African Digital Research Repositories: Mapping the Landscape

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Visual Map: https://kumu.io/access2perspectives/african-digital-research-repositories
Dataset: https://tinyurl.com/African-Research-Repositories
Archived at https://info.africarxiv.org/african-digital-research-repositories/
Submission form: https://forms.gle/CnyGPmBxN59nWVB38

The International African Institute (IAI, https://www.internationalafricaninstitute.org) in collaboration with AfricarXiv (https://info.africarxiv.org) present an interactive map of African digital research literature repositories. This drew from IAI's earlier work from 2016 onwards to identify and list Africa-based institutional repositories that focused on identifying repositories based in African university libraries. Our earlier resources are available at https://www.internationalafricaninstitute.org/repositories.
The interactive map extends the work of the IAI to include organizational, governmental and international repositories. It also maps the interactions between research repositories. In this dataset, we focus on institutional repositories for scholarly works, as defined by Wikipedia contributors (March 2020).

Objective

The map of African digital repositories was created as a resource to be used in activities addressing the following aims:

1. Improve the discoverability of African research and publications
2. Enhance the interoperability of existing and emerging African repositories
3. Identify ways through which digital scholarly search engines can enhance the discoverability of African research

We promote the dissemination of research-based knowledge from African repositories as part of a bigger landscape that also includes online journals, research data repositories and scholarly book publishers to enhance the interconnectivity and accessibility of such repositories across and beyond the African continent and to contribute to a more granular understanding of the continent's scholarly resources.

Data archiving and maintenance

The map and corresponding dataset are hosted on the AfricArXiv website under 'Resources' at https://info.africarxiv.org/african-digital-research-repositories/. The listing is not exhaustive and therefore we encourage any repositories relevant for the African continent not listed here to the **submission form at https://forms.gle/CnyGPmBxN59nWVB38**, or to notify the International African Institute (email sk111@soas.ac.uk). Both AfricArXiv and IAI will continue to maintain the list of repositories as a resource for African researchers and other stakeholders including international African studies communities.

Methodology

The original list of digital repositories was compiled by the International African Institute in 2016 and updated in 2019 (see https://www.internationalafricaninstitute.org/repositories for details). Entries were drawn from information made available by the African Studies Centre, Leiden (https://ilissafrica.wordpress.com/tag/institutional-repository/), in particular its 'Connecting Africa' project (http://www.connecting-africa.net/index.htm), the Directory of Open Access repositories (OpenDOAR - http://www.opendoar.org/), and the Registry of Open Access Repositories (http://roar.eprints.org/) amongst others. The original list was extended by following repository services that also host African scholarly works: ScienceOpen collections (https://about.scienceopen.com/collections/), Zenodo Community collections (https://zenodo.org/communities/), Figshare collections (https://figshare.com/features, Scholia (https://tools.wmflabs.org/scholia/), and third party repositories.

For visualisation we utilized the software Kumu (https://kumu.io/) to map the research repositories by country, underlying software, host institutions and curating institutions. We also added a category for languages of the interface, system and deposited works per repository.

Results

In the dataset, South Africa (40) and Kenya (32) hosted the highest number of repositories. In other countries, such as Ethiopia, Egypt, Ghana, Nigeria, Senegal, Sudan, Tanzania, Uganda, and Zimbabwe, the numbers were significantly lower (5-15). In 16 countries including Angola, Benin, Chad, the Gambia, Somalia and Eswatini (formerly Swaziland), no data on digital research repositories could be found.

Languages represented in the dataset include English (en), French (fr), Arabic (ar), Amaranth (amh), Portuguese (pt), Swahili (sw), Spanish (es), German (de).
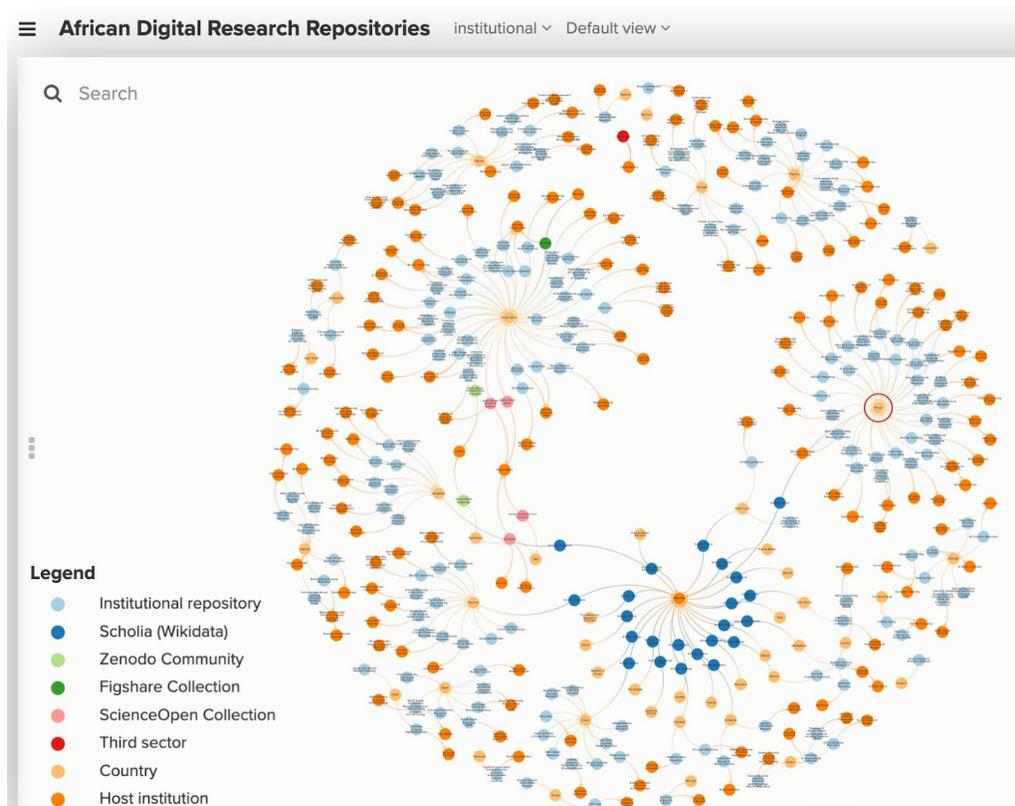

Figure 1: Overview of the visual map on African digital repositories (n=229). Nodes represent countries with their connections to various types of repositories as distinguished by color code (see legend).
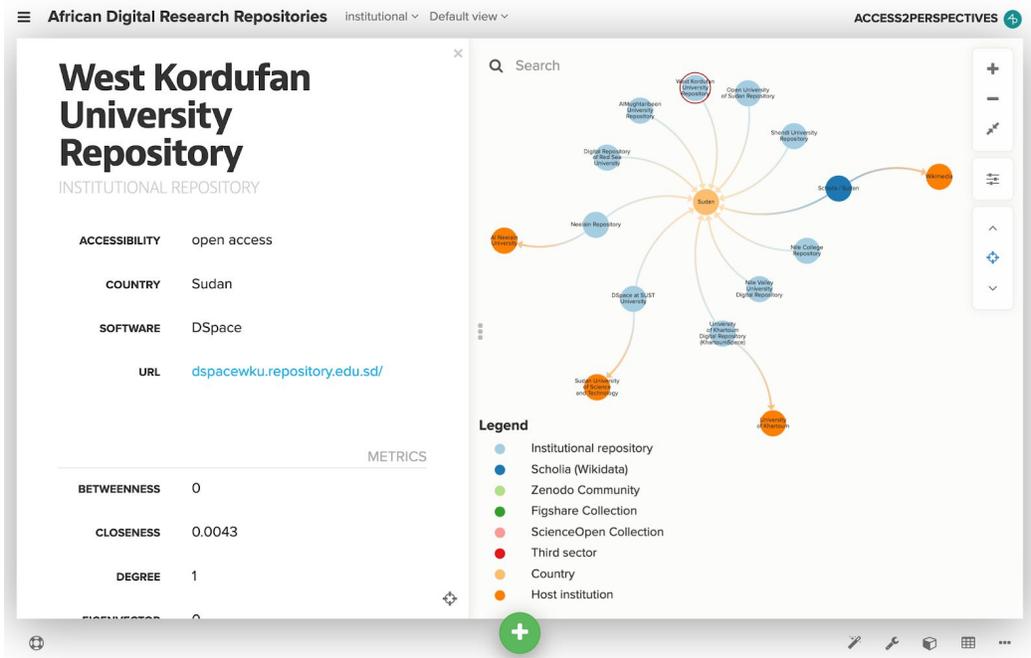url: https://kumu.io/access2perspectives/african-digital-research-repositories

Figure 2: Exemplary focus view on Sudan highlighting details of the West Kordufan University repository, incl. Software, available languages, accessibility and url.
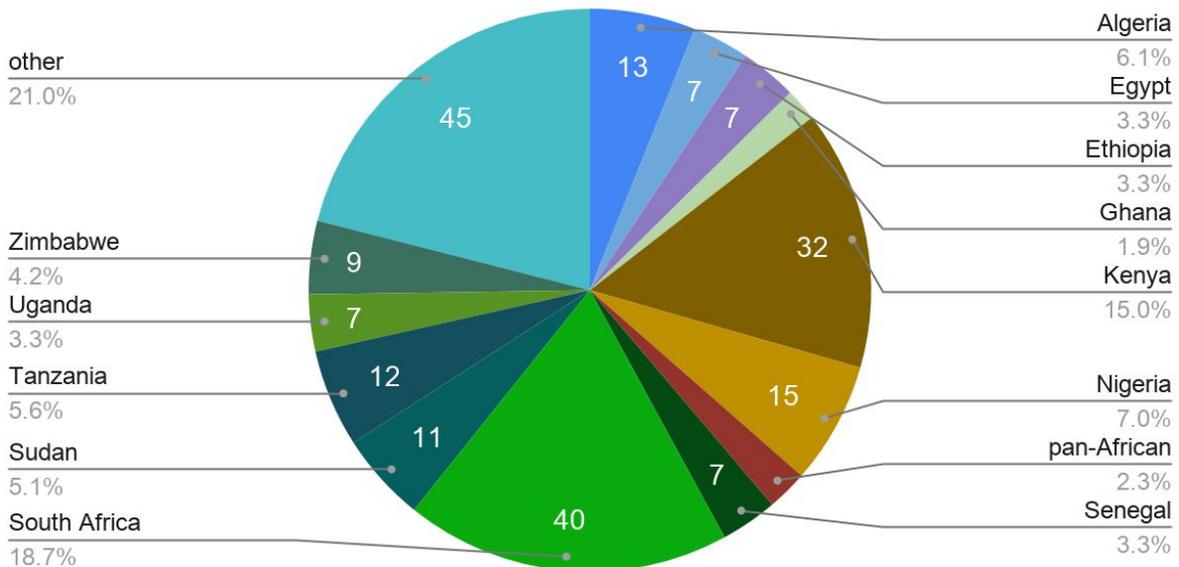
Repositories per country

Figure 3: Number of repositories per African country and percentages. 'Other' countries entail those with 0-3 repositories present,
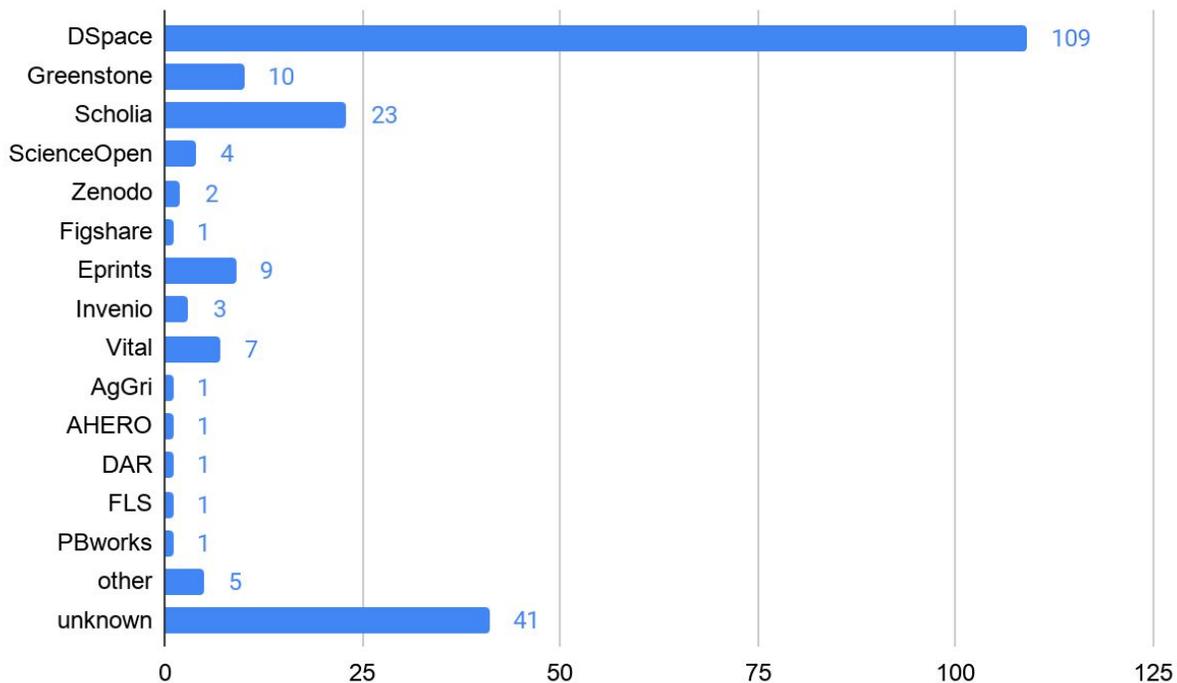
Figure 4: The software providers with the numbers of hosted repositories, respectively. Unknown

Table 1: Software providers

dSpace	https://duraspace.org/dspace/
Greenstone	http://www.greenstone.org/
Scholia (Wikidata)	https://tools.wmflabs.org/scholia/
ScienceOpen	https://www.scienceopen.com/
Zenodo	https://zenodo.org/
Figshare	https://figshare.com/
Eprints	https://www.eprints.org/uk/
Digital Assets Repository (DAR)	http://dar.bibalex.org/webpages/dar.jsf
Invenio	https://invenio-software.org/
AgGrid (Drupal)	https://www.drupal.org/project/aggrid
Vital	http://digital.libraries.dublincity.ie/vital/access/manager/Index
Open Science Framework (OSF)	https://osf.io/
Future Library Software (FLS)	http://www.mans.edu.eg/e-management-systems/future-library-management

Discussion

Effectively-designed digital research repositories should make research output accessible and discoverable online. Moreover, open repositories should enable users from around the globe to access the data holdings. Open digital repositories therefore play an important role within the Open Science landscape and are a vital element of Open Access publishing. For further background and a view on the development and outlook for repositories with reference to Africa and African studies, see Molteno (2016).

We recognize the complexity of mapping digital repositories. Notwithstanding the challenges of gathering data, additional levels of complexity challenges come in investigating curation methods, access limitations, searchability, longevity/sustainability and range of data types for deposition. Nonetheless, we believe that maps such as the one presented below remain a valuable resource. Having an understanding of the existing repository network - together with its strengths and weaknesses - facilitates directed responses and improvements. Moreover, increasing the visibility of these repositories - both to the African and global audience - can facilitate sharing of best practices, experiences and expertise. This will enable the stakeholders, namely librarians and other academic personnel to make informed decisions about how to most feasible adapt digital technologies for archiving of African scholarly works existing African repositories to become more responsive to new technologies and to develop "ground-up" approaches to digital data management that are both suitable and sustainable for the African continent.

What is defined as a repository differs considerably, not only in Africa, but across the global scholarly landscape. Funds dedicated to repository upkeep and personnel capacity building are scarce and vary significantly, largely depending on and limited by national governmental investments in research and innovation or donor contributions. The variation in systems that use different software and archiving technical features hinders strategic interlinking and thereby searchability of the repositories across the continent and other world regions. All of these issues need to be addressed to allow African research to transition from digital siloes to an interactive landscape.

We envisage this map to be a constituent of a larger future analysis of existing and emerging literature and data repositories. In a follow-up iteration of this work, we plan to include in the dataset and visual map African digital data repositories as identified by the African Open Science Platform (AOSP) landscape study (2019). Another goal will be to identify technological solutions to make the variety of repositories interoperable and searchable across disciplines/regions/languages – accessible and operable in the present African context with limited bandwidth capacities e.g. by developing online/offline workflows.
Yet another category of repositories to add will be those on African studies operated and hosted outside the continent; one such curated list is *Connecting-Africa*

(https://www.connecting-africa.net/index.htm). A growing list of relevant entries are also being curated on Wikidata, see e.g. https://en.wikipedia.org/wiki/User:GerardM/Africa#African_science.

The authors explicitly welcome feedback on the presented dataset as well as input on institutional repositories that have been inadvertently omitted or are currently being planned and implemented. We are looking forward to liaising with other stakeholders in African R&I as well as international institutions to further analyse existing scholarly archiving and publishing platforms and working towards their interoperability.

References

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