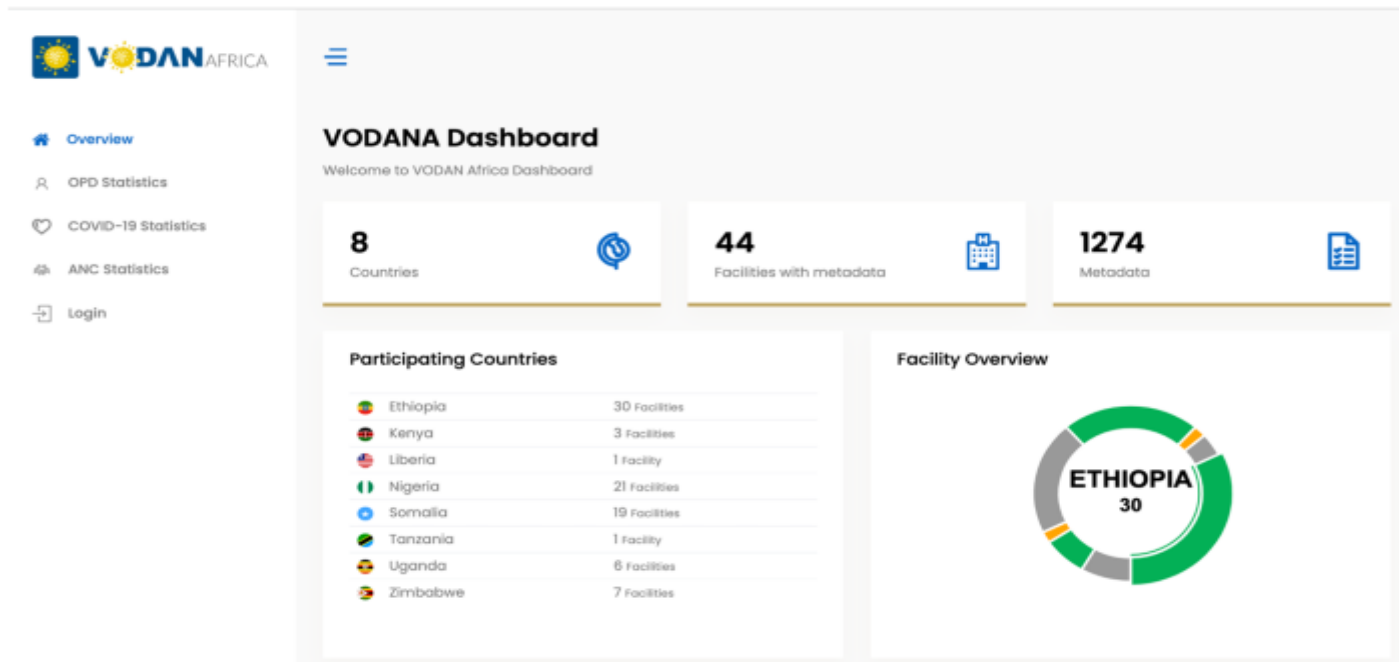


Architecture



Where are these Data Points

<https://dashboard.vodana.health/>



There is actually one, just steps from here

VODAN AFRICA

- Overview
- OPD Statistics
- COVID-19 Statistics
- ANC Statistics
- Login

VODAN-A Dashboard

Welcome to VODAN-Africa Dashboard

OSF

VODAN-Africa Resources

FIP

VODAN-Africa FAIR Implementation Profile

8 Countries

49 Facilities with Patient Instances

1407 Patient Instances

Participating Countries

4	Federal Medical Centre, Bida, Niger State	View Info
5	Federal University Lokoja University Medical Centre. (Adankolo Campus)	View Info
6	Federal University Lokoja University Medical Centre. Campus 1 (Felele Campus)	View Info
7	General Hospital Minna, Niger State	View Info
8	GH New Extension Maternity , Minna	View Info

Facility Overview

NIGERIA
21



We also showed others how we did and how to do it



IN Africa and Ambassadors



Overview

Files

OSF Storage

Wiki

Analytics

Registrations

Contributors

Add-ons

Settings

OSF Storage

Filter:

Filter current list

Sort by:

Name: A-Z

Download this folder

ACCREDITATION INFORMATION

ARTICLES IN THE FAIR CONNECT JOURNAL

ARTICLES IN THE SCIENTIFIC INTELLIGENCE JOURNAL

BULK IMPORT TOOL

CEDAR Localization

Communication on Training for Trainers

https://osf.io/q49wm/files/osfstorage

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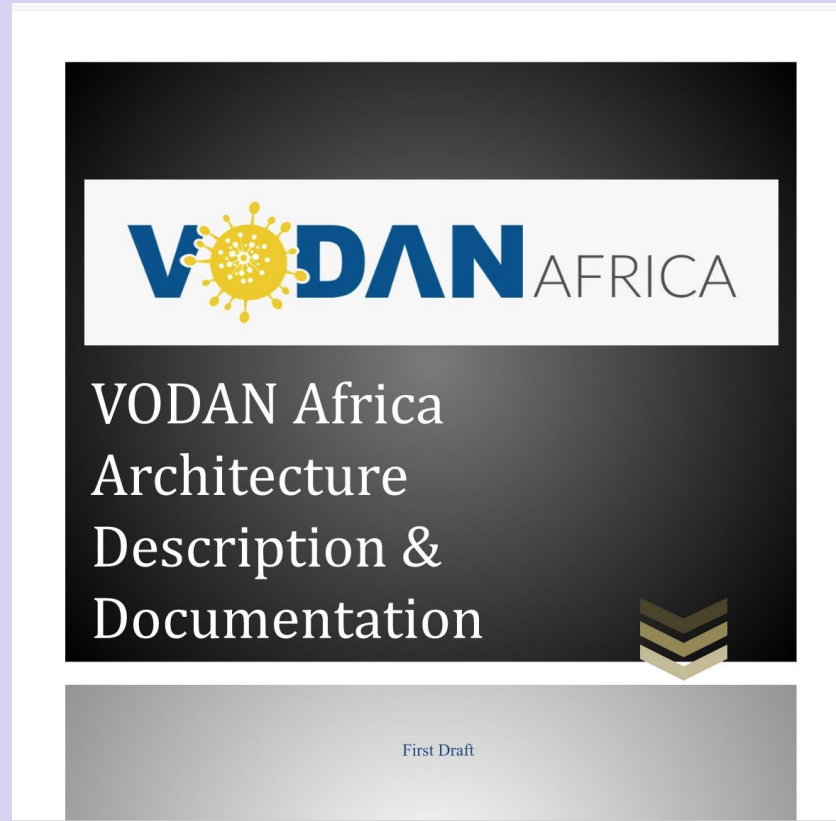
The screenshot shows the GitHub profile page for VODANA. At the top, there is a navigation bar with links for Pull requests, Issues, Codespaces, Marketplace, and Explore. Below this is a search bar and a navigation menu with Overview (selected), Repositories (4), Projects, Packages, and Stars. The profile section features a circular profile picture with the VODANA logo, the name 'VODANA Africa and Asia', and a 'Follow' button. Below the profile picture, it shows '4 followers · 0 following' and a 'Block or Report' link. The 'Popular repositories' section lists four repositories: 'Vocabularies' (Public, 1 fork), 'CEDAR_bulk_upload' (Public, CSS, 1 fork), 'Data-Processing-Agreements-' (Public, description: 'This contains all the finalized agreements by member countries'), and 'Cedar-deployment' (Public, HTML). The '4 contributions in the last year' section shows a calendar grid with a single green square on Monday, December 1st. A legend at the bottom right of the calendar indicates 'Less' and 'More' contributions.

<https://github.com/VODANA>

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<https://bit.ly/3AjR009>



Data Intelligence

Issues Online Early About Submit

Article Contents

August 18 2022

Curriculum Development for FAIR Data Stewardship

Francisca Oladipo, Sakinat Folorunso, Ezekiel Ogundepo, Obinna Osigwe, Akinyinka Akindele

Check for updates

Author and Article Information

Data Intelligence 1-42.

https://doi.org/10.1162/dint_a_00183 Article history

Cite PDF Permissions Share

Abstract

The FAIR Guidelines attempts to make digital data Reusable (FAIR). To prepare FAIR data, a new data stewardship is emerging and, as the FAIR Guidelin the demand for data stewards is expected. Conse curricula to foster professional skills in data stew communication. There have been a number of init data management training through both formal ar describes the experience of developing a digital i

Email Alerts

Article Activity Alert

Closed Issue Alert

Continuous Publishing Added Articles Alert

Data Intelligence

Issues Online Early About Submit

Article Contents

August 18 2022

Proof of Concept and Horizons on Deployment of FAIR Data Points in the COVID-19 Pandemic

Mariam Basajja, Marek Suchanek, Getu Tadelle Taye, Samson Yohannes Amare, Mutwalibi Nambobi, Sakinat Folorunso, Ruduan Plug, Francisca Oladipo, Mirjam van Reisen

Check for updates

Author and Article Information

Data Intelligence 1-38.

https://doi.org/10.1162/dint_a_00179 Article history

Cite PDF Permissions Share

Abstract

Rapid and effective data sharing is necessary to control disease outbreaks, such as the current coronavirus pandemic. Despite the existence of data sharing agreements, data silos, lack of interoperable data infrastructures, and different institutional jurisdictions hinder data sharing and accessibility. To overcome these challenges, the Virus Outbreak Data Network (VODAN)-Africa initiative is championing an approach in which data never leaves the institution where it was generated, but, instead, algorithms can visit the data and query

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Article Activity Alert

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Continuous Publishing Added Articles Alert

View Metrics

Latest Most Read Most Cited

Relational Topology-based Hetero Network Embedding for Predicting Target Interactions

PDF

Help

FAIREST: A Framework for Assessing Research Repositories

An analysis of crosswalks from research data schemas to Schema.org



DATA STEWARDSHIP COMPETENCY - A New Career Path In Africa

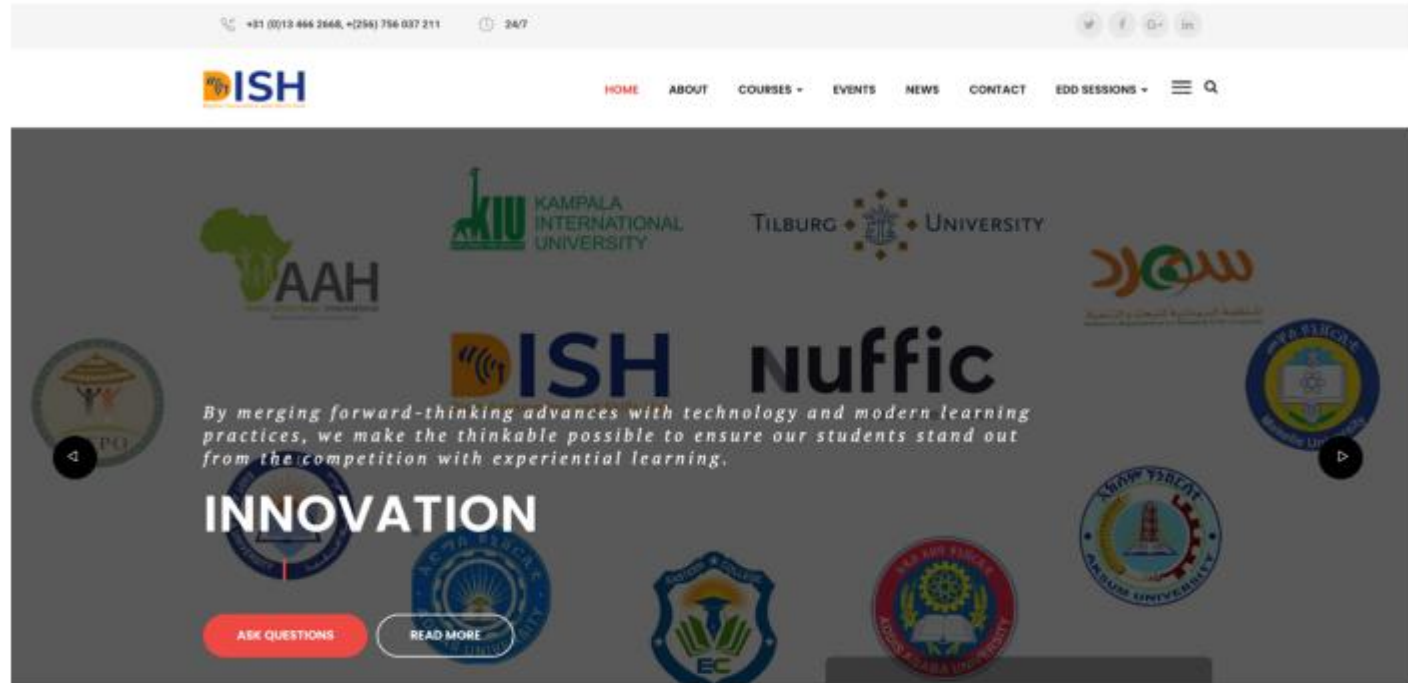
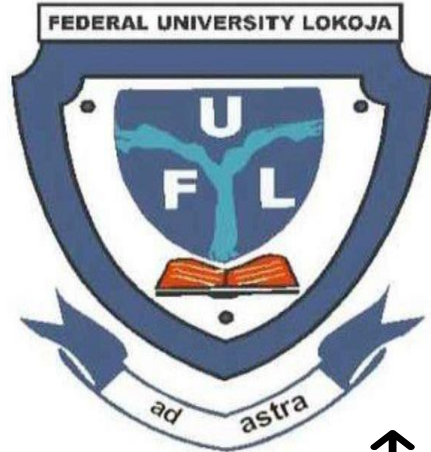


Figure 13. Digital Innovation and Skills Hub (DISH)



FAIRIFICATION OF RESEARCH ARTEFACTS AT KAMPALA INTERNATIONAL UNIVERSITY AND FEDERAL UNIVERSITY LOKOJA



78th to 35th ↑

**BEST AMONG THE 12
UNIVERSITIES
ESTABLISHED IN 2012**



5th to 2nd ↑

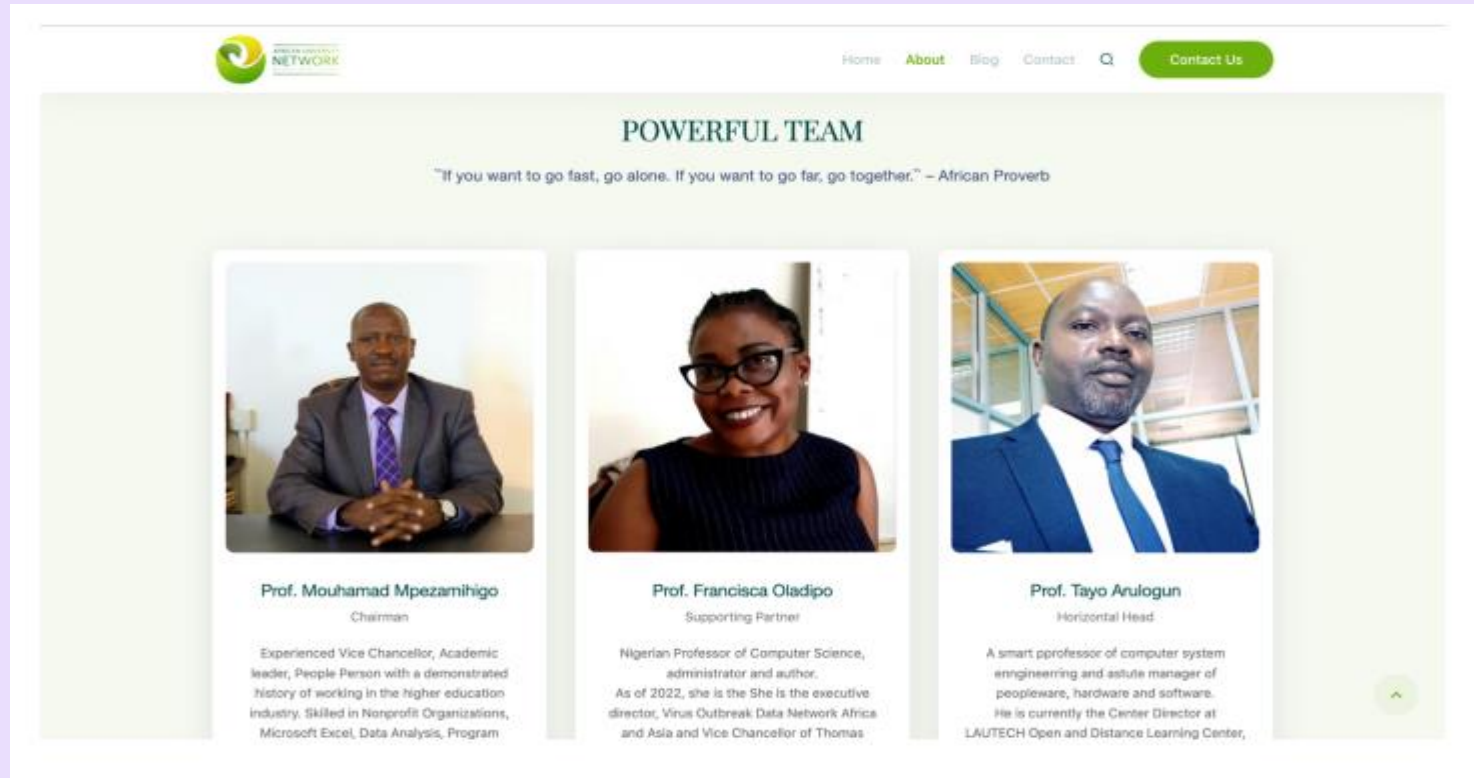


AFRICAN UNIVERSITY NETWORK FOR FAIR OPEN SCIENCE

Established the Africa University Network (AUN) on FAIR Open Science at the beginning of the first quarter of 2022



AFRICAN UNIVERSITY NETWORK FOR FAIR OPEN SCIENCE



The screenshot shows the website's header with the logo on the left and navigation links (Home, About, Blog, Contact, a search icon, and a green 'Contact Us' button) on the right. The main content area is titled 'POWERFUL TEAM' and includes an African proverb: "If you want to go fast, go alone. If you want to go far, go together." – African Proverb. Below this are three profile cards, each with a photo, name, title, and a short biography.

POWERFUL TEAM

"If you want to go fast, go alone. If you want to go far, go together." – African Proverb

Prof. Mouhamad Mpezamihigo
Chairman

Experienced Vice Chancellor, Academic leader, People Person with a demonstrated history of working in the higher education industry. Skilled in Nonprofit Organizations, Microsoft Excel, Data Analysis, Program

Prof. Francisca Oladipo
Supporting Partner

Nigerian Professor of Computer Science, administrator and author. As of 2022, she is the executive director, Virus Outbreak Data Network Africa and Asia and Vice Chancellor of Thomas

Prof. Tayo Arulogun
Horizontal Head

A smart professor of computer system engineering and astute manager of peopleware, hardware and software. He is currently the Center Director at LAUTECH Open and Distance Learning Center,



Conclusion: Like a FAIRy Tale



Scriberia 

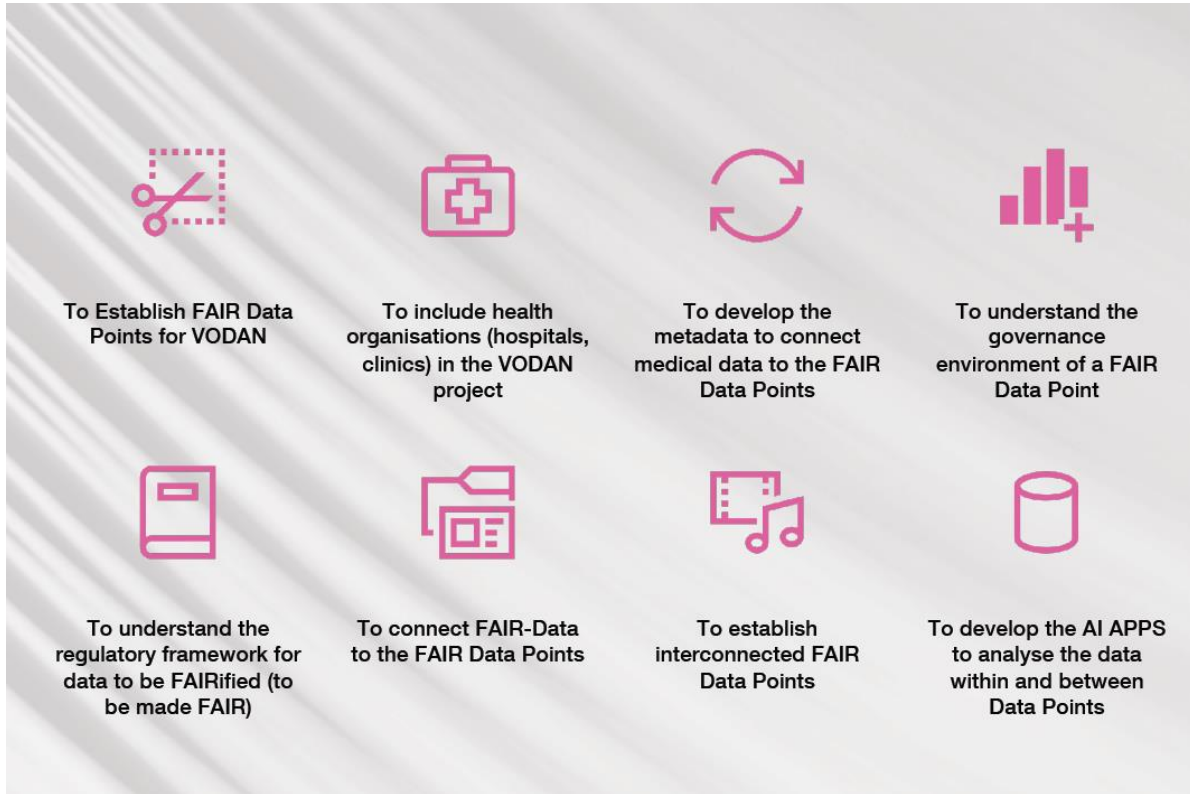
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Conclusion: FAIR is African



Conclusion: Finding joy in FAIRness



APPRECIATION

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The God of Double Portions: Special Gratitude



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