



Assessment Information

[CoreTrustSeal Requirements 2020–2024](#)

Repository: Prince of Songkla University Knowledge Bank
Website: <https://kb.psu.ac.th>
Certification period: Nov. 29, 2024 - 29 November 2027
Requirements version: CoreTrustSeal Requirements 2020-2022

This repository is owned by: **Prince of Songkla University, Khunying Long Athakravisunthorn Learning Resources Center**

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:

Description of Repository

Provide a short overview of the repository.

Response:

The Prince of Songkla University Knowledge Bank (PSUKB) is an Institutional Repository (IR) that collects and preserves academic works and knowledge of Prince of Songkla University lecturers, students, and personnel, including theses, dissertations, research data, research articles, textbooks, work manuals, schematic building and layout plans, and other university department works. With the idea of a modern repository system for efficient and practical use for archiving, searching and dissemination, PSUKB is the center of collaboration among students, staff and faculty members who help build this University's Knowledge Bank.

The collection has been published in digital format by the work's owner in accordance with international standards by digitization, archiving, and preservation in the form of documents, images, audio, and multimedia files for 16,486 items in 2023. Users can search for information at any time and from any location for free of charge.

Furthermore, PSUKB also shares resources with the Songkhla Lake Basin Knowledge Bank, which provides information on natural resources, the environment, the economy, and society in the Songkhla Lake Basin and serves as a data warehouse for problem solving in the Songkhla Lake Basin. This data includes news, government documents, reports, and so on.

PSUKB operations carry the following objectives and goals:

1. To collect and preserve digital resources of Prince of Songkla University.
2. To create a standardized and easily accessible digital archive of Prince of Songkla University.
3. To establish a network for the development of Prince of Songkla University's information warehouses and knowledge services.
4. To extensively refer and make available to interested parties the works and knowledge of Prince of Songkla University.

Online access is available on the website <https://kb.psu.ac.th>

Reviews

Reviewer 1:

Comments:

Reviewer 2:

Comments:

Designated Community

Provide a clear definition of the Designated Community

Response:

Prince of Songkla University Knowledge Bank

PSUKB's primary user groups are Prince of Songkla University students, lecturers, and personnel. It is a service for storing and preserving information, including the use of knowledge in the repositories for future study and development in order to create new works.

Furthermore, scholars, researchers, students, lecturers, government organizations, private sectors, and the general public can search and retrieve PSUKB as long as they comply with copyright restrictions.

Reviews

Reviewer 1:

Comments:

Reviewer 2:

Comments:

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
- C. Enhanced curation – e.g. conversion to new formats; enhancement of documentation

Reviews

Reviewer 1:

Comments:

Reviewer 2:

Comments:

Level of Curation - explanation

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

Response:

Storage levels are classified as follows:

- B. Basic curation includes diagrams, organizational structures, press releases, journals, conference documents, multimedia media, the Songkhla Lake Basin Data Archive, and various documents related to and received from Prince of Songkla University. Additional metadata, such as Type, Rights, Keywords, and Issue date, can be specified.

- C. Enhanced curation includes research papers, theses, papers, and research articles.

Before making the information available online, PSUKB has the right to inspect, select, and categorize the data and modify digital files to maintain service data standards, such as converting the file to pdf, adding bookmarks, and changing the file name. All activities carried out during the process by depositors, reviewers, and editors of the information resources will be documented in the system. The correspondence between the researcher and reviewer regarding the submitted data is stored in the database under the metadata name dc.description.provenance. PSUKB will record the file history for each instance, including the name of the depositor/approver/administrator, creation or modification date and time, email, file size, MD5 checksum, and version issue date. When changes to the repository's data are not the result of manual imports or modifications, the system uses the Automated Checksum Checkers Reporting tool to compare the checksum codes of every digital file weekly. If a changed code is discovered, the system will send a report to the administrator's email address to investigate the cause. Furthermore, the work's owner can request that the digital file's content be changed or added by filling out the file modifications or information addition request form.

Reviews

Reviewer 1:

Prince of Songkla University Knowledge Bank

Comments:

Reviewer 2:

Comments:

Insource/Outsource Partners

If applicable, please list them.

Response:

Prince of Songkla University has appointed the Board of PSU Knowledge Bank by issuing the document No. 1854/2551 dated October 1, 2008. A committee oversees the implementation of the PSU Knowledge Bank Project. This committee includes administrators from all five campus libraries, as well as the Dean of the Graduate School, the Director of the Research and Development Office, and the Director of the Office of Digital Innovation and Intelligent Systems. The committee's primary responsibilities involve establishing policies, operational guidelines, and database structure. [Appointment: https://kb.psu.ac.th/psukb/PSUKB/About_Us/Background.html]

The Prince of Songkla University Knowledge Bank (PSUKB) has developed with the support of collaborative partners, including [Partners: https://kb.psu.ac.th/psukb/PSUKB/About_Us/Organization.html]:

- Library offices on five campuses, with campus librarians serving as administrators, supervising and consulting on system usage and metadata editing. (University's Appointment) [Website: <https://www.psu.ac.th/?page=life-moor-detial&life=1>]
- PSUKB's network administrator is the Office of Digital Innovation and Intelligent Systems. (University's Appointment) [Website: <https://diis.psu.ac.th/>]
- The thesis must be approved by the Graduate School. (University's Appointment) [Website: <https://grad.psu.ac.th/en/>]
- The Research and Development Office is a repository for research findings. (University's Appointment) [Website: <https://research.psu.ac.th/>]
- Engineering Faculty approves independent studies. (Unit Cooperation)
- The Faculty of Management Sciences approves independent studies. (Unit Cooperation)
- The Geographic Information Systems Research Office provides information about the Songkhla Lake Basin Knowledge Bank. (Unit Cooperation)

Reviews

Reviewer 1:

Comments:

Reviewer 2:

Comments:

Thank you for addressing my feedback.

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:

Prince of Songkla University Knowledge Bank

Prince of Songkla University had issued the policy to set up PSU Knowledge Bank and the executive board (PSUKB) since October 1, 2008. Since January 28, 2009, the PSUKB board had approved the plan and objectives to develop the university knowledge bank with the preservation concept to the university library (Khunyong Long Athakravisunthorn Learning Resources Center).

The first stage in November of 2009, the operation board was choosing an open-source software "DSpace" to manage the university intellectual resources for convenient access from anywhere and anytime. The software is flexible in terms of archiving and publishing the organizational digital information, catering to long term data preservation, and tweaking the software functions to match with PSUKB individual needs.

The second stage in June of 2010, was to complete the system installation and upload the thesis reports and research works as the initial information supplies for PSUKB projects. Workshop and seminar sessions about the Knowledge Bank service were planned to train the users of faculties and internal university divisions.

The collection of information resources in PSU Knowledge Bank is 16,486 items in 2023.

Thesis (8,373)

Minor Thesis (704)

Research (3,821)

Article (50)

Book (5)

Manual (3)

Others (31)

Songkhla Lake Basin Knowledge Bank (3,499)

Throughout 2023, Google Search Console data revealed a significant focus on research-related queries within PSUKB. The term 'research' was the most frequent at 17,591 instances, followed closely by 'Section 157' at 16,378. 'Nursing' held the third position. The top 10 countries driving these searches were Thailand, the Philippines, Laos, India, Malaysia, the United States, Indonesia, Nigeria, Vietnam, and Japan.

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:

Khunyong Long Athakravisunthorn Learning Resources Center, is the main library which initiated the Prince of Songkla University Knowledge Bank (PSUKB) project since 2008. PSU has assigned a university board member and university library board members from all campuses to be the board of PSUKB project. The board must define policy and direction for operation plan, and as well set the database structure and appointed some of the university librarians to sit as the PSUKB working group. With a vision to be the repository that collects and preserves the intellectual resources of Prince of Songkla University, and also acts as an organization of life-long learning resources center. [1.1]

The Library is well aware of the significance of digital information. This reflects in the vision statement, "A Digital Library that supports lifelong learning and international service under sustainable development." [1.2.1] Being an important information source supporting university research, Libraries therefore continue to maintain PSUKB in strategic plans. under the strategy of digital information development and proactive services in research and teaching to support the university's strategic goals [1.2.2]. According to the vision, The Prince of Songkla University Knowledge Bank (PSUKB) is an Institutional Repository (IR) that collects works and knowledge of Prince of Songkla University professors, students, and personnel, including theses, dissertations, research reports, research articles, textbooks, work manuals, and other university department works. The collection may be converted into digital media (Digitize), stored (Archiving), and preserved (Preservation) for search at any time and from any location for free of charge. [1.3]

The Library has also issued the Digital Preservation Plan for a concrete operational direction to manage the digital information in a systematic way that meets international standards and should also be sustainable in the long term. [1.4]

Links:

- [1.4 Digital Preservation Plan](#)

Prince of Songkla University Knowledge Bank

- [1.3 Mission of PSUKB](#)
- [1.2.2 Strategic Objectives](#)
- [1.2.1 Vision of Library](#)
- [1.1 Vision of PSUKB](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

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:

The terms of use [2.6] follow the Creative Common public licenses [2.2] [2.7] following the laws and regulations specified in the licenses. Thailand (CC BY-NC-ND 3.0 TH) Attribution-NonCommercial-NoDerivs 3.0

You may share, copy, and redistribute the material in any medium or format under the following conditions:

Attribution — You must give proper credit, include a link to the license, and indicate whether or not changes were made. You may do so in any reasonable manner, but not in any way that implies the licensor endorses of you or your use.

NonCommercial — The material may not be used for commercial purposes.

NoDerivatives — You may not distribute the modified material if you remix, transform, or build on it. Users can inspect rights statements on the repository's home page, the item's display page, and each item's metadata elements dc.rights and dc.rights.uri.

The terms of the data deposit and archiving rights [2.3] for students, educators and staff of the Prince of Songkla University under the Non-Exclusive Distribution licenses include the following.

1. By signing upon and submitting this agreement, the depositor (author or copyright owner) agrees to grant the PSU the right to duplicate, convert (by definition in the next section), and disseminate the deposited work worldwide; including the abstract, in print and in digital format through all kinds of media including, but not limited to, audio and video.
2. The depositor agrees to grant the PSU the right to convert your work to any format for storage in any medium without editing the original content for the sole purpose of preservation.
3. The depositor agrees to grant the PSU the right to duplicate your work for more than one copy for the purpose of security, data backup and preservation.
4. The depositor assures that he or she owns the original content and has sufficient authority to agree on the right. He or she also assures that, with an extent of knowledge, the deposited work does not infringe the work of others.
5. In case a part of deposited work belongs to the third party, the depositor assures that he or she has been granted sole authority from the owner to agree with the PSU terms and conditions. The part of the content that belongs to the third party has been clearly indicated.
6. In case the deposited work has been funded by an external office or organization outside of the PSU, the depositor assures that he or she has been granted sole authority in the work without violating the agreement made with the funding organization.
7. PSU will indicate the name of the author or copyright owner of the work. PSU shall not edit any other information than that has been specified in the terms.

Through identification verification with PSU Passport, PSU limits specific users an access to each process of the Knowledge Bank as follows.

- 1) Data submission by the work owner for students, educators and personnel of the Prince of Songkla University
- 2) Information approval for advisors or faculties
- 3) Metadata edit for librarians

Prince of Songkla University Knowledge Bank

The depositor and data submitter must confirm and sign the research report and thesis deposition agreement [2.1] to reserve the right to archive and disseminate the data, as a full package or an abstract.

According to the University Policy, PSUKB also regulates under the relevant laws including the Personal Data Protection Act, B.E. 2562 (2019). [2.4] and the Copyright Act, B.E. 2537 (1994) [2.5] Users can search, view, and download all digital information resources except those for which an authorized owner has specified access limitations. To identify a preferred level of data accessibility, users must verify their identity and request permission to view. Some examples of access levels include restricted access, distribution in print only, data withdrawal following a petition, and so on. [2.8] Any violation to the use of PSUKB shall be submitted to the Law Division of the Prince of Songkla University for consideration and further legal action, including notice of copyright infringement and petition for article withdrawal.[2.9]

Links:

- [2.4 University Policy: Personal Data Protection Act, B.E. 2562](#)
- [2.3 Terms of Use: Repository, Service and Access](#)
- [2.2 Creative Common Licenses](#)
- [2.1 Grant of Copyright : Research Report and Thesis Deposition Agreement](#)
- [2.9 PSUKB Digital Preservation Plan: Preservation-Service and access](#)
- [2.8 PSUKB Collection Development Policy](#)
- [2.7 Sample of Information with the metadata dc.rights and dc.rights.uri of a digital file](#)
- [2.6 Terms of Access Right and Use of Information](#)
- [2.5 Copyright Act, B.E. 2537 \(1994\)](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

R3 Continuity of access

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

Compliance level:

The repository is in the implementation phase - 3

Response:

The Prince of Songkla University Knowledge Bank (PSUKB) is an initiative established by Prince of Songkla University. Designated university officials and library administrators across all campuses comprise the university intelligence project committee [3.1.1]. This committee formulates policies, operational procedures, and the database structure. Additionally, a university librarian is appointed to oversee the Intellectual Property Bank, providing an annual operations report to the University Executive Committee. This report facilitates progress monitoring and the resolution of operational challenges. PSUKB is a Prince of Songkla University project that has been delegated to Khunying Long Athakravisunthorn Learning Resources Center, an experienced unit in information storage and dissemination. Within its strategic plan, the Office of Digital Innovation and Intelligent Systems (PSUDIIS) has outlined the implementation of PSUKB [3.1.2]. This implementation is conducted in collaboration with the Office of Digital Innovation and Intelligent Systems on infrastructure and network systems. Specifically, the Office of Digital Innovation and Intelligent Systems manages the server as both an observer and a resource within the Prince of Songkla University Intelligence Project (PSUKB). The Office's server services comply with ISO9001:2015 standards.[3.1.3]

PSUKB has a plan in place to deal with unanticipated situations that may affect the PSUKB, such as disasters, hardware failure threats, or other types of unanticipated incidents and risks.

As a result, an information system risk management plan [3.3.1] has been established in PSUKB to prevent data corruption, including a continuity

Prince of Songkla University Knowledge Bank

management plan [3.2] and an IT contingency plan [3.3.2] to ensure that the information contained in the system remains intact and accessible at all times.

A succession plan [3.4] is also in place to respond to any uncertainties that may arise in the operation of PSUKB, as well as to prepare personnel and teams for data services, data retention, and data maintenance in the short and long term, as well as during crises or emergencies. PSUKB stores valuable academic and research data, which is crucial for further studies. To ensure uninterrupted access to this data, PSUKB intends to transfer digital files to the Library Center's search system (opac.psu.ac.th). This move will enable researchers to effortlessly locate and access essential information without any hindrance.

PSUKB's operations are monitored and reported to the University Library's Board of Directors once a year [3.5] in case of changes in the organization's goals and missions, revocation of grants, budget termination of the project, and so on.

The project's owner, Prince of Songkla University, will be responsible for management so that operations in various parts of PSUKB can continue to provide services such as data warehouse management, digital data production system, and organizing collected information.

Links:

- [3.5 Meeting's minutes of PSU Librarys' Board](#)
- [3.2 PSUKB Continuity Plan](#)
- [3.1.3 Server Service and Server Maintenance Plan](#)
- [3.1.2 PSUKB: The level of responsibility](#)
- [3.1.1 The Board of PSU Knowledge Bank](#)
- [3.4 PSUKB Repository Succession Plan](#)
- [3.3.2 PSUKB Digital Preservation Plan: IT Contingency plan](#)
- [3.3.1 Risk Aversion Operation Report](#)

Reviews

Reviewer 1:

Compliance level:

The repository is in the implementation phase - 3

Comments:

Reviewer 2:

Compliance level:

The repository is in the implementation phase - 3

Comments:

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:

PSUKB collects and disseminates the works of students, educators and personnel of the Prince of Songkla University. Each submission should follow the predefined criteria for its own category; including peer reviews, plagiarism detection using Turnitin service, human subjects research ethics, the ethics of animal research, and pass the moral research ethics evaluation. [4.1.1] PSUKB has the policy of neither storing nor disseminating works or data that are vulnerable to disclosure or confidentiality. After submitting the data to the Knowledge Bank, the depositor should review the following terms.

- 1) The work is consistent with PSUKB's objectives. If it is inconsistent, it will be returned (rejected) to the work's owner and will not be saved in the system.
- 2) Verify the author's release consent in the Thesis submission form or Research consent form [4.1.2] by assigning restricted permissions to data that does not consent to full-text or private items to data that does not consent to online publishing. [4.3]
- 3) If it is later discovered that the information is at risk of being disclosed, is a confidential document, or is an infringement of copyright, the data will be withdrawn and use of documents in the intellectual property warehouse will be immediately suspended.

Prince of Songkla University Knowledge Bank

To ensure precise and secure management of data, the following guidelines have been established: [4.4]

Data Accuracy: The content should be accurate, explicit, and complete, just like the original file. If any typos are found, the librarian will make the necessary corrections. Additionally, if the user input data is incomplete, metadata will be added as per the requirements of each published document type.

Duplicate Data: In case of duplicate items, the system workflow will abort the imported files and return them to the owner. The owner will be notified via email that the data has been removed from the system.

If the owner wants to halt publication, they can submit a complaint via a feedback form or email. The librarian will withdraw the data to prevent access to the information and notify the data importer of the operation's outcome via email. Withdrawn items will remain in the Withdrawn Items section.

All data should be licensed for digital distribution and not infringe on others' intellectual property, patent, or copyright. If a document is deemed at risk for distribution or is confidential, the data will be withdrawn and deleted (expunged), and will not be stored in the Knowledge Bank.

The owner is responsible to file a request using the PSUKB data revision request form to change or edit information, such as revise incorrect spelling, edit images or update the file. To terminate or delay the dissemination of digital information due to the publication process in a journal, the owner should submit the intention memo to the Khunying Long Athakravisunthorn Learning Resources Center. [4.5.1] [4.5.2]

The PSU Knowledge Bank is responsible for managing and regulating the collection, use, and protection of personal data in accordance with the Personal Data Protection Policy of Prince of Songkla University. The primary objective is to ensure that personal data is kept confidential and not used beyond its intended purpose. Moreover, all data is safeguarded from unauthorized access and usage, and explicit consent from the data owner is obtained before any data is used. [4.6]

The operation of PSUKB is based on the moral ethics and regulations, thus the manual and guideline for data deposition [4.9.1] and the use of data [4.9.2] has been issued to prevent any due negligence. A data management specialist has also been appointed to give lectures on the Knowledge Bank adaptation on effective data management and security. [4.7] Given the University code of conduct, the PSUKB follows the practice in operations and published work ethics evaluation. To petition on any published works in the Knowledge Bank [4.8], a relevant executive board will be responsible to handle the matters, such as the Personal Data Protection Board, the Research Ethics Board and the Graduate Study Ethics Board [4.2]. In case of serious mistakes or violations, the boards will be notified for initial evaluation before passing to the University Ethics Board for further actions, if found guilty.

Links:

- [4.6 University Policy: Personal Data Protection Act, B.E. 2566](#)
- [4.5.2 Image showing authorization to restrict access information file](#)
- [4.5.1 Samples of intention memo to terminate and delay the dissemination](#)
- [4.4 PSUKB Collection Development Policy](#)
- [4.3 Image showing a restricted access to a specific file](#)
- [4.9.2 Data Service and Access](#)
- [4.9.1 Data Deposit](#)
- [4.8 Operation Guideline on Service, Data Deposit and Dissemination](#)
- [4.7 List of training of personnel responsible for handling sensitive or confidential information](#)
- [4.2 University Policy: Official appointment of the Personal Data Protection Board and the University Personal Data Protection Policy, Research Ethics Board, Graduate Study Ethics Board](#)
- [4.1.2 Research Report and Thesis Deposition Agreement Form](#)
- [4.1.1 Research Regulations and Practices: Moral and Ethics Evaluation Form](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

R5 Organizational infrastructure

Prince of Songkla University Knowledge Bank

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 repository is in the implementation phase - 3

Response:

The PSUKB website [5.1.1] is under the supervision of the Khunying Long Athakravisunthorn Learning Resources Center (Library) which has a bureaucracy power equivalent to a faculty domain of the Prince of Songkla University, the biggest public university in the Southern region. The organizational infrastructure [5.1.2] comprises three divisions including ,

Information System Development Division is responsible for information resources development and analytic and digital information.

Information Service Division is responsible for information services and information technology.

Administration Support Division is responsible for general administratives and organizational wellbeing.

The Information System Development division is responsible for the PSUKB management and services. The Information Services division is responsible for the tasks related to information technology, such as fundamental infrastructure development, DSpace program management and maintenance, server and network management, and data backup.

PSUKB partners include:

1. The Graduate School sets policies for graduate students, approves theses, and maintains communication channels with students.
2. PSUDIIS is responsible for network administrators and server services and maintenance.
3. Other campus libraries are responsible for metadata editing.
4. Research and development office is responsible for promote transparency and integrity in all research activities, and research information source.
5. Faculties is responsible for approve independent studies.
6. Geographic information system research office is responsible for provide information for the Songkla Lake Basin Knowledge Bank.

The Graduate School and faculty appoint staff to review students' theses and dissertations. These staff are also responsible for reviewing information in the PSUKB database.

The Library understands the value of digital information. As a result, a digital information resource preservation plan was developed to provide clear and systematic guidelines for operating digital information in accordance with international standards. The Library allocates a budget for PSUKB every year [5.2.1] to cover hardware and software costs for the purpose to enable long-term use.

The Library is able to provide sufficient funds to support other costs for Knowledge Bank operation because the Library also receives continuous annual funding from the University and the Government for various expenses, such as educational materials, computer and office appliances, meeting expenses, workshops, seminars, among others. The budget resources include government support, university incomes, research funds, and additional support from the University if extra expenses are incurred outside the fiscal plan. [5.2.2] PSUKB is one of the missions entrusted to PSUDIIS by the university and thus receives consistent budget allocations. Additionally, the Library provided designated funding for PSUKB within the university's 2023 operating budget [5.2.3]. The Knowledge Bank is executed by the digital information work group under the Information System Development Division. The full-time staff team comprises five members including librarians, a computer specialist, library officer and office clerk. Librarians are in charge of managing digital information, reviewing and controlling information quality, collecting and analyzing usage statistics, servicing and coordinating information, and teaching and advising on system use. The team leader with major responsibilities should have a good knowledge base with a degree in library and information science and digital information management. [5.3.1] They should have extensive work experience in digital information and information science. The IT staff is required to manage the computer network, server and information management software (DSpace). Library officers and office clerks are in charge of digitizing print resources, digitizing files, and importing and cataloging digital data. [5.3.2]

All staff are required to attend various sessions; workshops, seminars, dialogue among peers with aims to develop knowledge and skills in, such as, library science, information science, digital information management, and information technology. [5.3.3] The University provides the network system for every department in all campuses. For human resources development, every year the Library will manage a self-development budget for all staff personnel to improve their digital information skills.

The Library has been actively attending a number of collaborative networks at the national level and international level, including the Provincial University Library Network-PULINET [5.4.1] and ASEAN University Network Inter-Library Online – AUNILo [5.4.2]. The Library staff has also attended the repository workshop organized by AUNILo in Indonesia in 2019 for the "Library Portal Content Enrichment Through Open Educational Resources". [5.4.3]

Links:

- [5.1.2 Organization's structure and Partners](#)
- [5.3.3 List of staff's training](#)
- [5.3.2 Team Directory](#)
- [5.3.1 Staff resume](#)
- [5.2.3 Budget 2023](#)
- [5.4.1 PULINET members website](#)
- [5.2.2 Summary of the budget for Khunying Long Athakravisunthorn LRC operation for the year 2019-2022](#)
- [5.2.1 Summary of budget plan for PSUKB](#)

Prince of Songkla University Knowledge Bank

- [5.1.1 PSU Knowledge Bank's website](#)
- [5.4.3 PSU Librarians' participation on AUNILo-2019](#)
- [5.4.2 AUNILo members website](#)

Reviews

Reviewer 1:

Compliance level:

The repository is in the implementation phase - 3

Comments:

Reviewer 2:

Compliance level:

The repository is in the implementation phase - 3

Comments:

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:

PSUKB is supervised by the panel of University Library Executive Directors who are responsible for (1) making policy and operation direction of the University Library to reflect the University's mission, (2) tracking and evaluating the Library's performance, (3) approving the information resources management for the University as a whole and, (4) approving the regulations concerning the Library administration.

PSUKB has regular experts meeting to provide advices in the following areas:

1) The panel of University Library Executive Directors include President, Vice Presidents, Deans, Library Board- who are the library director and head of each Division and external experts [6.1.1] who are qualified to advise the Knowledge Bank. The panel shall give advice in terms of the digital information management policy during the meeting dated twice per academic year. The external experts are either the panel of University Library Executive Directors, an advisor or an executive officer with special expertise in information technology, and can be from public or private organizations. [6.1.2] PSUKB staff will formally communicate with experts from the meeting, as reported on the implementation of the resolutions of the University Library Steering Committee Meeting Agenda 2.3 on the management of PSUKB and the university's information storage. [6.2.1] [6.2.2]

2) Faculty of Engineering [6.1.3] experts who specialize in the use of DSpace programs in Installation, program upgrades, and API connections to databases. When in need of advice, the Khunying Long Learning Resources Office communicates with experts, including an invitation to consult at the Office of Learning Resources, Khunying Long, as well as telephone and e-mail consultation.

Users can communicate with the PSUKB administrator via a variety of channels. Data importers can reach out to staff via email or phone for assistance in resolving data import issues or to ask other questions. Other users can contact staff through the Klang Panya website's feedback form [6.3.1], the Khunying Long Learning Resources Center's Facebook page (<https://www.facebook.com/clibpsuhatyai>), and the Khunyinglong Library LINE application.[6.3.2] Staff will respond to questions and assist users on an individual basis, and all feedback will be collected and used to improve the service.

Links:

- [6.1.3 Letter of invitation to be advisor](#)
- [6.1.1 The panel of University Library executive director](#)
- [6.2.1 Meeting's minutes of the panel](#)
- [6.3.2 Facebook and LINE of Khunying Long Athakravisunthorn \(LRC\)](#)
- [6.3.1 Sample screenshot of User Feedback Channel](#)
- [6.2.2 The Execution Report with Reference to the Conclusion of the panel of University Library](#)
- [6.1.2 Expert](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

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:

PSUKB uses DSpace for development by deploying workflows and assigning permissions to each process. The Knowledge Bank has issued operation guidelines from deposit, review, dissemination and including deposition agreement. [7.1] The following process is introduced to those involved through a guideline.

1) Submit: Prince of Songkla University students and staff take charge in submitting data, identifying metadata, and uploading files in the specified format [7.2], including giving consent for distribution.

2) Approve: Graduate school and faculty staff check for duplicates, the accuracy of the depositor's data and files, and Turnitin/Copyleaks plagiarism evidence.

3) Edit Metadata: The PSUKB administrator reviews the publishing consent and edits the data and files as needed. The metadata process has been checked for accuracy by professional librarians as explained in R8.

The Library is responsible for citation and index review according to standards, and ensures that the deposited works are disseminated according to the owner's preferences of usage rights. Hence, the owner or an assignee of the works must define these right properties during the deposition agreement and attach any relevant documents as proof.

There is not an option to change or distort information during the Submit and Approve process. The process helps to ensure that the thesis or research content is original, correct and complete before being disseminated in the Knowledge Bank. Other works are directly deposited by the author or the copyright owner which is already a proof of original content. All actions taken in the process by any depositors, reviewers, and editors of the information resources will be logged in the system in metadata name is dc.description.provenance. [7.3] PSUKB will record as file history each time, including the name of the depositor/approver/administrator, date and time of create or modify, email, the amount of deposited file, checksum(MD5) and issue date version. These data can be used to trace information changes, data integrity, version control and data authenticity. [7.4]

For authenticity of the data, PSUKB has an automated process to validate that the ingest digital files within the system have never been edited without authorization. The process is conducted with DSpace function to evaluate the Checksum(MD5) [7.5] of the digital files and record the values and file size in the database. MD5 is used to verify the integrity of files, as virtually any change to a file will cause its MD5 hash to change. This is accomplished by comparing the MD5 checksum calculations results in the Submit, Approve, and Edit Metadata processes. Assuming that all processes have the same checksum (MD5), it ensures that the file has not been altered as a result of a file transfer error and that it is the same file. [7.9]

When there are changes to the data in the repository that are not the result of manual imports or modifications, the system uses the Automated Checksum Checkers Reporting tool to compare the checksum codes of every digital file on a weekly basis. If a changed code is discovered, the system will send a report to the administrator's email address to investigate the cause.

Furthermore, the work's owner can request that the digital file's content be changed or added by filling out the file modifications or information addition request form [7.6].

The Knowledge Bank has issued a URI Persistent ID for a permanent access to the information resources and the digital file [7.7]. The Collection of PSUKB has its entry page displaying information, news, and links reflecting the interests of users of that collection [7.8]. This also connects various indexes, such as EDS One Search and the PSU Automated Library System, by using metadata dc.identifier.uri to associate rendering between systems and define associated metadata between datasets, such as dc.contributor dc.subject. PSUKB has a protocol to review the information resources ingested

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to the Knowledge Bank. The depositors must be a member of the University and have a unique security passcode to log in and access the system. The Knowledge Bank use of Lightweight Directory Access Protocol LDAP is to provide a central place for authentication.[7.10] PSUKB employs the LDAP system by installing the program as a client and sending a request via TCP/IP protocol to the university's server to retrieve the identity of the data importer in order to verify the university's list of students and staff. The data importer can log in once the system confirms the status is correct. PSUKB then authenticates at each level through submitting, approving, and editing metadata from the PSU Passport used for authentication.

Links:

- [7.9 Sample of Checksum file verification](#)
- [7.10 Screen of a logged-in user using PSU Passport](#)
- [7.8 Sample of connecting link to the other metadata, such as the Creator Department collection](#)
- [7.7 PSUKB function: Handles](#)
- [7.6 PSUKB Policy: Request to edit content/change files](#)
- [7.5 PSUKB Site Administrator Help: Metadata Registry](#)
- [7.4 PSUKB function: File Formats](#)
- [7.3 Screenshot showing metadata item list](#)
- [7.2 PSUKB metadata item list](#)
- [7.1 PSUKB Workflow](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

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:

PSUKB has issued a policy for the collection development and preservation [8.1] to be used as references in selection, consolidation and preservation of suitable information in the Knowledge Bank. Such policies are published and disseminated on the website, informing readers that PSUKB has a policy to collect information or documents from Prince of Songkla University lecturers, students, and personnel. It informs users about the different types of documents, data import criteria, data import procedures, and metadata listing according to the Dublin Core Metadata Initiative, so that users can import the correct data that is compliant with policies, as well as properly catalog metadata and digitize files that adhere to the same standards. However, if information or documents are found that they do not comply with the policy requirements, including confidential documents, they will be rejected for inclusion in the archives. [8.2]

PSUKB compiles and publishes a guide to logging metadata in accordance with the international standard of the Dublin Core Metadata Initiative, defining the metadata required for reference. The following are some examples from the thesis data import manual [8.3]:

Authors (dc.contributor.author) Organizations (dc.contributor.department) Title (dc.title)

Type (dc.type) Date of Issue (dc.date.issued) Publisher (dc.publisher) Language (dc.language.iso)

Fields are described during the data import and listing process, as well as the generation of a template for automatic data entry and verification. It specifies the following elements as mandatory: collection, author, title, and year of publication. If the element is left blank, the system will not save the data.

PSUKB has published a standard policy for file formats to be stored and suitable for the preservation of information resources on its website.

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Furthermore, digital files can be reused in a long-term, sustainable manner, reducing the future problem of obsolete and unusable digital files. The file upload process clarified information about each file type and the level of support for each file type in the Knowledge Bank storage and services [8.6], making it easier for data users to understand and import data in accordance with PSUKB policies and processes.

The Submit, Approve, and Edit Metadata processes automatically send metadata to the process's responsible person. As shown in the work flow diagram [8.4], once the user has successfully imported the data, the system will send the data to the reviewers, who are either Graduate School staff or faculty staff, to ensure that the data and files are accurate. When you log in, tasks will appear in My Knowledge Bank. If the file requires editing, reviewers can reject it and specify the reason for editing, such as editing the metadata list or updating information, and return it to the data importer for editing via email notification from the system. The Approve and Edit Metadata process is carried out once a week. If approved, the system will send the data and digital files to the librarian, who will check their accuracy. The following guidelines [8.7] have been established at this point.

- Data Accuracy: The librarian will correct typos, convert the docx file to pdf, or change the file name. If the user input data is found to be incomplete, metadata will be added in accordance with the requirements of each published document type [8.5].

- Duplicate Data: If there are duplicate items, the imported files will be aborted from the system workflow, returned to the owner, and the owner will be notified via email that the data has been removed from the system.

- If the work's owner wishes to halt publication, submit a complaint via a feedback form or e-mail. The librarian will withdraw the data to prevent access to that information and will notify the data importer via email of the outcome of the operation. Withdrawn Items will remain in the Withdrawn Items section.

- If a document is deemed at risk for being distributed or is a confidential document, the data will be withdrawn and deleted (expunged) and will not be stored in the Knowledge Bank.

Links:

- [8.7 PSUKB Collection Development Policy: Reject, withdrawn and Delete](#)
- [8.6 PSUKB File Formats](#)
- [8.5 Case of Data Accuracy](#)
- [8.4 PSUKB Workflow](#)
- [8.3 PSUKB Operation Manual: Metadata](#)
- [8.2 Case of Rejection or Confidential document](#)
- [8.1 PSUKB Collection Development Policy](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

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:

PSUKB collects its documents by order of Community and Collection because DSpace has been developed to serve hierarchical data structure based on OAIS (Open Archival Information System) standards. When adapting DSpace to use for the Knowledge Bank, the data is categorized into three levels as follows.

- 1) Community is described by faculty or any equivalent department.
- 2) Sub-Community is described by programme, major or division.
- 3) Collection is described by the type of publication, such as thesis, dissertation, research report, article, etc.

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Moreover, DSpace also designs its workflow which includes data ingest, data confirmation, first edit of metadata, second edit of metadata, and allows free workflow adaptation. When adapting its workflow to use for the Knowledge Bank, there are three steps required as follows.

- 1) Data submission by the author or right owner
- 2) Data approval by the advisors, faculties and Graduate School staff
- 3) Metadata edit by the librarians

A metadata guideline for each kind of information resources and digital files has been issued and shall be referenced before data ingest approval. [9.1] Only the items that have been reviewed and edited will be disseminated. The system can locate files using the Handle ID or URI Persistent ID [9.2] to allow permanent access to any digital file and its metadata information resources, and also link to other indexes or databases.

PSUKB has managed system security with a risk management plan [9.3] to prevent unexpected events, which includes a preservation plan and a time frame for keeping the information on an ongoing basis. PSUKB access is granted via the DSpace authentication and authorization system via email authentication. The administrator is responsible for assigning specific levels of access. There is user authentication at all levels of the system, as well as an ongoing security software support system. To prevent data deterioration, the main system is stored in a highly efficient Virtual Machine Server (VM Server) network and has a continuous maintenance system from PSUDIIS.

The Library describes a standard backup method for the Knowledge Bank data by delegating the copies of original work into three sets: two sets are stored at the Office of Digital Innovation and Intelligent Systems, and the other set are stored at the Library. [9.4] The backup is divided into three parts: 1) the original DSpace backup when the data changes, 2) the log files and compiled programs are backed up once a day, and 3) the PostgreSQL database is backed up once a day. The backup can be restored within 24 hours.[9.5]

PSUKB employs a standard file storage procedure. When receiving digital files from the owner of the work or when staff has already converted from print media to digital files, staff makes one copy of the digital file and stores the original file on the server to avoid the risk of digital files being lost during data import, being deleted, or deteriorating in the future. The staff will then bookmark the copied file, rename it according to the automated library system's record number, change the file format as specified, and reduce the file size to make it practical. After preparing this set of files, it will proceed to create a metadata list and upload the file to the knowledge bank, which will then proceed to backup the original three copies of the data [9.6].

Links:

- [9.6 PSUKB IT Contingency Plan: Automated Checksum Checkers Reporting](#)
- [9.5 PSUKB IT Contingency plan: Back up and Recovery](#)
- [9.4 PSUKB Digital Preservation Plan: Risk Aversion Operation Plan](#)
- [9.3 PSUKB Digital Preservation Plan: IT Contingency plan](#)
- [9.2 Screenshot of the list of Handle items in the Knowledge Bank](#)
- [9.1 PSUKB function: Submission Process](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

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:

PSUKB operates under the information management and preservation policy of the Khunying Long Athakravisunthorn Learning Resources Center, the Main Library. [10.3] The standard of operation for permanent data preservation is well written to ensure that the system administration approach is

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secured and complete. Some functions are preset on date and time for automated checkup, ie. to prevent digital trespassing, and auto daily data backup and sending of automated notification to system admin when the server restarts.

A system manual also describes approach to the digital resources preservation; data security; data recovery when backup system fails; transition to the future of digital file formats; storage management to sufficiently cater to the future information; preparation for data transfer due to technological advancement; obsolete equipment and storage devices management; references to the international standards for information ingest; and the Handle ID system to maintain permanent access to the information. [10.1]

PSUKB adopts a policy to permit the Knowledge Bank to process the metadata of all digital files and information resources, and uses the Creative Commons public licenses to share contents with "No Derivatives". The rights of the Depositor will be clarified, and the work owner will be required to sign a document granting permission to process the work [10.2] so that it can be legally stored, copied, modified, reproduced, and distributed. As a result, the archived works can be accessed and used indefinitely and sustainably [10.4]. The librarian ensures that the imported metadata is of sufficient quality and completeness for users to understand and reuse. PSUKB incorporates a data evacuation plan in case of an emergency and a succession plan in case of failure as part of its preservation plan. PSUKB implements a daily data backup strategy, replicating data across three storage locations within VM and local servers. Metadata is exportable in standard CSV and XML formats, guaranteeing compatibility with external database systems (e.g., library OPACs). This approach ensures long-term data usability and adaptability to potential system changes.[10.5.1][10.5.2]

Links:

- [10.5.2 Example of metadata and bistreams datasets for importing into other systems](#)
- [10.5.1 Example data export to CSV file format for importing to other systems](#)
- [10.1 PSUKB Preservation Plan](#)
- [10.4 PSUKB Letter of Consent for Publication with Non-Exclusive Distribution License](#)
- [10.3 PSUKB Succession Plan](#)
- [10.2 Research Report and Thesis Deposition Agreement Form](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

R11 Data quality

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:

PSUKB conducts a clear guideline of operation which follows the international criteria of data management standards. A manual for handling each kind of metadata resources and digital files has been issued [11.1] with descriptions for specific scope of data. The protocol to ingest, control and review data and digital files before publication has been set to ensure integrity and authenticity per suggested standards. The DSpace user manual also provides operation insight on how to manage data for quality.

With a protocol to review the quality of data, PSUKB can ensure data integrity and authenticity before including them in the repository. If the metadata of the digital file and information resources described by the depositor is incomplete, the reviewing librarian shall be notified immediately while the depositor shall receive rejection notification via email for opportunity to self-edit. [11.2] The Knowledge Bank receives digital data deposit only in certain file formats which have also been described and explained in the user deposit guideline with contact details in case of information change request. [11.3.2]

PSUKB uses Dublin Core Metadata as a standard of operation to let users know what metadata contains. It is a guarantee that the stored data has the

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required metadata and is searchable. Users can view metadata details at the PSUKB website [11.4].

The Knowledge Bank also provide feedback channel for users to submit their query, comments, suggestions, usage errors on the website and email. [11.3.1]

Links:

- [11.3.2 Channel to Request Information Change](#)
- [11.4 Sample of using an identifier link in citation](#)
- [11.3.1 Sample screenshot of User Feedback Channel](#)
- [11.2 Sample screenshot of PSUKB submission rejected via email](#)
- [11.1 PSUKB Metadata](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

R12 Workflows

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

Compliance level:

The repository is in the implementation phase - 3

Response:

PSUKB develops its DSpace program based on the Open Archival Information System (OAIS) [12.1] model to provide data storage services to Prince of Songkla University students and personnel. The Producer submits content to the system through the Ingest process. Once the data is imported, it is automatically converted to AIP (Archival Information Package) and sent to the Archival Storage function to be stored and managed within the Knowledge Bank. The content is then managed by data management and stored in archived storage for long-term preservation. This involves assigning handles to items, creating unique URLs for each bitstream based on handles, and generating retention and technical metadata such as provenance, date/time submitted, checksum, and metadata transformations to a suitable format for inclusion in a database. Preservation Planning ensures that the content remains accessible over time. The Access step allows Consumers to retrieve data from the archive. In addition, log files are automatically saved to track the operation and changes at each step so that the administration and management can oversee the entire process, ensuring smooth operations. PSUKB has a workflow and process set up on the web page [12.2] for data importers, data reviewers, and metadata editors to be informed by authenticating access to a process that determines their access rights.

These three work structures include processes as follows. [12.3]

1) Data Ingest and Saving Process: The depositor can access the submitted data on My PSU Knowledge Bank and can still edit the work-in-progress data with the "Unfinished Submissions" status. The depositor cannot further edit once the data has been ingested and moved to "Submissions In Workflow Process" status. The data importer must select a collection and provide file details based on the metadata required for the file upload process. PSUKB indicates supported formats and file types [12.4] and notifies the data's publishing license, after which the system automatically forwards it to the authorized person for verification.

2) Data Review Process: Users with review authority can view the items that appear under the "Tasks in the Pool" status to review the data authenticity and file compatibility. The system will log and record the data for either "Reject" or "Approve." Suppose the data reviewer rejects the file, for example. In that case, the graduate school staff notifies the student to edit the file's contents. The student is notified via email and must log in to upload the corrected file to the original submitted file. Communication between the data reviewers and the submitters occurs within the PSUKB environment, and records in provenance metadata are also automatically emailed to submitters.

As in the example handle [12.6], the system logs in provenance the reason for the rejection as well as the changed checksum (MD5) value to inform the

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handling of changes made in the workflow. When the submitted data has been reviewed and approved, the system will automatically forward the data to the next responsible users for further action.

3) Metadata Review Process: Only the librarians are authorized to review the metadata and digital files before dissemination. The librarian verifies metadata integrity by correcting typos or invalid listings and adding headings. Then, as needed, check the file's accuracy, such as converting docx to pdf [12.5].

The information will be accepted and published once it has been validated. Once the data is approved, the system will automatically define a specific handle. In addition, librarians can retrieve information to make corrections or review it. When a user requests such as suspending file distribution, the librarian determines and takes action to restrict access or withdraw specific files to prevent access to metadata.

The processes mentioned above are described in the PSUKB Operation Manual. They should be taken as a guideline for operating the Knowledge Bank based on widely accredited standards to ensure long-term accessibility and reusability of information. They should give clear information about the PSUKB information management method for researchers, data depositors, and users. For example, sending an email notification to inform depositors about rejected data after the review process approves and archives data or information about the data type and effects is shown as a protocol diagram on the website.

Once the data is disseminated to the public, the depositor will be informed regarding the publication via email and can also log in to check the data status in My Knowledge Bank under "View Accepted Submission" status.

In case any errors occur during the creation of the archival package, the program will halt, and the errors will be documented in a log file. The PSUKB Developer will then examine the error logs, identify the issue, fix the error, and restart the process of creating the archival package. It's important to note that the archival packages are created from exact duplicates of the submitted files, ensuring that the original files provided by the provider remain undamaged. When the workflow changes, PSUKB staff and partners meet to evaluate the old process and jointly design a new one. The meeting [12.7] is then recorded and disseminated to users and personnel. If no changes are found in the workflow, a review meeting is held once a year.

Links:

- [12.7 Minutes of the meeting on the submission of thesis data from the GSMS and PSUKB systems](#)
- [12.1 DSpace digital repository System](#)
- [12.6 Sample of change management of workflow in provenance metadata](#)
- [12.5 PSUKB Workflow: Edit metadata](#)
- [12.4 PSUKB Supported Formats on upload process](#)
- [12.3 Terms of Use \(License\)](#)
- [12.2 PSUKB Workflow](#)

Reviews

Reviewer 1:

Compliance level:

The repository is in the implementation phase - 3

Comments:

Reviewer 2:

Compliance level:

The repository is in the implementation phase - 3

Comments:

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:

PSUKB processes the metadata resources entirely according to the international standards of Dublin Core Metadata Initiative.[13.6] Users can access information via keyword search function [13.1] using metadata on the Knowledge Bank home page [13.2], or browse by the alphabets for category of Communities & Collections, Issue, Date, Author, Title, Subject, and Submit Date. Information search council guidelines and the standard of metadata

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descriptions are indicated in the Operation Manual.

PSUKB uses URI and Handle ID to access information and ensure accessibility in the future. [13.3] Various APIs are adopted to assist with searching of the Knowledge Bank data per DSpace. It implements the Open Archives Initiative (OAI) standard, which is a widely used protocol for Access, Ingest, and Export, as well as a REST API for heterogeneous data network operations. PSUKB demonstrates metadata by using identifier.uri to refer to or link to another repository, such as base-search.net or core.ac.uk, which acts as a server to collect metadata. By linking metadata with other databases such as BASE, CORE, and Google Scholar [13.5], the data harvesting process makes it easier for users to access [13.4].

For information resource reference, PSUKB has provided a Citation Guide [13.7] for users on its website, as well as a Search Guide [13.8].

Links:

- [13.2 Sample of screenshot of Search Result](#)
- [13.1 PSUKB function: Search](#)
- [13.8 PSUKB Search Guide](#)
- [13.7 PSUKB Citation Guide](#)
- [13.6 PSUKB Site Administrator Help: Metadata Registry](#)
- [13.5 Search by Other Sources: BASE CORE Google Scholar](#)
- [13.4 PSUKB OAI-PMH Data Provider](#)
- [13.3 Screenshot of Handle List in Each Collection](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

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:

PSUKB processes the metadata resources entirely according to the Dublin Core Metadata Initiative. A description guideline for each data type and an ingest manual is published on the Knowledge Bank website to act as the guideline for metadata description.[14.1] DSpace software uses universal file format standards to handle digital files and supports a wide range of file types such as Text, Image, Audio, Video, Applications such as MS-Word, Adobe PDF, Postscript, MS-Excel, MS-Power Point, LateX, etc. Users can access information through browsing, searching and utilising the metadata with ease and convenience. [14.2] In addition to providing full research papers or agency documents, PSUKB also accepts related research data, including data analysis and supplementary.

The Knowledge Bank also preserves and disseminates the digital files based on trustworthy standards by, such as, checking files for long term compatibility, [14.3] data backup per schedule set in the Library's annual maintenance plan. PSUKB staff are proactively investigating the challenges posed by digital obsolescence and evolving technologies. If PSUKB finds data in an old or outdated format, a data transfer plan is put in place. The process involves the following steps:

- Keeping up-to-date with changes in technology on an annual basis.
- Analyzing and verifying file standards.
- Updating files in accordance with new file standards.
- Testing the accuracy and quality of the transfer process and keeping the original file to check for any errors.

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To ensure the long-term preservation and accessibility of records, imported files in .doc and .docx formats will be systematically converted to PDF. Additionally, daily backups of Intellectual Property Office data to a separate storage location, along with the export of metadata in CSV and XML formats for all hierarchies within the Metadata and Bistreams, provides safeguards against unforeseen events or technological shifts. These measures promote the seamless transfer of data to other systems or databases, such as an OPAC, if necessary. [14.4][14.5]

PSUKB also created the manual of Knowledge Bank system management to describe preservation approach for future data access and data transfer. Due to a lack of server maintenance, PSUKB accepts data transfers from Songkhla Lake Basin Knowledge Bank (SLBKB). SLBKB is regarded as useful information and is managed by university authorities in accordance with PSUKB policies. As a result, it exports data from SLBKB and imports it into PSUKB, which uses the same Dublin Core metadata standard. It then defines it as a Community and publishes it in PSUKB, the university's central system for reuse and long-term access [14.6] for the purpose of future technology potential.

Links:

- [14.6 Songkhla Lake Basin Knowledge Bank \(SLBKB\)](#)
- [14.5 Example of metadata and bistreams datasets for importing into other systems](#)
- [14.4 Data and File Format Migration Plan](#)
- [14.3 PSUKB function: Checksum File](#)
- [14.2 PSUKB Digital Information Service and Access](#)
- [14.1 PSUKB File Formats and Metadata](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

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:

PSUKB has a system infrastructure that incorporates a PSUDIIS host computer that serves as a virtual machine server and has network security and a firewall.

In November of 2009, the operation board was choosing and making a decision on a viable system and selected an open-source "DSpace", [15.1] [15.2] a software developed by the MIT Libraries and the Hewlett Packard Laboratories, to manage the electronic data for convenient access from anywhere and anytime. The software is flexible in terms of archiving and publishing the organizational digital information, catering to long term data preservation, and tweaking the software functions to match with PSUKB individual needs.

PSUKB provides a technical infrastructure that was designed with the DSpace [15.3] technical specification document standards by awareness. It provides infrastructure for data management, data ingress (SIP), storage (AIP), and access (DIP). PSUKB, based on OAIS reference model standards, provides a network with sufficient availability, speed, and connectivity to meet user needs while allowing for future scalability [15.4]. A risk management plan is in place, and software accounts and system manuals for current software applications are available.

PSUKB has been designed based on Ubuntu version 20.04 operating system with optimum stability and software security system for continuous 24 hours service. The main computer of the Knowledge Bank is in the Virtual Machine Server (VM Server) which is highly efficient and maintained regularly by the

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Innovation Division. [15.5] Scholars and general public users can easily access the database via the website. The system includes a backup plan that triggers whenever there is a change in the data, or on a daily basis. It distributes three copies of the original data, out of which two are stored separately at the PSUDIIS, while the third one is kept at the Khunying Long Learning Resources Center. As per the security risk assessment report of the university system, the individual responsible for the PSUDIIS network system must collaborate and communicate with the person accountable for the PSUKB system to promptly identify and rectify any emergency situations arising due to uncertainties and potential disasters within 24 hours. [15.6]

The basic technical structure of the Knowledge Bank includes as follows.

1. The main server of the Office of Digital Innovation and Intelligent Systems of the Prince of Songkla University is the VM Server, and is registered by the address 'kb.psu.ac.th' with following properties.

1.1 CPU 8-core

1.2 Minimum 8GB RAM

1.3 1TB disk space

1.4 Swap disk 8GB

2. The operating software include,

2.1 DSpace version 6.3

2.2 Ubuntu version 20.04

2.3 OpenJDK 8

2.4 Apache Maven and Apache Ant to compile programs

2.5 PostgreSQL 10 as a relational database

2.6 Apache Tomcat 8.5.51 as a servlet engine

2.7 Nginx as a web server

Links:

- [15.5 PSUKB: Server Service and Server Maintenance Plan](#)
- [15.4 PSUKB Digital Preservation Plan: Network within the Prince of Songkla University](#)
- [15.3 PSUKB Technical Infrastructure](#)
- [15.2 System development forum in Duraspace community](#)
- [15.1 DSpace 6.x Documentation](#)
- [15.6 PSUKB IT Contingency Plan](#)

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

R16 Security

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

Compliance level:

The repository is in the implementation phase - 3

Response:

PSUKB manages system security in accordance with the Prince of Songkla University's 2015 information security policy and guidelines, and it has a risk management plan [16.1] in place to make the system more efficient, stable, safe, and practical so that operations can continue, as well as to prevent unexpected events. PSUDIIS has a continuous maintenance system in place, including a backup system that distributes three copies of the original, two of which are stored separately at PSUDIIS and one at the Khunying Long Learning Resources Center. [16.2]

Prince of Songkla University Knowledge Bank

PSUDIIS provides firewall information for system security as well as a host computer maintenance plan [16.4.1]. According to the university system security risk assessment report, the person in charge of the PSUDIIS network system is required to communicate and coordinate with the person in charge of the PSUKB system in order to track down the cause and correct the system as soon as possible, or within 24 hours, in the event of an emergency due to uncertainty and potential disasters. [16.4.2]

To use the Knowledge Bank service, users have to be granted level of access by DSpace settings and verify identity on email. The system admin is responsible for reviewing all users' verification, and granting access level per user identity.

PSUKB can grant access permission to both individual users and group users, and can limit accessibility and edit functions at all data classes (community, collection, item, bitstream) [16.5]. Users will have access to add and edit information per their specific jurisdiction. However, users can also access the Knowledge Bank information via Open Access without identification requirement. With this method, the Knowledge Bank will create log files and record access activities for 90 days.

PSUKB also practices risk aversion analysis and internal control plan evaluation with reference to the University Policy for all organizations. [16.3] The Knowledge Bank considers digital information management as a part of the annual risk aversion plan that needs to be reviewed every year.

PSUKB also prepares to apply DRAMBORA criteria for risk management plan.

Links:

- [16.5 PSUKB System manual about Authentication method: LDAP configurations using PSU Passport \(Page17-21\)](#)
- [16.4.2 PSUKB IT Contingency Plan](#)
- [16.4.1 PSU Information Security](#)
- [16.3 Diagram of risk aversion and internal control plan in which the Knowledge Bank refers to the University Policy](#)
- [16.2 Staff : Responsibilities](#)
- [16.1 PSUKB Digital Preservation Plan: IT Contingency Plan](#)

Reviews

Reviewer 1:

Compliance level:

The repository is in the implementation phase - 3

Comments:

Reviewer 2:

Compliance level:

The repository is in the implementation phase - 3

Comments:

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:

I have already fixed it according to the comments. Thank you very much for your valuable comments and helpful suggestions. Your valuable insights have greatly contributed to improving the overall quality of this work.

Links:

Reviews

Reviewer 1:

Prince of Songkla University Knowledge Bank

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Many thanks for carefully considering our comments and implementing them to your best ability. You have improved the application greatly.

Reviewer 2:

Compliance level:

Not Applicable - 0

Comments:

Thank you very much for having taken the comments on the previous version into account. This reviewer Accepts the Evidence provided for the Background information and all the Criteria.