



Assessment Information

[CoreTrustSeal Requirements 2020–2024](#)

Repository: Cape Peninsula University of Technology

Website: <https://www.cput.ac.za/>

Certification period: Nov. 29, 2024 - 29 November 2027

Requirements version: CoreTrustSeal Requirements 2020-2022

This repository is owned by: **Cape Peninsula University of Technology**

CoreTrustSeal Board

W www.coretrustseal.org

E info@coretrustseal.org

CORE TRUSTWORTHY DATA REPOSITORIES REQUIREMENTS

Background Information

Repository Type

Please provide context for your repository. You can select one or multiple options.

Response:

- Institutional repository

Reviews

Reviewer 1:

Comments:

Reviewer 2:

Comments:

Accepted

Description of Repository

Provide a short overview of the repository.

Response:

CPUT eSango, a research data repository, powered by Figshare (hereafter referred to as eSango <https://esango.cput.ac.za/>), is a multidisciplinary institutional research data repository that provides access to unique and scalable server architecture to facilitate data sharing, collaboration, storage, persistent archiving, and to showcase data from institutions to a large and growing community already used by other institutions and currently containing more than three million objects. The scope of the CPUT collection are from researchers and postgraduate students from CPUT's six faculties: Applied Sciences, Business and Management Sciences, Education, Engineering and the Built Environment, Health & Wellness Sciences, and Informatics and Design.

CPUT researchers are actively participating in the collaborated ilifu Data-Intensive Research project on Astronomy and Bioinformatics and researchers are required to use trusted repositories to deposit their data. eSango falls under the category of an institutional data repository; users make their research data outputs available, regardless of file type, in a citable, shareable, and discoverable manner. eSango exists to support researchers in the institution to comply with global funder mandates and publisher requirements with regards to open research data. We aim to increase visibility and adhere to FAIR principles. eSango strives to make use of new technologies such as cloud hosting, RESTful APIs, and browser functionality to better aid researchers, publishers, and institutions in their attempts to better manage and disseminate academic research. The data repository provides a dashboard and reporting functionality that give insight to how the audience are interacting with the repository through statistical analysis of usage and impact. DOIs are registered through DataCite and have a contractual commitment to them to ensure that public content remains accessible for at least 10 years. The National Research Foundation (NRF) statement in 2015 requires that funded researchers deposit their data in trusted institutional repositories. eSango adheres to TRUST and FAIR principles as prescribed by Figshare: <https://knowledge.figshare.com/publisher/fair-figshare> and <https://help.figshare.com/article/complying-with-the-trust-principles>

Reviews

Reviewer 1:

Comments:

Accepted.

Reviewer 2:

Comments:

Accepted

Designated Community

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Provide a clear definition of the Designated Community

Response:

The repository's Designated Community are academics/researchers from all the discipline areas researched, including research focus areas, research chairs, and research entities at CPUT (as evidenced by <https://www.cput.ac.za/academic> & <https://www.cput.ac.za/research-technology-and-innovation> & <https://esango.cput.ac.za>) are examples of who produce research outputs. It also fits with the University's ambition to increase the visibility, reach, and impact of its research, as can be seen in two policies: Open Access Policy (<https://www.cput.ac.za/storage/library/pdf/research-support/CPUT-Open-Access-Policy.pdf>) & Research Data Management Policy (2015) (<https://www.cput.ac.za/storage/library/pdf/research-support/Research-Data-Management-Policy.pdf>) see ANNEXURE B&C. Figshare's vision is to change the face of academic publishing with the improved dissemination and discoverability of all scholarly research and content. The focus is on making use of new technologies such as cloud hosting and new browser functionality to better aid researchers, publishers, and institutions in their attempts to better manage and disseminate academic research.

Reviews

Reviewer 1:

Comments:

<https://esango.cput.ac.za/> example/s

Review 3: the above can not be accessed

Remove paragraph outlining Figshare's vision - not relevant to the topic.

Reviewer 2:

Comments:

Accepted

Level of Curation

Select all relevant types of curation.

- Content distributed as deposited
- Basic curation – e.g., brief checking, addition of basic metadata or documentation
- Enhanced curation – e.g., conversion to new formats, enhancement of documentation
- Data-level curation – as above, but with additional editing of deposited data for accuracy

Response:

- B. Basic curation – e.g. brief checking; addition of basic metadata or documentation

Reviews

Reviewer 1:

Comments:

Accepted

Reviewer 2:

Comments:

Level of Curation - explanation

Please add the description for your Level(s) of Curation.

Response:

On submission, a basic curation is done by CPUT Library Staff, brief checking, the enrichment of basic metadata when needed, screening of the datasets and other submitted documentation for possible sensitive information and/or reusability of how data is presented. (ANNEXURE: D). Researchers submit their research outputs and are checked by a library reviewer, the Digital Scholarship Librarian, Metadata Librarian, and the university Ethics Manager.

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Library reviewers do not change datasets, but where there are any discrepancies or enhancements needed, recommendations are made to the submitter. In cases of postgraduate student submissions for graduation purposes, their Supervisor forms part of the review process to approve the submission and check the quality of the datasets.

There are also layers of automated curation wherein metadata requirements are met on the backend (ie: time stamping date, assigning of a DOI). Users manually type in the following core metadata:

- Title*
- Authors*
- Categories*
- Item Type
- Keywords*
- Description*
- References (related URLs)
- Funding
- Licence

The starred fields are mandatory for minting a DOI and making an item public - these are demarcated by a green dot. The data are further defined within the metadata fields with a dropdown menu, for example the file type can either be: thesis, image, dataset, video etc.

Additional metadata fields can be configured at the group level, under the control of the Digital Scholarship Librarian and other Library specialists.

In addition, there is version control, whereby end-users have the ability to update their records and create a new version - these are also made visible and are clearly demarcated by a drop-down menu (Version 1, Version 2 etc.)

Other research data information is drawn from publishers like PLOS One through publisher agreements with Figshare.

All data made public requires producers to provide a detailed description pertaining to methods and/or techniques used (where applicable) and submitted via the systems metadata capture screen. Figshare has partnered with DataCite via Figshare for DOIs. This means that mandatory metadata fields - clearly demarcated with green dots on the metadata form - have to be completed, including licenses, in order for the user to publish.

By agreeing to our terms and selecting the appropriate license, users are confirming that data they are sharing was carried out in accordance with ethical and legal criteria in the producer's geographic location and discipline and they hold relevant copyrights to publicly share the data.

eSango allows academics to license their content with one of the following licenses (CC BY 4.0, CC0, MIT, GPL, GPL 2.0+, GPL 3.0+, Apache 2.0, CC BY-NC 4.0, CC BY-NC-ND 4.0).

1) Annexure D: Cape Peninsula University (CPUT) Figshare Review workflow

Reviews

Reviewer 1:

Comments:

Accepted, but the details of the workflow can be moved to the relevant sections (R 12, and possibly R 7-11)

Review 3: details of workflow to be moved (second paragraph onwards).

Review 4: Still not moved, but does not affect certification decision.

Reviewer 2:

Comments:

Accepted

Insource/Outsource Partners

If applicable, please list them.

Response:

The Cape Peninsula University of Technology has a contract with Figshare, via TENET (Tertiary Education and Research Network of South Africa) and the general purpose is to publicly share CPUT research data.

The Cape Peninsula University of Technology has a contract with Arkivum for a preservation solution.

1) Figshare - ANNEXURE A [CONFIDENTIAL] : Figshare agreement via TENET (Tertiary Education and Research Network of South Africa)

2) TENET (Tertiary Education and Research Network of South Africa) Consortium who negotiates for Figshare and other services for South African universities

3) Arkivum - ANNEXURE U-5 [CONFIDENTIAL] Arkivum Preservation Agreement

Reviews

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Reviewer 1:

Comments:

Accepted

Reviewer 2:

Comments:

Significant Changes

Summary of Significant Changes Since Last Application if applicable.

Response:

-

Reviews

Reviewer 1:

Comments:

Reviewer 2:

Comments:

Other Relevant Information

You may provide other relevant information that is not covered by the requirements.

Response:

-

Reviews

Reviewer 1:

Comments:

Reviewer 2:

Comments:

Organizational Infrastructure

R1 Mission/Scope

The repository has an explicit mission to provide access to and preserve data in its domain.

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

CPUT's has a mission to provide access to research data and aligned with CPUT's Research Data Management Policy and Open Access Policy. eSango exist to support researchers in the institution to comply with national directives and global publisher and funder mandates with regards to open research data. We aim to increase visibility for all types of research data and available as per FAIR principles. The National Research Foundation (NRF) statement in 2015 requires that research funded by public funds be made available in an institutional repository, including the research data.

In addition, CPUT has been participating in the collaborated ilifu Data-Intensive Research project for Astronomy and Bioinformatics to develop Research Data Management practices at the university and in the region. The University has responded to this mission with these two policies and adhere to the

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following principles: Open Access Policy (2021), Research Data Management Policy (2021), FAIR principles and TRUST principles. CPUT has implemented and deployed a data management plan (DMP) tool that sets out the guidelines that researchers need to comply with when they are conducting research. DMP guideline describes the manner in which research data will be managed as well as after the completion of research projects. The purpose of the DMP is to ensure that CPUT researchers comply with all the legal, ethical, and contractual obligations and promotes the best practice of managing research data.

Links:

- [National Research Foundation \(NRF\) Open Access to Research Publications from the NRF-Funded Research](#)
- [FAIR principle](#)
- [Research Data Management Policy \(2021\)](#)
- [Open Access Policy \(2021\)](#)
- [ilifu Data-Intensive Research project on Astronomy and Bioinformatics](#)
- [DMP guideline](#)
- [CPUT has implemented and deployed a data management plan \(DMP\) tool](#)
- [TRUST](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Accepted The University explicitly requires DMPs and has deposit guidelines recommending the use of the repository
Compliance Level Comment: Accepted. The University explicitly requires DMPs and has deposit guidelines recommending the use of the repository.

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Accepted

R2 Licenses

The repository maintains all applicable licenses covering data access and use and monitors compliance.

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

By agreeing to our terms and selecting the appropriate license users are confirming that data they are sharing was carried out in accordance with ethical and legal criteria in the producer's geographic location and discipline and they hold relevant copyrights to publicly share the data. eSango allows academics to license their content with one of the following licenses (CC BY 4.0, CC0, MIT, GPL, GPL 2.0+, GPL 3.0+, Apache 2.0, CC BY-NC 4.0, CC BY-NC-ND 4.0) these licenses are described fully in the Figshare copyright and License policy. Mandatory metadata fields - clearly demarcated with green dots on the metadata form- must be completed, including licences, for the user to publish.

CPUT's Policy on Intellectual Property and Innovations (2020) and the Intellectual Property Rights from Publicly Financed Research and Development Act 51 of 2008 (hereinafter the IPR Act), as well as its Regulations that came into effect in 2010 (GG 33433 of 2/8/2009). The purpose or intent of this policy is to provide a strategic and operational framework for the protection, management, and commercialization of intellectual property developed by staff, students, and other parties at CPUT. This will ensure that the rights and obligations of all stakeholders are clearly outlined, in order to comply with the provisions of the applicable legislation and to reduce any potential for conflict between stakeholders.

The conditions of use established by the repository are mandated by:

Policy on Intellectual Property and Innovations (2020), see section 5.3, 5.5, 5.7, 5.8 & 7.7

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Research Data Management policy, see section 5.2, 2.2.4, 2.2.5, 5.1.1.6, 5.1.1.7, 5.1.2, 5.3.2

eSango Terms of Use

1] ANNEXURE F: Policy on Intellectual Property and Innovations (2020)

20 ANNEXURE G: Intellectual Property Rights from Publicly Financed Research and Development Act 51 of 2008 (hereinafter the IPR Act)

Links:

- [eSango Terms of Use](#)
- [eSango allows academics to license their content with one of the following licenses](#)
- [Research Data Management policy](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Accepted

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Compliance Level Comment: Accepted.

R3 Continuity of access

The repository has a continuity plan to ensure ongoing access to and preservation of its holdings.

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

The guideline has been fully implemented.

Figshare's Business Continuity Plan [1]) outlines in detail the provisions in place to ensure the continued running of the technical infrastructure, which includes continuity management plans for the following risks: financial, pandemic, disaster, security and technical. Figshare are ISO27001 certified, which further includes an Incident Response Management Procedure [2], IT Disaster Recovery Plan [3]. An annual subscription for Figshare will continue in terms of access to our holdings. The initial 3 years of access to Figshare was funded through the ilifu Tier 2 project and this ended at the end of 2020. We have joined the TENET (Tertiary Education and Research Network of South Africa Figshare consortium and re-subscribed from 2021. If, however we would move to another platform in the future our service level agreement makes reference of migration of data and metadata to a new system of choice. CPUT Libraries has signed a Software as a Service Agreement (SaaS) with Arkivum [5] Limited for a preservation platform, also see the initial CPUT Preservation Strategy [4] and CPUT Digital Preservation Plan [6], the Arkivum Solution Overview for HEI Heritage [7] and the CPUT TENET letter agreement re Figshare (institutions) countersigned [8]. Our agreement with TENET as a Figshare for Institutions consortium ensures cost-effective negotiations for South African Universities. CPUT Libraries is mandated at the university for this service and therefore having an annual budget item for this research data management solution.

See also the eSango Terms of Use.

- 1) ANNEXURE H: [CONFIDENTIAL] Figshare Business Continuity Plan
- 2) ANNEXURE J: [CONFIDENTIAL] Figshare Incident Management Procedure
- 3) ANNEXURE I: [CONFIDENTIAL] Figshare IT Disaster Recovery Plan
- 4) ANNEXURE U: [CONFIDENTIAL] CPUT Preservation Strategy
- 5) ANNEXURE U-5: [CONFIDENTIAL] CPUT and Arkivum Agreement
- 6) ANNEXURE U-3: [CONFIDENTIAL] CPUT Digital Preservation Plan
- 7) ANNEXURE U-4: [CONFIDENTIAL] Arkivum Solution Overview HEI Heritage

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8) ANNEXURE A: [CONFIDENTIAL] CPUT TENET agreement re Figshare

Links:

- [eSango Terms of Use](#)
- [Tertiary Education and Research Network of South Africa](#)

Reviews

Reviewer 1:

Compliance level:

The repository is in the implementation phase - 3

Comments:

Accepted

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Accepted

R4 Confidentiality/Ethics

The repository ensures, to the extent possible, that data are created, curated, accessed, and used in compliance with disciplinary and ethical norms.

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

All data made public in eSango requires the producer to provide a detailed description pertaining to the method and/or techniques used (where applicable), this is submitted in the system's metadata capture screen. By agreeing to our terms and selecting the appropriate license, users are confirming that data they are sharing was carried out in accordance with ethical and legal criteria in the producer's geographic location and discipline and they hold relevant copyrights to publicly share the data. The terms also stipulate and remind producers of the need to remove any personally identifiable or sensitive information from their data. Researchers and supervisors of research are responsible for ethical clearance submissions as per the Universities guidelines and processes. When submissions are made on eSango no files are made public without first being reviewed/curated by a member of the CPUT team, who have been trained in best practices for RDM and data publishing and have nearly five years' experience of curating data and understanding the ethics involved in data curation. The review process [1] at CPUT has been activated with the Digital Scholarship Librarian as the main reviewer, the Metadata Librarian as well as the universities Ethics Manager as part of the process. All submissions are checked for ethical clearance documentation and confirmation by the Universities Ethics Manager.

Although this is a Generalist Repository, the CPUT team has included disciplinary-based quality controllers as part of our postgraduate student submissions. The workflow has been developed, reviewed and updated for implementation in December 2021 which includes disciplinary representatives for graduation purposes [1]. This workflow has been workshoped with all faculties for their input. The Research Data deposit guidelines, point 12, shows the aspects that the Ethics Manager reviews on the ethics checklist. In the Research Data Deposit guidelines, point 14, indicates the file formats that eSango accepts.

See also the eSango Terms of Use.

1) ANNEXURE D: eSango/Figshare Review Workflow

Links:

- [eSango Terms of Use](#)
- [Research Data Deposit guidelines show the file formats that eSango accepts:](#)
- [Research Data deposit guidelines](#)

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Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Accepted

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Compliance Level Comment: Accepted.

R5 Organizational infrastructure

The repository has adequate funding and sufficient numbers of qualified staff managed through a clear system of governance to effectively carry out the mission.

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

There is institutional buy-in and is evident based on these policies, the Research Data Management (RDM) policy [1] and Open Access (OA) Policy [2] have existed since 2015 and was reviewed and approved in 2021. The first 3 years of Figshare has been funded by the Department of Science and Technology (DST) as part of the ilifu Tier 2 project. This project ended in March 2021. CPUT is continuing with this repository as part of the TENET (Tertiary Education and Research Network of South Africa consortium. Our teams consist of the Library Director, Deputy-Director, Research Support Manager, eResearch Systems Developer, Library IT Manager, Digital Scholarship Librarian, Ethics Manager, Metadata Librarian and Institutional Repository Librarian – 9 staff members. This team in the future will include ad hoc disciplinary data quality controllers as part of the data curation process. Currently, supervisors forms part of the review process for datasets of postgraduate students for graduation purposes, to ensure quality checks across various disciplines. If platforms are changed, all data will be migrated to any chosen platform in the future.

CPUT libraries are responsible for continuous budgeting for the maintenance of the repository. The university library will be responsible for:

Providing training and consultation services to assist researchers with their RDM requirements.

Provide and maintain a Research Data Repository.

Provide a basic level of curation which includes brief checking, the addition of basic metadata or documentation to enhance curation, including conversion to new formats.

Provide and maintain a DMP tool.

In the CPUT's RDM policy the following resources are required, including Finance:

Access to Policy

Procedures

Guidelines

Research Data Management Working Groups

Data management infrastructure

Finance, and participation by researchers

Metadata and research output

Human Capital and expertise

Skills Development

Partner institutions

1) ANNEXURE C: Research Data Management Policy

2) ANNEXURE B: Open Access Policy

Links:

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- [Tertiary Education and Research Network of South Africa.](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Accepted

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Compliance Level Comment: Accepted

R6 Expert guidance

The repository adopts mechanism(s) to secure ongoing expert guidance and feedback (either in-house, or external, including scientific guidance, if relevant).

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

CPUT Libraries staff engage in Figshare meetings, webinars, Network of Data & Information Curation Communities (NeDICC), Data Intensive Research Initiative of South Africa (DIRISA), Committee on Data for Science and Technology (CODATA), eResearch workshops and university webinars/training/discussions on this topic. CPUT Libraries is a member of Ilifu Research Data Management and Open Science working group, ilifu Project Steering Committee, Research Data Alliance (RDA), Confederation of Open Access Repositories (COAR), African Open Science Platform (AOSP), Figshare Ambassador Programme. CPUT Libraries have regular engagement with Figshare support teams through online meetings, logging tickets, webinars and eResearch workshops. We form part of the Figshare South African Community group which meets once a term. Internally, CPUT libraries have a working group whereby technical aspects and workflows are discussed on a regular basis and this is ongoing. We are also part of a regional community that includes 4 universities where we discuss RDM and Figshare matters, a further ilifu project was approved on the National level for our region for ongoing engagement. Our designated community provides/receives feedback via scheduled dedicated training sessions, consultations, and library working groups. External guidance is requested as required, e.g. the ilifu working group, consulted with Mr Wim Hugo, at the timey Chief Technology Officer at DANS, institute of KNAW and this link includes recordings of meetings as well as articles and slides of presentations by Prof Elisha Chiware, CPUT Libraries Director and other expert workshop recordings, publications and presentations. To gain external guidance CPUT worked closely with DCC initially and used their version of DMP and other documentation as guidelines. The functional team after attending the DCC events provided reports to library management and other library staff members and highlighted areas of importance for implementation. Based on this feedback, working groups of staff from various departments of the University were formed to investigate RDM in the early stages.

Links:

- [Product Development at Figshare](#)
- [Figshare knowledge portal](#)
- [eResearch Africa 2019: Data Science for Development](#)
- [Figshare Support](#)
- [SciDataCon-IDW Gaborone 2018 Main link](#)
- [Ilifu session:](#)
- [Dr Elisha Chiware, CPUT Libraries Director and other expert's workshop recordings, publications and presentations:](#)
- [ilifu](#)

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- [RDM Workshop \(2018\):](#)
- [User Engagement Workshop \(2019\)](#)
- [User Workshop \(2018\):](#)
- [Data Intensive Research Initiative of South Africa \(DIRISA\)](#)
- [OR \(Open Repositories\) Conference 2023](#)
- [Chiwere, E.R.T., Lockhart, J. 2023. Open science. Reference module in social sciences.](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Revised text is adequate.

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Accepted

Digital Object Management

R7 Data integrity and authenticity

The repository guarantees the integrity and authenticity of the data.

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

MD5 integrity checks are performed when the files are uploaded to eSango and the computed value is stored along with the other metadata for further checks. The default Figshare storage, Amazon S3, performs regular, systematic data integrity checks as well. Figshare is SaaS 27001 certified. MD5 integrity checks are performed on all uploads and are displayed on file previews. DOIs are only issued when all mandatory metadata, set by DataCite, has been completed. Furthermore, version control of the metadata and the files is supported for all research outputs that are made publicly available. All changes on each landing page, previous versions are displayed and accessible where applicable. Under each file or set of files, Figshare has a section describing how to cite the object, complete with DOI and a timestamp, illustrating when the files were accessed by the cited. All identities of depositors who create items or upload data to eSango are authenticated using the institutional single sign-on system (SSO). Furthermore, users can link to their ORCID profile. Full audit trails are available upon request via Figshare support site, to the individual, as is requested. It is possible to see a provenance trail documenting the history of changes to the object/metadata and a full record of every event performed by a user during a session. Some audit log functionality is exposed in the front end, too (e.g. last edit, date stamp and by whom). The review process at CPUT has been activated with the Digital Scholarship Librarian as the main reviewer with the Ethics Manager and a Metadata Specialist Librarian as part of the process [1]. See the Data Deposit Guidelines, point 11, review process and point 12 is the Ethics Checklist.

The CPUT team has included disciplinary-based quality controllers for postgraduate student submissions. The system provides information on the number of views, downloads, and citations. Depositors have to agree to a deposit license under which they undertake that they have all the necessary permissions to deposit the data when submitting. The functionality to input the name of the funder exists as part of the metadata. Researchers are encouraged to deposit explanatory note files (readme files) with their data submissions.

1) ANNEXURE D: Figshare Review Workflow

Links:

- [Research Data. Is it being cited?](#)

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- [Data Integrity and Authenticity Policy](#)
- [The system provides information on the number of views, downloads, and citations](#)
- [the Data Deposit Guidelines, point 11, review process and point 12 is the Ethics Checklist](#)
- [The default Figshare storage, Amazon S3, performs regular, systematic data integrity checks as well](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Accepted

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Compliance Level Comment: Accepted

R8 Appraisal

The repository accepts data and metadata based on defined criteria to ensure relevance and understandability for data users.

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

Data producers must provide all metadata required to interpret their data before the eSango platform will enable data publishing. These are clearly demarcated in the interface by mandatory green dots and are the required fields from the DataCite (V3 schema). Custom fields are available and customised on an ad hoc basis by the library team. Any changes to the metadata fields and content are logged over time and are available upon request. This allows the items to be shared publicly and to be discovered by data consumers in the wider academic community. Data producers can easily add metadata in a capture form via the Figshare (eSango) GUI or alternatively via the API. Should a producer need to update or amend metadata they are able to do so using the same methods. eSango mints DOIs through DataCite in order to comply with DataCite's minimal metadata standards, the default metadata schema includes the following fields:

- Title*
- Authors*
- Categories*
- Item Type
- Keywords*
- Description*
- References (related URLs)
- Funding (name of funder)
- Licence

The starred fields are mandatory for minting a DOI and making an item public. Also available in the interface are the following: Version history, Publication date and time, Time of page access, File size/Recommended citation structure, Filetype, Author Profile, Page Views, Social share count, Download count and Citation count. Data fields that are automatically captured but not exposed are: Time of upload/User who uploaded the file/Projects/Collaborative spaces associated with the file/ IP ranges of those accessing the content/ Timestamps on usage statistics. Our platform vendor is a member of the National Information Standards Organization (NISO) to ensure our work mirrors the standards being adopted for research data management globally. The review process at CPUT has been activated with the Digital Scholarship Librarian as the first line worker that receives the dataset, the Ethics Manager conducts ethical conduct checks and the Metadata Specialist will run the last review on the dataset and publish the dataset on eSango. The CPUT team have included disciplinary-based quality reviewers as can be seen in our review workflow.

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See the CPUT Data Submission Guideline, point 11 (dataset submission review process), point 14 (file formats) and point 12 (ethics checklist). The CPUT data submission workflow and the RDM ethical checklist, now included in the Data Deposit Guideline, point 12, are followed during the data curation life cycle. eSango supports many file formats and versions. The type of data managed is based on the Figshare parameters and can be viewed. For long-term preservation, CPUT Libraries has procured a preservation platform, Arkivum. See the Data Submission Guideline, point 10, for metadata schema information and fields.

- 1) ANNEXURE D: Figshare Review Workflow
- 2) ANNEXURE U: CPUT Preservation Strategy
- 3) ANNEXURE U-3: CPUT Digital Preservation Plan
- 4) ANNEXURE U-4: Arkivum-Solutions- Overview-HEI-Heritage
- 5) ANNEXURE U-5: SaaS Agreement Arkivum_CPUT
- 6) ANNEXURE A: CPUT & TENET agreement Figshare

Links:

- [eSango supports many file formats and versions](#)
- [Data Submission Guideline](#)
- [The type of data managed is based on the Figshare parameters and can be viewed](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Accepted

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Disciplinary-based reviewers now included.

R9 Documented storage procedures

The repository applies documented processes and procedures in managing archival storage of the data.

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

Figshare Backup policy (ANNEXURE K), Figshare Incident Management procedure (ANNEXURE J) is currently the basis for our archiving and storing. Backups for the files managed by the Figshare platform are performed automatically, using Amazon Simple Storage Service (AWS) S3 versioning and AWS Cross Region Replication. AWS S3 versioning allows for the immediate restore in case of deletion of a file. For any S3 bucket created, the option "Versioning" will be activated. Metadata is stored in a MariaDB Galera Cluster running on Amazon Web Services EC2 instances; incremental backups are performed every hour and full backups every day. MD5 integrity checks are in place, these are carried out as the data is uploaded and when it's transferred from the eSango temporary storage to the final storage destination.

CPUT has a Preservation strategy plan, a Digital Preservation Plan, and has procured a Software as Service (SaaS) agreement with Arkivum Limited, and is now implemented. The ingesting between Figshare and Arkivum has been completed. Also, see the letter of agreement with Figshare.

- 1) ANNEXURE K: Figshare ISMS Backup Policy
- 2) ANNEXURE J: ISMS Incident Management Procedure
- 3) ANNEXURE U: CPUT Preservation Strategy
- 4) ANNEXURE U-3: CPUT Digital Preservation Plan
- 5) ANNEXURE U-4: Arkivum-Solutions- Overview-HEI-Heritage

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- 6) ANNECURE U-5: SaaS Agreement Arkivum_CPUT
- 7) ANNEXURE A: CPUT & TENET agreement Figshare

Links:

- [Figshare - Arkivum Integration Overview](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Accepted

Reviewer 2:

Compliance level:

The repository is in the implementation phase - 3

Comments:

Compliance Level Comment: Accepted.

R10 Preservation plan

The repository assumes responsibility for long-term preservation and manages this function in a planned and documented way.

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

CPUT Libraries had a Preservation strategy plan [1] initially to work on a preservation solution for the university by looking at a number of possible options. Subsequently, a decision was taken and CPUT procured a Software as Service (SaaS) agreement with Arkivum Limited [4], see the Arkivum Solution Overview for HEI and Heritage [3], which has been fully implemented. The CPUT Libraries Digital Preservation Plan [2] outlines the various workflows and overviews of ingesting from Figshare to Arkivum and the retrospective ingesting has been concluded for all published items, and all new published items will automatically be ingested as they are published in future. The digital preservation plan includes the following aspects: Overview / Scope, applicability and audience / Digital preservation strategy and commitments / Guide to CPUT research data preservation / Supporting legal & ethical aspects, Digital preservation standards and guidelines / Preservation infrastructure / Overview of the Arkivum solution / Figshare - Arkivum integration overview, including workflows and Relevant CPUT policies

The CPUT TENET letter agreement re Figshare [5]. The CPUT Research Data Management (RDM) Policy encourages researchers to deposit data in the format which is best suited for re-use in their disciplinary domain and also indicated in the CPUT Research Data Deposit Guidelines and, includes relevant sections:

- Legal and ethical considerations for the storage of data (Clause 5.3)
 - Roles and Responsibilities (Clause 6)
 - Access to research data (Clause 5.2)
 - Contractual agreements where contribution to the creation of research data by individuals from other organizations (Clause 5.3.1-5.3.4)
- See also the eSango Terms of Use.

Other important CPUT documents to consider are the CPUT Privacy Statement [12] and the CPUT PAIA & POPIA Access to Information Manual [13].

The CPUT Open Access policy intent:

It is also intended to promote scholarly communication and research/ information sharing among peers. As a signatory to the Berlin Declaration on Open Access to the Sciences and Humanities, CPUT affirms its role in the global community by contributing to the creation and preservation of knowledge and its wide distribution on open platforms without any restrictions on discoverability and visibility.

More information on Figshare backup policies:

Figshare Backup policy (ISMS - Backup policy [6], Figshare Information transfer policy <https://figshare.com/terms> , Figshare Incident Management procedure [7], forms the bases of our archiving and storing. eSango mints DOIs through DataCite and has a contractual commitment to them to ensure

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that content remains accessible for at least 10 years, to meet as a bare minimum, funder requirements. Backups for the files managed by the Figshare platform are performed automatically, using AWS S3 versioning and AWS Cross Region Replication. AWS S3 versioning allows for the immediate restore in case of deletion of a file. For any S3 bucket created, the option "Versioning" will be activated.

AWS S3 Cross Region Replication allows the copying of the files from the AWS region where they were created to another AWS region. These backups will be used in the event of a disaster, according to the ISMS - IT Disaster Recovery Plan. AWS S3 Cross Region Replication will be activated for any S3 bucket created and will be configured in such a way that backups may be replicated in AWS EU Frankfurt Region. The Source will be "entire bucket", the Status will be "Enabled", the Storage Class will be set to "Standard - IA", the Destination will be set to "AWS EU Frankfurt Region", and the Bucket will be set to "[bucket]backup". Figshare is ISO27001 certified, which further includes an Incident Management Procedure [7], Disaster Recovery Plan [8] and Figshare have a Comprehensive Business Continuity plan [9]. Figshare also provides Back-up Policy, Figshare Annex Risk Management plan [10], Figshare Physical and Environmental Security policy [11].

- 1) ANNEXURE U: CPUT Preservation Strategy (Confidential)
- 2) ANNEXURE U-3: CPUT Digital Preservation Plan (Confidential)
- 3) ANNEXURE U-4: Arkivum-Solutions- Overview-HEI-Heritage
- 4) ANNEXURE U-5: SaaS Agreement Arkivum_CPUT (Confidential)
- 5) ANNEXURE A: CPUT & TENET agreement Figshare (Confidential)
- 6) ANNEXURE K: Figshare ISMS Backup Policy
- 7) ANNEXURE J: Figshare ISMS Incident Management Procedure
- 8) ANNEXURE I: Figshare ISMS IT Disaster Recovery Plan
- 9) ANNEXURE H: Figshare Business Continuity Plan
- 10) ANNEXURE O: Figshare Annex Risk Management Plan
- 11) ANNEXURE R: Figshare ISMS Physical and Environmental Security Policy
- 12) ANNEXURE M: CPUT Privacy Statement
- 13) ANNEXURE M-1: CPUT PAIA & POPIA Access to Information Manual

Links:

- [Arkivum Overview](#)
- [eSango Terms of Use](#)
- [Open Access Policy \(2021\)](#)
- [Research Data Management Policy \(2021\)](#)
- [Figshare Terms and Conditions](#)
- [CPUT Libraries Research Data Deposit Guidelines](#)
- [Arkivum](#)
- [Figshare also provides Back-up Policy](#)
- [Figshare Information transfer policy](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Compliance Level Comment: Accepted

If the revised text is understood correctly, the Arkivum integration has now been implemented.

However, the relevant evidence returns 404 (Arkivum Overview). Please update link.

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Accepted

R11 Data quality

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The repository has appropriate expertise to address technical data and metadata quality and ensures that sufficient information is available for end users to make quality- related evaluations.

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

All deposits to eSango, our Generalist Repository, are curated by trained, experienced professionals within the University.

The metadata provided by researchers is augmented during the curation process. In many cases this includes communication with the depositing researcher so that relevant and deposit specific metadata and documentation are made available. In addition, the communication helps to improve the quality of future deposits as researchers are made aware of how they can improve the quality of the initial deposit. Discipline specific reviewers have been added to our review-processes to strengthen this requirement. Currently our M and D students' data sets need to be submitted with their theses and are checked and approved by their research supervisors (discipline specific experts) before being uploaded. Curation of data is done by researchers, discipline-specific supervisors (for M & D students), Digital Scholarship, Metadata Librarians and Ethics Manager. We hope in future to have more of the subject specialists in faculties and research departments involved with the curation process. The CPUT data submission workflow is explained [1]. This is to ensure quality control during the curation phase. The discipline-specific experts ensure the quality of the datasets as explained above, together with the Ethics Manager using the ethics checklist to ensure standards across all submissions. The type of data managed is based on the Figshare parameters AND can be viewed.

All datasets can be linked to other related works e.g currently we are linking our datasets to relevant Theses and other research outputs where applicable. Figshare supports Altmetrics. Altmetrics can include attention on social media, news outlets, blogs, patents, and many more. Users can click on the Altmetric donut to see where their item has received attention and this will appear automatically without any action having to be taken by the user. See also the eSango Terms of Use.

1) ANNEXURE D: Figshare Review Workflow

Links:

- [eSango Terms of Use](#)
- [The type of data managed is based on the Figshare parameters can be viewed](#)
- [Figshare supports altmetrics](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Accepted

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Compliance Level Comment: Accepted

R12 Workflows

Archiving takes place according to defined workflows from ingest to dissemination.

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

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Our internal workflows involve Online Electronic Theses & Dissertation (ETD) Submissions workflow [1] and eSango review process workflow [2]. This ETD submission workflow is included due to the requirement that postgraduate students must submit their thesis and their research data for graduation purposes. The thesis is hosted on another repository and the research data on eSango, there is then a link created between the two repositories to connect the thesis and research data. For research data from researchers, the eSango review process workflow will apply.

The DMP guidelines are developed and reassessed regularly with the various stakeholders. Communication is either activated by the system or staff via eSango and additional communication via email. Please see responses to R8 & R9, where we indicated the document storage procedures (backups, versioning, and incident management procedure) and how appraisals (guidelines covering datasets review process, file formats, and ethics checklist) are done. The review process at CPUT has been activated with the Digital Scholarship Librarian as the first line worker that receives the dataset, the Ethics Manager conducts ethical conduct checks and the Metadata Specialist will run the last review on the dataset before the dataset is published on eSango. See the Data Submission Guideline, point 11 (dataset submission review process), point 14 (file formats) and point 12 (ethics checklist). The CPUT data submission workflow [2] and the RDM ethical checklist, now included in the Data Deposit Guideline, point 12 are followed during the data curation life cycle. R9 refers to Backup Policies and platforms, Incident Management procedures and AWS Cross Region Replication.

All data is guaranteed for at least 10 years after its publication date in order to obtain a DOI through DataCite. eSango supports all file formats and versions, see Data Deposit Guidelines, point 14.

CPUT has implemented an updated data submission workflow [1] and the Ethical Checklist guidelines that are followed by the Ethics Manager see point 12 in the Data Deposit Guidelines.

CPUT Libraries has a Preservation strategy plan and a Digital Preservation Plan and Preservation Software as Service (SaaS) agreement with Arkivum Limited, please refer to R10.

See also the eSango Terms of Use.

1) ANNEXURE L: Online Thesis Submission Workflow

2) ANNEXURE D: Figshare Review Workflow

Links:

- [eSango Terms of Use](#)
- [Ethical Checklist guidelines that are followed by the Ethics Manager see point 12 in the Data Deposit Guidelines](#)
- [File formats and types](#)
- [eSango supports all file formats and versions](#)
- [eSango supports all file formats and versions, see Data Deposit Guidelines, point 14](#)
- [DMP guidelines](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Accepted

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Compliance Level Comment: Accepted

R13 Data discovery and identification

The repository enables users to discover the data and refer to them in a persistent way through proper citation.

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

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eSango is a Generalist Repository and search functionality is based on Elasticsearch. The primary search page for figshare is accessed in this link <https://figshare.com/>. eSango supports an advanced search syntax including use of Boolean operators and allows for content to be browsed at the department/group, or subject category level, supported by search and filter options in the UI. eSango adheres to FORCE11 guidelines (these can be found at <https://www.force11.org/group/joint-declaration-data-citation-principles-final>) for data citation and offers facilities for machine harvesting. All public content in eSango is assigned a DataCite DOI and the recommended citation format for data is given on all items and collections in the UI. eSango metadata is uploaded to DataCite. eSango also has excellent SEO to aid discovery of the researcher's data via search engines. eSango ensures all content is marked up for discovery in all common search engines including Google and Google image search. As well as marking up content to be indexed in Google Scholar, Google, and Google Dataset discovery.

Note: Dataset search only harvests items with a "type" of dataset. As such, a large selection of material e.g. images etc., will not be indexed in Dataset Search. Figshare items with the type dataset are included in Google Dataset Search results. This is achieved by including schema.org JSON-LD markup in the public item's metadata HTML pages. CPUT is registered on Registry of Open Access Repositories (ROAR) and on Research Organisation Registry (ROR).

As we mint DOIs content is also discoverable and visible through DataCite tools and services.

To further enhance visibility of our research, all our repositories are accessible from CPUT Libraries website and our Library discovery tool . Our Electronic Theses and Dissertation and eSango links our Theses and datasets for better discoverability.

eSango is OAI-PMH compliant and supports open API.

See link for eSango on OpenDoar

See link for eSango on ROAR

See also the eSango Terms of use.

Links:

- [To further enhance visibility of our research, all our repositories are accessible from our library](#)
- [enhance visibility of our research, all our repositories are accessible from](#)
- [Enhance visibility repository available Library discovery tool](#)
- [eSango](#)
- [eSango is OAI-PMH compliant and supports open API](#)
- [eSango is OAI-PMH compliant](#)
- [eSango is registered under OpenDoar](#)
- [The primary search page for figshare](#)
- [CPUT is registered on ROR.org](#)
- [Electronic Theses and Dissertation](#)
- [Registry of Open Access Repositories \(ROAR\) eSango](#)
- [CPUT Libraries Research Support page](#)
- [CPUT Libraries Discovery Tool](#)
- [eSango Terms of Use](#)
- [eSango on OpenDoar](#)
- [eSango on ROAR](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Accepted

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Compliance Level Comment: Accepted

R14 Data reuse

The repository enables reuse of the data over time, ensuring that appropriate metadata are available to support the understanding and use of the data.

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

Refer to R8.

Metadata is automatically generated and stored in eSango. Some of this metadata is displayed publicly, whereas some is stored in the private audit log (available upon request as described in R7). eSango default metadata form requires the minimum metadata required for a DataCite DOI to be minted. eSango offers a RESTful API that provides the export of metadata in JSON format, and an OAI-PMH endpoint with three output formats: Dublin Core, DataCite, and Resource Description Framework (RDF). "RDF has features that facilitate data merging even if the underlying schemas differ, and it specifically supports the evolution of schemas over time without requiring all the data consumers to be changed". A metadata field for describing the data is required to ensure reusability.

The eSango API is documented and the OAI-PMH endpoint at https://docs.figshare.com/#oai_pmh. Note that the API has a number of parameters so that only selected records need to be harvested. Upon publication, all files and metadata are made public and are visible and searchable on the institution's Figshare portal and on the main figshare.com website, as well through the eSango API (in a simple JSON format), Figshare OAI-PMH endpoint (in DataCite, Dublin Core and RDF formats) and Schema.org. All public Figshare content (item landing pages and person profile pages) are indexed by Google and are discoverable there.

One of the default metadata fields is labelled 'Reference' and can contain a URL which can link to any related web page or site. An unlimited number of Reference fields can be added to any Figshare item.

There is also support for versioning of items, with version numbers, and timestamped DOIs navigable directly on the entity page. Note that "isVersionOf" information is sent to DataCite as part of this support for versioning. All submissions are covered by a selected creative commons license and FAIR principles. For more detailed information around Figshare metadata functionalities and further developments in this area see this link under for "Metadata functionalities". Reusability of data is further explained in this article by Figshare and working with Dimensions.

eSango is a Generalist Repository, also listed by National Institutes of Health (NIH) to make CPUT datasets findable, accessible, interoperate and reusable across all our Faculty and research discipline areas as part of our Research Data Management strategies and practices. The repository has categories [Agricultural and Veterinary Sciences, Astronomy, Astrophysics, Space Science, Biological Sciences, Built Environment and Design, Chemistry, Commerce, Management, Tourism and Services, Earth and Environmental Sciences, Engineering, Health Sciences, Humanities, Information and Computing Sciences, Language, Communication and Culture, Mathematics, Meta Science, Physics, Psychology, Social Science, Studies in Creative Arts and Writing, Studies in Human Society, Technology] and groups [Centre for Community Engagement and Work Integrated Learning (CCEWIL), Centre for Innovative Educational Technology (CIET), CPUT Libraries, Disability Unit, Faculty of Applied Sciences, Faculty of Business and Management Sciences, Faculty of Education, Faculty of Engineering, Faculty of Health & Wellness Sciences, Faculty of Informatics and Design, Fundani Centre for Higher Education Development & Research Centres and Units] to indicate discipline-specific areas that are covered in the repository. CPUT datasets are harvested from some publishers where possible, such as PLOS One, and automatically place the metadata and link in eSango. We also promote Repository Finder [1] to the CPUT community, if they prefer to host their research data in a discipline-specific repository, then they can do so, as long as the metadata and link is also in eSango. eSango is therefore also a catalogue for CPUT datasets that are published in other repositories across the world and that cater for discipline-specific characteristics which might not be possible in a generalist repository.

1) ANNEXURE X: Repository Finder

Links:

- [eSango is a Generalist Repository, also listed by National Institutes of Health \(NIH\)](#)
- [Reusability of data is further explained](#)
- [detailed information around Figshare metadata functionalities](#)
- [All submissions are covered by a selected creative commons license](#)
- [OAI-PMH endpoint](#)
- [eSango API is documented](#)
- [eSango offers a RESTful API that provides the export of metadata in JSON format](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Accepted

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Compliance Level Comment: Accepted

Technology

R15 Technical infrastructure

The repository functions on well-supported operating systems and other core infrastructural software and is using hardware and software technologies appropriate to the services it provides to its Designated Community.

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

Figshare is proprietary software. All users who create items or upload data to eSango are authenticated using the institutional single sign-on system (SSO). Furthermore, users can link to their ORCID profile. eSango is deployed on Amazon Web Services. High-availability Amazon zones (Multi-AZ) are employed along with elastic load balancing for dynamic horizontal scaling depending on workloads. The provisioned bandwidth for the public-facing interface is at around 2Gbit/s. Load test results are available upon request. eSango makes use of open libraries such as MariaDB, Elasticsearch, RabbitMQ, Ceph or NGINX. The policy is to employ open-source solutions as opposed to commercial ones (e.g., OpenOffice is used for previewing .doc files). All resources are provisioned inside an AWS Virtual Private Cloud (VPC). The VPC gives us full control over the virtual network environment, including subnet selection, routing tables and network access control lists (ACLs). An IPsec VPN connection between the VPC and our development network helps secure all communication between the production instances and development machines, with the exception of file workers instances no other instance is directly accessible from the internet. In order to achieve high availability every eSango system and subsystem is deployed across three availability zones

available in AWS EU-West Region. Subnetting is used to isolate different types of services and to implement network level ACLs. Network ACLs are also used to isolate the staging environment from the production environment.

In order to isolate shared functionality and keep a zero-dependency list between systems, the overall functionality is divided in 3 main systems:

1. Figshare web app - The web application is the main system that most of the users interact with. The software stack used to power the web system is based on established open source services, frameworks and a good amount of custom code. The application code is built in Python around the Pyramid framework.

2. Figshare REST API - eSango RESTful API can be used for the bulk ingest of metadata and files (again, up to 5TB). The API is fully documented at <https://docs.figshare.com/api>

3. Figshare widgets - Figshare deploys a separate system in order to handle requests regarding Figshare widgets and file viewers. This is a read-only system, with the single purpose of enabling fast access to public figshare articles to be rendered inside custom-built js widgets. The application is fully isolated from other Figshare systems and subsystems. It only touches the shared database layer in order to retrieve article information.

And 4 subsystems:

- upload system
- search subsystem
- statistics subsystem
- tasks subsystem

Each system can be managed, deployed and scaled independently. There is no dependency between systems when it comes to provisioned resources and application services.

CPUT Libraries is in the process of investigating further preservation strategies with other relevant stakeholders in the University.

Backups for the files managed by the Figshare platform [1] are performed automatically, using AWS S3 versioning and AWS Cross Region Replication.

AWS S3 versioning allows for the immediate restore in case of deletion of a file. For any S3 bucket created, the option "Versioning" will be activated.

AWS S3 Cross Region Replication allows the copying of the files from the AWS region where they were created to another AWS region. These backups will be used in the event of a disaster, according to the ISMS - IT Disaster Recovery

Plan [2]). AWS S3 Cross Region Replication will be activated for any S3 bucket created and will be configured in such a way that backups may be replicated in AWS EU Frankfurt Region.

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The Source will be "entire bucket", the Status will be "Enabled", the Storage Class will be set to "Standard - IA", the Destination will be set to "AWS EU Frankfurt Region", and the Bucket will be set to "[bucket]backup".

All publicly published content hosted on eSango can be downloaded by anyone, with no need to log in. CPUT contracts with TENET for the provision of sufficient bandwidth for access to the database.

CPUT Libraries has a Preservation strategy plan and has procured a Software as Service (SaaS) agreement with Arkivum Limited and CPUT TENET letter agreement re Figshare (institutions), refer to R10.

- 1) ANNEXURE K: Figshare ISMS Backup Policy
- 2) ANNEXURE I: ISMS IT Disaster Recovery Plan

Links:

- [The API is fully documented](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Accepted

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Compliance Level Comment: Accepted.

R16 Security

The technical infrastructure of the repository provides for protection of the facility and its data, products, services, and users.

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

eSango makes use of ISO27001 & approved SaaS. This is audited each year to ensure the full integrity of the cloud-based solution. ISO27001 covers all aspects of protection for data, products, services and users. Figshare implemented an Information Security Management System (ANNEXURE W) in 2017 and successfully certified it under the ISO 27001 security standard. The certificate set of policies and procedures can be provided upon request. See File Backup and Security Policy & Personal data. Regarding user and personal data, Figshare is fully GDPR compliant. Figshare only process a limited amount of personal information on behalf of eSango, which may include details of individual users such as names and basic contact information (e.g. emails) and professional information (e.g. job title, place of work / research / department). If requested, Figshare will provide details of the information held at user level and delete individual accounts. Further, settings on user accounts allow individuals to control information they themselves have been provided.

Figshare's Privacy Notice also provides more details.

Information security

As part of the ISMS ISO27001 Figshare maintain an Information security policy [1]. The objective of Information Security is to prevent any loss of, or threat to, the confidentiality, integrity and availability of the proprietary information of the business and of the information provided by clients (customers, suppliers, contractors/subcontractors) under the applicable statutory rules and requirements <https://aws.amazon.com/products/security/>. This policy, along with the entire Information Security Management System [2], must observe the relevant legal regulations in Information Security that apply to the organization, as well as the contractual requirements.

Secure data transfer and encryption

The eSango platform is deployed with AWS in the EU Ireland region. All data transfer, process and storage inside the platform is limited to the AWS EU region. All eSango public endpoints are available only via HTTPS. HSTS is used to enforce the use of the HTTPS protocol. eSango deploys the

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recommended AWS TLS Security Policies.

Secure authentication

eSango users log in via a Single Sign-On (SSO) authentication mechanism. eSango supports integration with services that employ the Security Assertion Markup Language 2.0 (SAML2.0).

Data integrity

For data integrity, please see response to R7.

Access constraints and role-based permissions

All users are allocated a dedicated account with a unique user identifier to access the solution. End users can access the repository to find, access and download published datasets (unless the files are embargoed or set to Confidential).

There are several different administrative roles (each role having a subset of permissions) available within eSango [3].

CPUT Privacy Statement [4] and CPUT PAIA, POPIA Access to Information Manual [5] and Privacy Policy is currently in review.

Also see eSango Terms of Use.

- 1) ANNEXURE V: Information Security Policy
- 2) ANNEXURE W: ISMS Scope of the Information Security Management System
- 3) ANNEXURE Y: eSango Role Descriptions
- 4) ANNEXURE M: CPUT Privacy Statement
- 5) ANNEXURE M_1: CPUT PAIA and POPIA Access to Information Manual

Links:

- [eSango Terms of Use](#)
- [Figshare Terms and Conditions](#)
- [Figshare Privacy Notice](#)
- [Secure authentication](#)
- [applicable statutory rules and requirements](#)
- [File Backup and Security Policy](#)
- [eSango makes use of ISO27001 approved SaaS](#)
- [eSango makes use of ISO27001](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Accepted

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Compliance Level Comment: Accepted

Applicant Feedback

R17 Applicant Feedback

We welcome feedback on the CoreTrustSeal Requirements and the Certification procedure.

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

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Dear Board members, thank you for approving our certification, with the provision of fixing of the two links. That is wonderful news. The one link is <https://esango.ac.za> and it seems the word "example/s" looked as if it was part of the link, this was written differently to resolve. The other link "Arkivum Overview" was a link removed by Arkivum and updated with a newer version, which caused the broken link, the link was therefore updated to the newer version.

Kind regards

We submitted our third submission in November of 2022. We did not receive our feedback and we followed up on 14th April 2023, on the following day we received feedback. We noted that it was exactly the same feedback we received in our previous round. We wrote to Lisa de Leeuw to enquire about this and she advised that we resubmit, which we did. When we received our feedback in December 2023, the above problem persisted and we again received exactly the same feedback, besides the Board feedback. We alerted Lisa de Leeuw about this. She indicated that she will alert the reviewers about this, and that with our next submission it should be resolved.

Links:

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Board comment on V5:

Thank you for your revised application. In your final comments you noted that:

"We submitted our third submission in November of 2022. We did not receive our feedback and we followed up on 14th April 2023, on the following day we received feedback. We noted that it was exactly the same feedback we received in our previous round. We wrote to Lisa de Leeuw to enquire about this and she advised that we resubmit, which we did. When we received our feedback in December 2023, the above problem persisted and we again received exactly the same feedback, besides the Board feedback. We alerted Lisa de Leeuw about this. She indicated that she will alert the reviewers about this, and that with our next submission it should be resolved"

Apologies if some comments have not been closed before returning to you. We will also check to ensure there is no bug within the application management tool. However, looking at the current version of the application we can see that under Levels of Curation- Explanation the reviewer comments over time make it clear which revision they relate to and state:

"

Accepted, but the details of the workflow can be moved to the relevant sections (R 12, and possibly R 7-11)

Review 3: details of workflow to be moved (second paragraph onwards).

Review 4: Still not moved, but does not affect certification decision."

The current version of the application can be approved by the Board subject to providing you with the opportunity to address final comments e.g. broken link to <https://esango.cput.ac.za/example/s> under Designated Community and to Arkivum Overview under R10.

The Board still considers that this application focuses too much on the provision of services from Figshare and Arkivum rather than on the responsibility taken by the applicant and this should be addressed when certification is renewed. This refers particularly to responsibility for active long term preservation which remains vague in the response to R10. The Board is awarding the CoreTrustSeal based on the following text from the preservation plan evidence:

"Principle 9: Obsolescence monitoring

CPUT will monitor preserved digital objects to identify when content is in danger of becoming inaccessible due to technological change and ensure that data is transferred to new software solutions and a log of changes is available.

Principle 10: Preservation approaches

CPUT will support the use of multiple digital preservation approaches including content migration, hardware emulation, and software and hardware dependency preservation."

Board comment on v4:

The Board discussion of this initial review noted a strong focus on the technical repository services provided by Figshare, but a relatively limited amount of detail about the practices of the applicant. This is particularly the case for R10 (Preservation) where the focus is on backup and storage, which should be covered elsewhere, rather than the active preservation measures in place to ensure that data and metadata remain usable and understandable over time. Technical infrastructure providers, appraisal and data quality measures on deposit are important to CoreTrustSeal, but to be in scope for certification applicants must provide evidence that they have a plan for active long term preservation. The applicant notes that they are "one of the 4 universities for which payment has already been made by ilifu Tier2 project South Africa". If the applicant is cooperating with peers on their application then these points would equally apply to them.

The application notes that "CPUT Libraries has procured a preservation platform, see (Confidential ANNEXURE U & Confidential ANNEXURE U-2 & ANNEXURE U-3 Arkivum

Solution Overview (Data Preservation Platform) and eSango adheres to TRUST and FAIR principles as prescribed by Figshare:

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<https://knowledge.figshare.com/publisher/fair-figshare> and <https://help.figshare.com/article/complying-with-the-trust-principle>"

The Board would note that support for TRUST and FAIR is good practice, but that there is no formal compliance test for these. The compliance of a technical service provider such as figshare is beneficial, but action by the applicant is also required to deliver TRUST and FAIR. Similarly the fact that figshare are "ISO27001 certified, which further includes an Incident Response Plan (ANNEXURE J), Disaster Recovery Plan (ANNEXURE I), and Figshare have a comprehensive Business Continuity Plan (ANNEXURE H), does not remove the need for the applicant to provide information and evidence about their own information security, business continuity etc.

We would further note that ARKIVUM are repeatedly mentioned, but they are not included in the list of outsource partners. Though they are referred to as a preservation platform there is no information about what steps the applicant will take on their side to ensure preservation.

We would strongly advise you to review your application alongside the CoreTrustSeal Extended Guidance. If more time and progress is required before you will be fully in scope we would suggest applying under the newer version of the Requirements."

Kind Regards,

The CoreTrustSeal Board.

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Board comment v5:

Thank you for your revised application. In your final comments you noted that:

"We submitted our third submission in November of 2022. We did not receive our feedback and we followed up on 14th April 2023, on the following day we received feedback. We noted that it was exactly the same feedback we received in our previous round. We wrote to Lisa de Leeuw to enquire about this and she advised that we resubmit, which we did. When we received our feedback in December 2023, the above problem persisted and we again received exactly the same feedback, besides the Board feedback. We alerted Lisa de Leeuw about this. She indicated that she will alert the reviewers about this, and that with our next submission it should be resolved"

Apologies if some comments have not been closed before returning to you. We will also check to ensure there is no bug within the application management tool. However, looking at the current version of the application we can see that under Levels of Curation- Explanation the reviewer comments over time make it clear which revision they relate to and state:

"

Accepted, but the details of the workflow can be moved to the relevant sections (R 12, and possibly R 7-11)

Review 3: details of workflow to be moved (second paragraph onwards).

Review 4: Still not moved, but does not affect certification decision."

The current version of the application can be approved by the Board subject to providing you with the opportunity to address final comments e.g. broken link to <https://esango.cput.ac.za/example/s> under Designated Community and to Arkivum Overview under R10.

The Board still considers that this application focuses too much on the provision of services from Figshare and Arkivum rather than on the responsibility taken by the applicant and this should be addressed when certification is renewed. This refers particularly to responsibility for active long term preservation which remains vague in the response to R10. The Board is awarding the CoreTrustSeal based on the following text from the preservation plan evidence:

"Principle 9: Obsolescence monitoring

CPUT will monitor preserved digital objects to identify when content is in danger of becoming inaccessible due to technological change and ensure that data is transferred to new software solutions and a log of changes is available.

Principle 10: Preservation approaches

CPUT will support the use of multiple digital preservation approaches including content migration, hardware emulation, and software and hardware dependency preservation."

Board comment v4:

The Board discussion of this initial review noted a strong focus on the technical repository services provided by Figshare, but a relatively limited amount of detail about the practices of the applicant. This is particularly the case for R10 (Preservation) where the focus is on backup and storage, which should be covered elsewhere, rather than the active preservation measures in place to ensure that data and metadata remain usable and understandable over time. Technical infrastructure providers, appraisal and data quality measures on deposit are important to CoreTrustSeal, but to be in scope for certification applicants must provide evidence that they have a plan for active long term preservation. The applicant notes that they are "one of the 4 universities for which payment has already been made by ilifu Tier2 project South Africa". If the applicant is cooperating with peers on their application then these points would equally apply to them.

The application notes that "CPUT Libraries has procured a preservation platform, see (Confidential ANNEXURE U & Confidential ANNEXURE U-2 & ANNEXURE U-3 Arkivum

Solution Overview (Data Preservation Platform) and eSango adheres to TRUST and FAIR principles as prescribed by Figshare:

<https://knowledge.figshare.com/publisher/fair-figshare> and <https://help.figshare.com/article/complying-with-the-trust-principle>"

The Board would note that support for TRUST and FAIR is good practice, but that there is no formal compliance test for these. The compliance of a technical service provider such as figshare is beneficial, but action by the applicant is also required to deliver TRUST and FAIR. Similarly the fact that

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The CoreTrustSeal Board.