
CUCRID RESEARCH SERIES FOR RESEARCHERS & POST-GRADUATES STUDENTS
10th July 2024

PERSISTENT IDENTIFIERS (PIDs) Presentation

OWEN IYOHA

EKO-KONNECT RESEARCH AND EDUCATION INITIATIVE

www.eko-konnect.org.ng

secretariat@eko-konnect.org.ng

Twitter: @EkoKonnnect

ABOUT EKO-KONNECT

- NREN Service Provider in Nigeria established in 2009
- Operator of the Nigerian Identity Federation - eduID.ng
- Identity and Access Management Platforms
- National Roaming Operator for eduroam
- Open Access Repository deployment and Training
- Open Science and Open Access Advocacy
- Digital Education and Training

Eko-Konnect Role in Nigeria

- Open Science (Open Access) Advocacy especially for ECRs (Early Career Researchers)
- PID Services Provider - Providing DataCite DOIs since 2017 see:
<https://aphrc.org/blogarticle/press-release-north-and-south-join-forces-to-promote-open-science-in-africa/>
- Datacite DOI Consortium Lead in Nigeria
- Expect to lead the establishment of an ORCID Consortium in Nigeria in Q3 2024
- Provide cloud based Open Science Infrastructure <https://ren.ng>

What are Persistent Identifiers - PIDs

A persistent identifier (PID) is **a long-lasting reference to a document, file, web page, or other digital object**. Most PIDs have a unique identifier which is linked to the current address of the metadata or content.

Common examples of PIDs include:

ROR - places

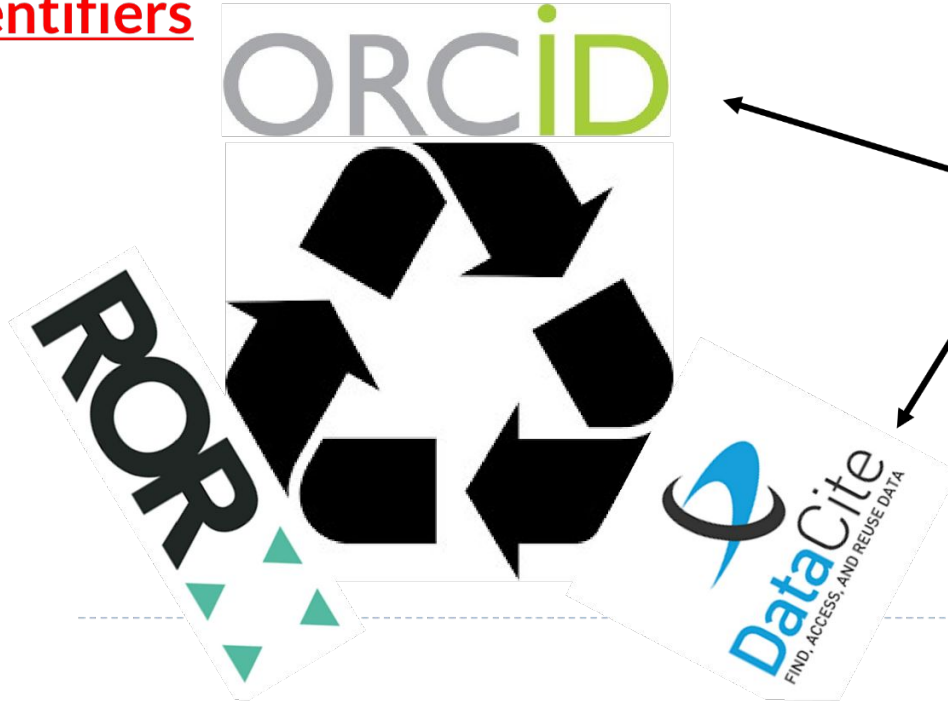
ORCID- persons

Crossref & DataCite DOIs, IGSN, ARKs - Outputs

Others include: GrantID, Funder's ID, RAiD, etc.

Popular Persistent Identifiers

persistent identifiers



In this presentation

PID Hierarchy

- Different PIDs for different levels
 - Institutional Level - ROR
 - Repository level (Dspace, Invenio, E-Prints) - System Handle
 - User level (Academics /Researchers) - ORCID iD
 - Scholarly/Research Outputs (Publications; articles, preprints) DOI and/or ARK
 - Funders - FundRef ID (from CrossRef)

Handle System

- Developed by CNRI, is a registry for assigning PIDs or “Handles” to information resources.
- Provides underlying architecture for DOIs and repositories such as DSpace.
- Typically used (handle.net)) to uniquely identify repositories and facilitate interoperability between repositories.
- DONA Foundation now responsible for the administration and future development of the Handle System.

Research Organisation Registry - ROR



- The Research Organisation Registry (ROR) is a registry of open persistent identifiers
- ROR makes it easy for users or systems to disambiguate institution names and connect research organisations to researchers and research outputs
- Designed to be integrated into open scholarly infrastructure
- Default identifier used by CrossRef DOI, Datacite DOI and ORCID
- ROR is used in publishing systems, repositories, funder/grant management platform, Open Access workflows and other infrastructure to improve discovery and tracking of research and scholarly outputs.



ORCID iD

- ORCID - **O**pen **R**esearcher and **C**ontributor **ID**
- Global organisation provides a fully open and interoperable PID - ORCID iD
- ORCID iD allow researchers to be uniquely identified and connected to their outputs across institutions, disciplines, borders and time.
- ORCID iD is a 16 digit identifier that users can acquire free of charge from <https://orcid.org/> comes also with some free tools and APIs for simple integrations
- Access to more advanced tools and APIs require Orcid Consortium membership for access

Digital Object Identifier - DOI



- A Digital Object Identifier - DOI is an alpha-numeric string used to uniquely identify digital objects from research outputs e.g. journal articles or research data and provide it with a persistent (permanent) link.
- A DOI helps a reader easily locate a research output from a citation
- Versioned DOIs allow editing research outputs without requiring a new DOI
- DOI uses the System Handle technology developed by CNRI

DOI Registration Agencies (RAs)



The 2 most popular RAs

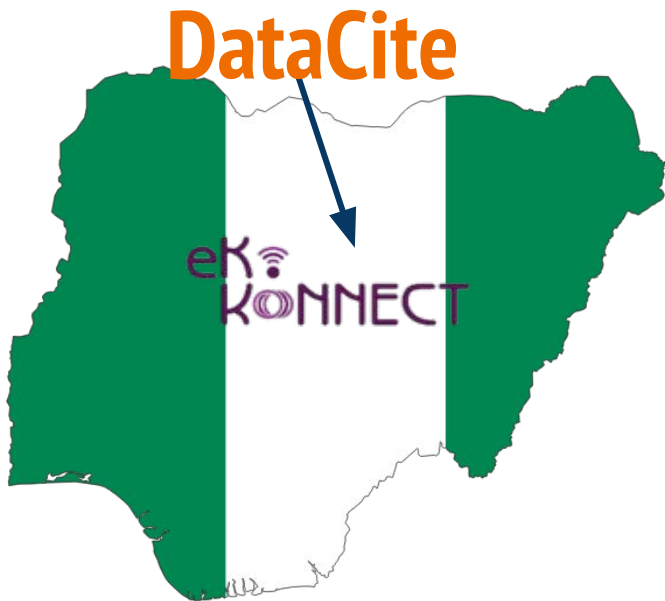


eK KONNECT & DataCite

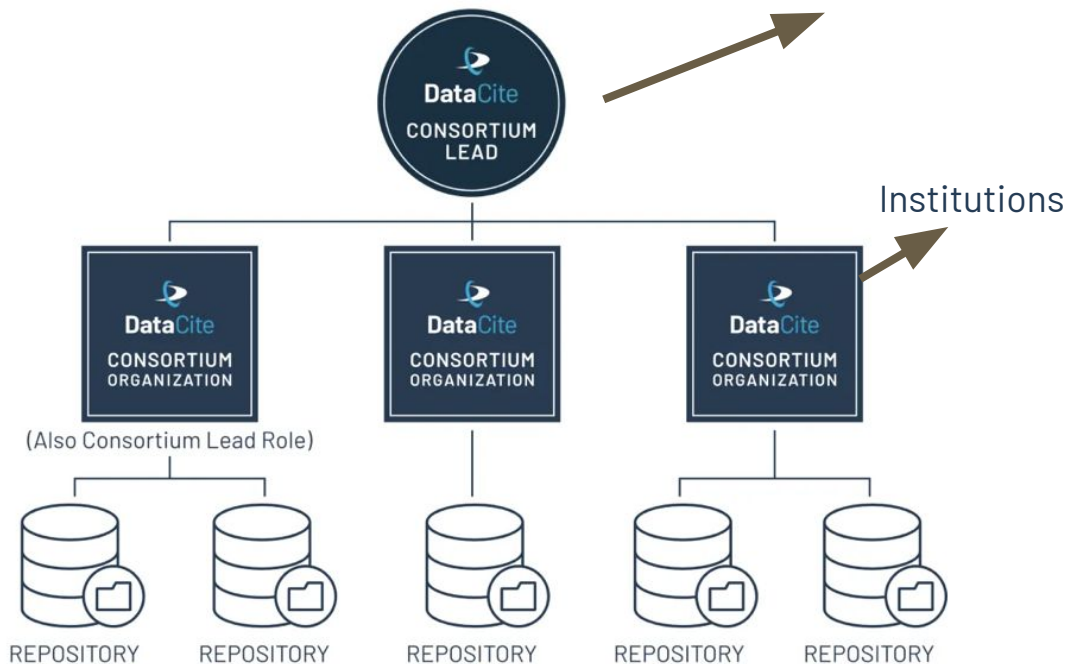


Eko-Konnect is DataCite's lead consortium in Nigeria.

New members can join DataCite by contacting Eko-Konnect



Consortium



Archival Resource Key - ARK



- ARKs are similar to DOIs, URNs, and Handles.
- Exist in large numbers (8.2 billion ARKs, 240 million DOIs, etc.),
- Start with a string to identify the name assigning authority,
- Require the active updating of URL redirects, and
- Support research and scholarship, appearing in the Data Citation Index, Wikipedia, ORCID.org profiles, etc.
- Eko-Konnect undergoing pilot implementation with WACREN

International Generic Sample Number - IGSN



- IGSNs are persistent identifiers used with physical objects or material samples
- DataCite have taken over the minting of IGSNs which are now part of DataCite's ecosystem and function similarly to DataCite DOIs.
- Eko-Konnect is involved in a project with the National Commission for Museums and Monuments to assign IGSNs to artefacts of the National Lagos Museum.

Metadata for PIDs Interoperability

- Metadata is the 'glue' that connects different types PIDs to promote interoperability.
- The metadata is less useful if users do not complete the required fields that will ensure PIDs interoperability.
- When a Member registers a DataCite DOI they always register metadata about the resource.
- PID interoperability increases discoverability, connectedness and FAIRness of research and scholarly outputs.

Metadata schema

Properties

Mandatory	Recommended	Optional
Identifier	Subject	Language
Creator	Contributor	AlternateIdentifier
Title	Date	Size
Publisher	RelatedIdentifier	Format
PublicationYear	Description	Version
ResourceType	GeoLocation	Rights
		FundingReference
		RelatedItem

Resource Types

DataCite DOIs are suitable for a wide range of research outputs:

Audiovisual	Model
Book	OutputManagementPlan
BookChapter	PeerReview
Collection	PhysicalObject
ComputationalNotebook	Preprint
ConferencePaper	Report
ConferenceProceeding	Service
DataPaper	Software
Dataset	Sound
Dissertation	Standard
Event	Text
Image	Workflow
InteractiveResource	Other
Journal	
JournalArticle	

PIDs and Metadata



See sample from DataCite Commons. It exposes:

the **connections between DOIs in the form of citations, versions, and collections, people (ORCID), research organizations (ROR), repositories (re3data) and funders (Crossref Funder ID)** e.g. all works/funder or all works/organization

More information: <https://doi.org/10.5438/f4df-4817>

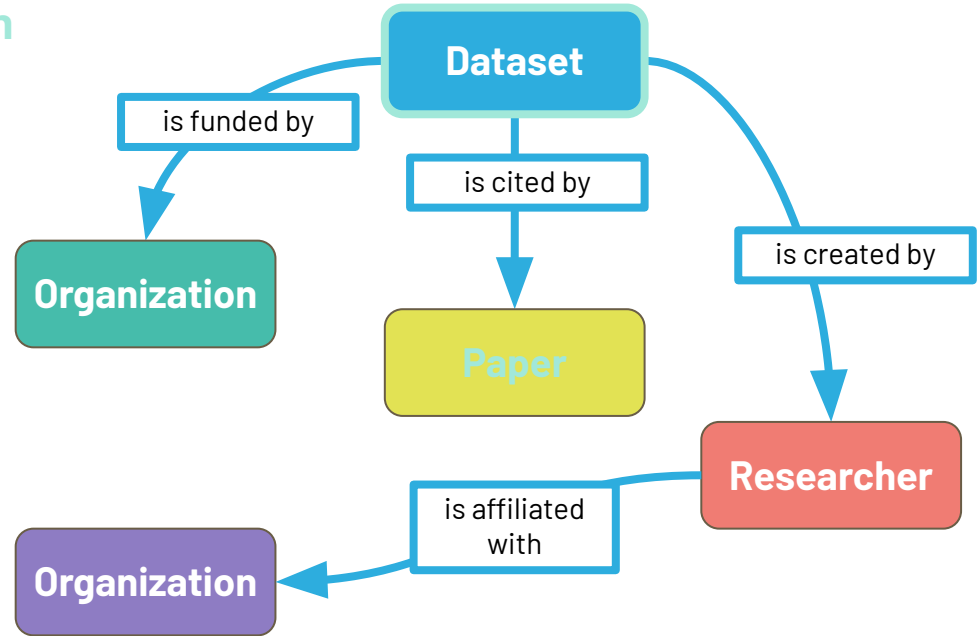
<https://commons.datacite.org>

Research Impact... - Connection Metadata

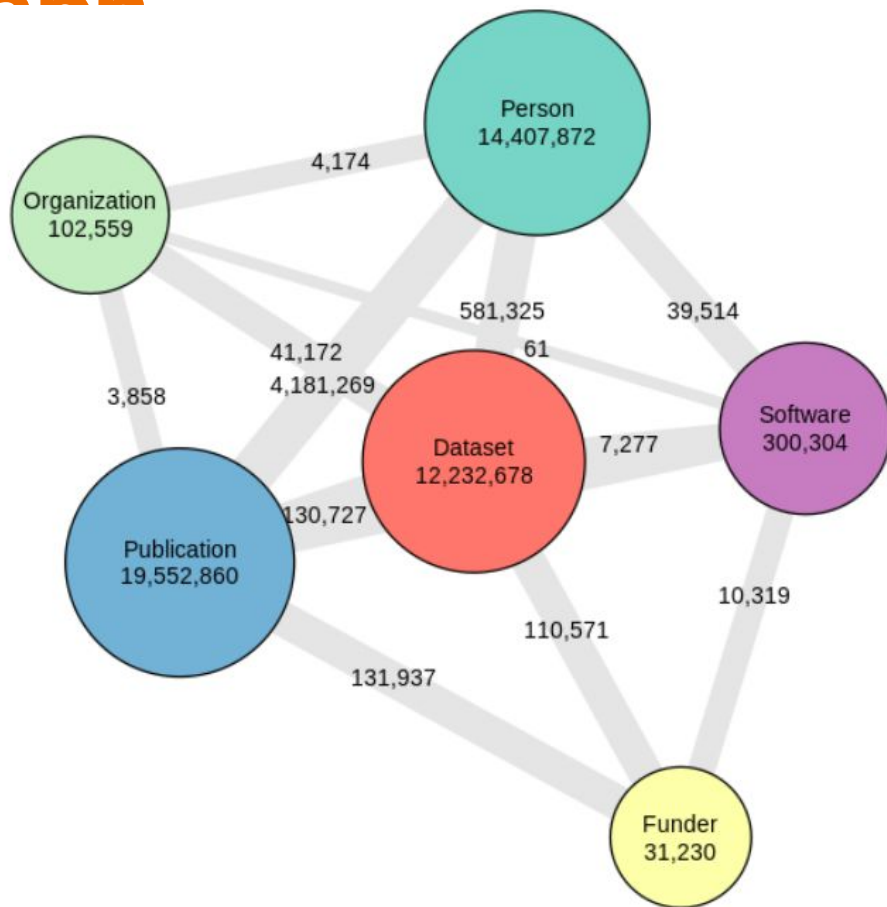
Metadata that represents relationships—connections—between entities

Examples:

- A paper cites a dataset
- A person authors a paper
- A person is affiliated with an institution
- An institution funds a research output
- A dataset is compiled/created by software



...Research Impact - PID Graph



The PID Graph

Number of nodes and connections (August 2022)

Establishing the Nigerian ORCID Consortium



- Goal is to build a Nigerian ORCID Community via the ORCID Consortium
- Access to dedicated ORCID Support Staff.
- Access to ORCID premium APIs for improved automated integrations.
- Track impact of institution's research with **Affiliation Manager** tool.
- **We expect CU to become a founding Member of the ORCID Consortium!**
- Eko-Konnect plans to be Consortium Administrative and Technical Lead.
 - a. Coordinate or Facilitate advanced ORCID workshops.
 - b. Provide 1st line ORCID API support for less equipped institutions.
 - c. Onboarding additional institutions to reduce annual consortium costs.

RECOMMENDATIONS

Optimise PIDs in Journal and Repository Platforms

- Compliance with FAIR principles
- Adhere to global metadata standards
- Establish local standards if necessary
- Support Open Access as much as possible
- Support as many PIDs as possible to achieve greater visibility and interoperability
- Use the additional tools available from PID vendors like ORCID, CrossRef & DataCite to easily measure institution's visibility and research impact.

-
-
- Deploy institutional repository or explore shared services option.
 - Use as many PIDs as possible in metadata and for integrations with your repository
 - Register your repositories with the likes of OpenDOAR, OpenArchive and Re3data
 - Ensure all your researchers, academic staff and PG students register for ORCID iD
 - Promote and adopt Open Access policies so your outputs are visible globally
 - Join the Nigerian Identity Federation (eduID.ng) to be able to use education identity (eduID) to access non PID related services like eduROAM and library subscriptions

-
-
- Some PIDS (like ORCID iD) ARKs are free others like DOIs have a fee;
 - Explain to management the needs for budgets to support PIDs and Open Science
 - Consortium's i.e. working with other institutions can reduce the costs of PID infrastructure and improve integrations and interoperability
 - Eko-Konnect is consortium lead for DataCite DOIs and is exploring with CU the prospects of leading an ORCID consortium to help Nigerian HEIs have better integrations for their scholarly outputs and increase visibility.

**EKO-KONNECT LOOKS FORWARD A CLOSER AND FRUITFUL
RELATIONSHIP WITH COVENANT UNIVERSITY**



THANK YOU

Eko-Konnect Research and Education Initiative

Web: www.eko-konnect.org.ng

E-mail: support@eko-konnect.org.ng

Tel: +234 1 3428566

Twitter: @eko-konnect