Chulalongkorn University Intellectual Repository (CUIR)

Notes Before Completing the Application

We have read and understood the notes concerning our application submission.

True

CORE TRUSTWORTHY DATA REPOSITORIES REQUIREMENTS

Background & General Guidance

Glossary of Terms

BACKGROUND INFORMATION

Context

R0. Please provide context for your repository.

Repository Type. Select all relevant types from:

Publication repository

Brief Description of Repository

Chulalongkorn University Intellectual Repository (CUIR), administered by the Office of Academic Resources (OAR), Chulalongkorn University (CU), started to operate in 2006 as the first intellectual repository in Thailand. CUIR collects and provides access to information resources that are scholarly works of the University members which include research reports, theses, independent studies, academic projects, textbooks, journal articles, handouts, event videos and other works by the faculties, researchers, students as well as organizations of Chulalongkorn University. Being preserved and digitized for long-term access, CUIR not only facilitates the study, research and creation of scholarly works by internal and external users, but also showcases Chulalongkorn University scholarly works to international community.

CUIR is managed by 2 divisions of OAR, namely Library Information Management Division and Library Information Technology Division. Currently, CUIR holds 67,800 records of digital information resources date from 1943 to the present. Since the beginning, the handling process of CUIR digital information resources follows international standard practice to ensure its reliability. By November 2020, the Office of Academic Resources has been certified for the International Standard for Quality Management Systems (ISO 9001: 2015) in all processes across-the-board which helps secure the depositors and the users' trust in the quality and long-term availability of CUIR information resources.

Brief Description of the Repository's Designated Community.

CUIR is meant to collect and share CU scholarly works among CU members that facilitate the finding of new knowledge from study and research. CUIR designated community is, therefore, the group of CU students, faculties and researchers, predominantly, while the general public are also welcome.

Reviewer 1

Comments:

Reviewer 2

Comments:
Accept.

Level of Curation Performed. Select all relevant types from:

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

Reviewer Entry

Reviewer 1

Comments:

Reviewer 2

Comments:
Accept.

Comments

The level of curation performed in CUIR is enhanced curation. CUIR staff will evaluate content quality, create metadata then prepare digital file conversion according to the predefined standard of file formats. In case the resources came in printed form, digitization will be performed following the same standard of file formats. More details can be found at R.7

Reviewer Entry

Reviewer 1

Comments:

Reviewer 2

Comments:
Accept.

Insource/Outsource Partners. If applicable, please list them.

Reviewer Entry

Reviewer 1

Comments:

Reviewer 2

Comments:
Accept.

Summary of Significant Changes Since Last Application (if applicable).

R6: Compliance level was reconsidered and adjusted to level 3 according to reviewer's comment.

R7: The description was shortened.

For the comments on R3 and R5, OAR will proceed further action for improvements.

All URLs were rechecked for accessibility.

Other Relevant Information.

ORGANIZATIONAL INFRASTRUCTURE

1. Mission/Scope

R1. The repository has an explicit mission to provide access to and preserve data in its domain.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Comments:
4 – The guideline has been fully implemented in the repository

Response:

To inform depositors as well as the general public the goals and objectives of Chulalongkorn University Intellectual Repository, vision and mission of CUIR had been developed and broadcasted by the Office of Academic Resources on the website (Document no. 1.1).

CUIR vision

To be the national institutional repository providing information resources for learning and research as well as disseminating the University scholarly works to both national and international community.

Mission

CUIR is a repository that contains and provides access to scholarly works created by faculties, researchers, students as well as organizations of Chulalongkorn University by preserving, digitizing, archiving and providing long term access to these works. It delivers services to both internal and external users in studying, researching and creating academic works, as well as provides a channel of scholarly communication between external researchers and Chulalongkorn University faculties and researchers who share common interest in any particular subjects.

Evidence Links

1.1 Vision and Mission of Chulalongkorn University Intellectual Repository

https://cuir.car.chula.ac.th/dspace/sidebar/vision.html

Reviewer Entry

Reviewer 1

Comments:
accept

Reviewer 2

Comments:
Accept.

2. Licenses

R2. The repository maintains all applicable licenses covering data access and use and monitors compliance.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Response:

The Office of Academic Resources had prepared Guidelines for Submissions to CUIR (Document no. 2.1) and published them on CUIR website at Guide for Authors. Permission to preserve and publish the works online needs to be granted to OAR by the authors or the organizations that created them using Permission to Publish the Works on Website Form (FM-LIM-13) (Document no. 2.2) and also by sending emails or written permission together with the digital files or the hard copies. CUIR staff will carry out the preservation or digitization, create metadata then submit the works to the database.

For theses or independent studies that were processed by iThesis system, after defense examinations, the students will grant CUIR permission to publish the works using Consent Form (Document no. 2.3) already available in the system.

Another 2 types of academic works, already been granted permission to publish online to CUIR along with the handing over of hard copies or digital files by Graduate School or the Office of Research Affairs, are theses finished in the past and research reports supported by government budget and Ratchadaphiseksomphot Endowment Fund. CUIR staff can carry out the process of preservation, digitization and publication right away after the hard copies or digital files were delivered.

If any theses were categorized as "classified" and allowed restricted access, the files from Graduate School will not be delivered to OAR until the time frame of restriction expired. In case OAR has already received and published the works online, the authors have yet any reasons to suspend access to the works, OAR will withdraw these theses from our automated library system and CUIR for a period of 3 months. The authors are required to ask for the decision of Graduate School before informing OAR to proceed according to the decision. Within these 3 months, if there is still no contact from the authors, the files will return to CUIR and be available online as usual.

CUIR has announced the right to use digital files in our database according to Creative Common Attribution-NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND 4.0) (Document no. 2.4). The users are free to use the resources as long as the sources are cited. It is for non-commercial purposes and there are no adaptations. The Creative Commons logo has already been on CUIR website. The users are able to follow the link at the logo to Creative Commons website for the details of public copyright licenses or find them at https://creativecommons.org/licenses/by-nc-nd/4.0/

For copyrights information management, the rights element of Dublin Core metadata standard or dc.rights is used to identify rights owner, for example dc.rights: Chulalongkorn University (Document no. 2.5). In order to remind the users about the Terms of Use, pop-up window will appear after download link was clicked with the message that reads "These

documents are reserved for educational use only, no commercial use or adaptation are allowed. Citations of the author are always required." The users need to click OK to continue downloading process.

CUIR has also developed and published "Guidelines and Measures to Handle Information Resource Misuses" (Document no. 2.6) online. The purpose of these guidelines are to inform the users about the consequences of and the measures to be pursued by OAR in case of resource misuses. Violation of Creative Common public copyright licenses in commercial use of information resources without permission of Chulalongkorn University or the authors or corrupted use will be prosecuted.

Evidence Links
2.1 Submissions Guidelines for Authors
https://cuir.car.chula.ac.th/dspace/sidebar/guide.html

2.2 Permission to Publish the Works on Website Form (FM-LIM-13)
https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/webconsent.pdf

2.3 Consent Form
https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/thesesconsent.pdf

2.4 Creative Common Attribution-NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND 4.0)
https://creativecommons.org/licenses/by-nc-nd/4.0/

2.5 Metadata containing rights owner information
https://cuir.car.chula.ac.th/handle/123456789/7044?mode=full

2.6 Guidelines and Measures to Handle Information Resource Misuses
https://cuir.car.chula.ac.th/dspace/sidebar/userright.html

Reviewer Entry
Reviewer 1

Comments:
accept

Reviewer 2

Comments:
Accept.

3. Continuity of access

R3. The repository has a continuity plan to ensure ongoing access to and preservation of its holdings.

Compliance Level:

3 – The repository is in the implementation phase

Response:

CUIR is an intellectual repository that provides sustainable deposit service by the preservation and maintenance of Chulalongkorn University academic works to ensure long-term access. Under the supervision of the Office of Academic Resources, CUIR significantly responds to the University strategy of Impactful Research and Innovation and therefore has been supported sufficient budgets from OAR and CU for long-term management of human resources, technology and activities. Risk assessment is conducted annually to comply with CUIR Risk and Opportunity Assessment (Document no. 3.1). If any operations seem at high risk, measures to reduce the risk will be performed according to OAR ISO9001 : 2015 risk and change management.

In case CU policies and strategies or OAR organizational structure may be changed, the management, storage and maintenance of the University academic works which are the mission of CUIR ensure that its service exists. The Office of Academic Resources as the University library will continue, leading by the Director, with the responsibility of sustainable storage and service that facilitate users' access to CU intellectual works in accordance with Chulalongkorn University Intellectual Repository Collection Development Policy (Document no. 3.2).

In emergencies like disruptions of OAR infrastructure or CUIR server, cyberattack or natural disaster that discontinue CUIR online service, OAR will follow the instructions in Business Continuity Plan (BCP) (Document no. 3.3).

Evidence Links

3.1 CUIR Risks and Opportunity Assessment

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/riskopp.pdf

3.2 Chulalongkorn University Intellectual Repository Collection Development Policy

https://cuir.car.chula.ac.th/dspace/sidebar/policy.html

3.3 The Office of Academic Resources Business Continuity Plan (BCP)

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/bcp.pdf

4. Confidentiality/Ethics

R4. The repository ensures, to the extent possible, that data are created, curated, accessed, and used in compliance with disciplinary and ethical norms.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Response:

CUIR is an open access database available to the public worldwide. Users are able to search the database and download digital files available for study and research with no membership or request for permission needed. Submission guidelines for authors (Document no. 4.1) had therefore been developed, with reference to related ethics and regulations, as instructions for both the authors and staff in selecting the works appropriate to CUIR.

The criteria concerning the ethics and the laws are as follows:
1. The content needs to conform to ethical principles, for instance, academic ethics, human research ethics, professional

ethics, etc.

2. The content contains no incitement or misinformation opposed to peace and stability of the country and any agencies.

3. The content needs to conform to human rights and the Personal Data Protection Act B.E. 2562.

4. The content performs no violation of intellectual property rights, patents and copyrights.

CUIR is the provider of access to research reports and theses after their completion, during their progress, CUIR does not involve in reviewing ethical and legal issues presented in these works.

In terms of CU academic works ethical quality, the University administration has set up 2 committees to oversee the conformity of CU research involving human subjects to international standard in the protection of human research participants and the Medical Council Regulations on Medical Ethics Preservation. These committees are responsible for considering research and thesis proposals and procedures as well as imposing suspension, withdrawal or termination on the research project which fails to comply with the ethical principles of research involving human subjects. The committees are:

1. The Research Ethics Review Committee for Research Involving Human Subjects: The First Allied Academic Group which is responsible for research projects from the Faculty of Psychology, Faculty of Nursing, Faculty of Allied Health Sciences, Faculty of Sports Science, College of Population Studies and College of Public Health (Document no. 4.2).

2. The Research Ethics Review Committee for Research Involving Human Subjects: The Second Allied Academic Group which is responsible for research projects in Social Sciences, Humanities and Fine and Applied Arts (Document no. 4.3).

In general, academic works that are confidential or considered risky if made public will not be accepted into CUIR, unless this is unknown or resource withdrawals are requested from the organizations in charge. OAR had already prepared "Guidelines for Managing Sensitive and Classified Documents in Digital Repository" (Document no. 4.4) as general practice for the selection of digital files and further action if any errors are later found . There are 2 levels of errors defined. Level 1 is staff error that are, for example, incomplete metadata, typos or data corruption. These errors can be fixed by CUIR administrator or staff who found them. Level 2 is content error that are, for example, ethical or law infringement, as stated in four criteria above. In case the errors are found by users, they can inform CUIR using Complaint/Suggestion Form provided on OAR website https://www.car.chula.ac.th/complaint/wc.php (Document no. 4.5). CUIR staff will follow instructions in Complaints and Satisfactions (CPS) Work Manual (Document no. 4.6). Complaints will be analyzed promptly and resolved within predetermined time frame. Causes of the problems shall also be identified to prevent recurrences and remind the staff to be precise at work.

Each year, CUIR staff will be supported to attend training programs or seminars to update their knowledge in the management of information repository and digital files as well as in the laws related. Sharing of knowledge and experience from training or seminars to colleagues are also required. For the newcomers, after receiving assignments from the Director of Library Information Management Division, they will be provided with on the job training that helps them familiar with work process, resource selection criteria, digital file management and accurate metadata creation.

Evidence Links

4.1 Submissions Guidelines for Authors

https://cuir.car.chula.ac.th/dspace/sidebar/guide.html

4.2 The Research Ethics Review Committee for Research Involving Human Subjects: The First Allied Academic Group
https://www.research.chula.ac.th/the-research-ethics-review-committee-for-research-involving-human-research-participants-group-1/

4.3 The Research Ethics Review Committee for Research Involving Human Subjects: The Second Allied Academic Group
https://www.research.chula.ac.th/office-of-the-research-ethics-review-committee-for-research-involving-human-subjects/

4.4 Guidelines for Managing Sensitive and Classified Documents in Digital Repository
https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/sensitivedoc.pdf

4.5 Complaint/Suggestion Form
https://www.car.chula.ac.th/complaint/wc.php

4.6 Complaints and Satisfactions (CPS) Work Manual
https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/complaints.pdf

Reviewer Entry

Reviewer 1

Comments:
accept

Reviewer 2

Comments:
Accept.

5. Organizational infrastructure

R5. 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:

3 – The repository is in the implementation phase

Reviewer Entry

Reviewer 1

Comments:
3 – The repository is in the implementation phase
accept

Reviewer 2

Comments:
3 – The repository is in the implementation phase

Response:

CUIR is under the administration of the Office of Academic Resources, Chulalongkorn University (Document no. 5.1) with the installation of its system in OAR server. CUIR operation is running by 2 divisions of OAR that are:

1.The Library Information Management Division. This division is responsible for information resource development in collaborations with both internal and external organizations, digitization or digital files management, digital files submission into the database with metadata and training on metadata creation for OAR staff as well as staff of other CU organizations which are prospect depositors. The staff also hold the duty in public relations to promote usage of available resources.

2.The Library Information Technology Division. This division is responsible for the maintenance of infrastructure, network, servers and DSpace software which is CUIR system software. Database backups, access rights setting and the creation of data entry templates for each type of information resources with related constants are also the responsibility of this division.

The Office of Academic Resources annual budget, which will be allocated to CUIR, is supported by Chulalongkorn University. It comes from 3 sources, as stated in CUIR Collection Development Policy (Document no. 5.2), that are:
1.Government budget for CUIR staff salaries.
2.University revenue budget for routine management, like document scanning, hardware and software maintenance.
3.The Office of Academic Resources revenue budget for CUIR publicity and staff training and seminars.

The recruitment of CUIR staff who are responsible for the creation and management of digital files and metadata as well as the promotion of CUIR usage focuses on their competencies in library and information science and their background knowledge in computer system, application software and information technology while expertise in information technology is required for CUIR system administrators who are responsible for the management of the servers and network system. At the moment, CUIR has a staff of 6 people working in the two divisions (Document no. 5.3).

OAR recognizes the significance of human resource development and supports CUIR staff participation in training, conferences and seminars, national and international, to keep up with changes in the fields (Document no. 5.4).

Evidence Links

5.1 Organizational structure of Chulalongkorn University and the Office of Academic Resources
https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/orgstructure.pdf

5.2 CUIR Collection Development Policy

https://cuir.car.chula.ac.th/dspace/sidebar/policy.html

5.3 CUIR staff

https://cuir.car.chula.ac.th/dspace/sidebar/staff.html

5.4 Report of CUIR staff participation in training, seminars and other professional development program 2018-2021

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/training.pdf

6. Expert guidance

R6. The repository adopts mechanism(s) to secure ongoing expert guidance and feedback (either inhouse or external, including scientific guidance, if relevant).

Compliance Level:

3 – The repository is in the implementation phase

Response:

CUIR consists of professionals both in information resource management and in information technology. Librarians and information specialists from the Library Information Management Division take care of information resource selection, digital file management and resource description using Dublin Core metadata standard. Computer system analysts from the Library Information Technology Division take care of DSpace software and server and network system maintenance to ensure 24-hour availability and immediate problem-solving.

In addition to full-time staff, OAR has appointed three experts as CUIR Advisory Board (Document no. 6.1), namely:

1. Assistant Professor Dr. Veera Muangsin, Department of Computer Engineering, Faculty of Engineering, Chulalongkorn University. His role is to provide advice concerning information technology, software systems and CUIR infrastructure.

2. Dr. Wachiraporn Klungthanaboon , Department of Library Science, Faculty of Arts, Chulalongkorn University. Her role is to provide advice concerning data management, digital resource preservation and institutional repository standard.

3. Dr. Jirawan Sriwong, Department of Library Science, Faculty of Liberal Arts, Thammasat University. She specializes in data management, digital resource preservation and institutional repository standard.

4. Ms. Chanida Jariyapornpong. Her role is to provide advice concerning information resource description and management of institutional repository.

Consulting usually occurs using informal channels after problems in daily operation are found. It was planned that meeting with CUIR Advisory Board will be held at least once a year for the Board members to share their comments and suggestions about CUIR development.

Membership of DSpace user community

CUIR had already registered as a member of DSpace User Group via DuraSpace website which is a channel provided by DuraSpace, as DSpace developer, to enable communications and sharing of suggestions and assistance among DSpace users. Information about CUIR can be found at https://duraspace.org/registry/entry/4116/ (Document no. 6.2)

Evidence Links

6.1 CUIR Advisory Board

https://cuir.car.chula.ac.th/dspace/sidebar/expertise.html

6.2 CUIR information on DuraSpace Registry

https://duraspace.org/registry/entry/4116/

Reviewer Entry

Reviewer 1

Comments:
Excellent to read that the Advisory Board has been expanded with an external advisor. It would be good to have more external people involved. It would also be good to meet more often than once a year to seek advice from these experts.

Reviewer 2

Comments:
Accept.

DIGITAL OBJECT MANAGEMENT

7. Data integrity and authenticity

R7. The repository guarantees the integrity and authenticity of the data.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Response:

Digital file management and submission to CUIR have processes of data and metadata verification. CUIR staff or the owner of the works are able to input complete and correct data by the same workflow for all submissions (Document no. 7.1). This is to make sure that the submissions are accompanied by adequate metadata descriptions and the digital files as the system will not allow saving of the submission without digital file upload. DSpace also provides metadata and digital file quality recheck by librarian or information specialist who will commit the submission to the archive after verification is complete to make it available to users (Document no. 7.2). CUIR Digital File Management and Submission Manual (Document no. 7.3) which gives detailed information of metadata description for each type of information resources is available both for user and for CUIR staff as working manual.

DSpace records all submissions history in dc.description.provenance field of metadata (Document no. 7.4). Each alteration done will be recorded and used to examine modifications, consistency and version of the data. All files submitted will be stored as submission information packages (SIP) to ascertain that, in case of emergency or file damage, the originals can be used to generate the new copies.

Care and maintenance of the system is scheduled in the first and third quarter of each financial year according to "CUIR Digital Files and System Maintenance" (Document no. 7.5). Both packages of the data, i.e. submission information packages (SIP) and archival information packages (AIP) will be checked for data integrity, retrievability, and the accuracy by random sampling. If any of the SIPs are found damaged, irretrievable or outdated, the AIPs in CUIR system will be converted into new files according to "CUIR Standard File Format for the Storage and Service" (Document no. 7.6). In case the SIPs and AIPs are different, the files will be compared with their printed versions. If there is no printed version

available, the files will be sent to their creators to make the decision that which ones are to be used for the publication. In case the AIPs were found damaged, the SIPs will be converted into new files according to "CUIR Digital File Management and Submission Manual".

Evidence Links

7.1 The topic of Submit in DSpace Help

http://cuir.car.chula.ac.th/help/index.html#submit

7.2 The topic of My DSpace in DSpace Help

http://cuir.car.chula.ac.th/help/index.html#mydspace

7.3 CUIR Digital File Management and Submission Manual

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/cuirfilemgt.pdf

7.4 The topic of Submit: File Format in DSpace Help

http://cuir.car.chula.ac.th/help/index.html#formats

7.5 CUIR Digital Files and System Maintenance

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/digitalfilestorage.pdf

7.6 CUIR Standard File Formats for the Storage and Services

https://cuir.car.chula.ac.th/dspace/sidebar/fileformats.html

Reviewer Entry

Reviewer 1

Comments:
accept

Reviewer 2

Comments:
Accept

8. Appraisal

R8. The repository accepts data and metadata based on defined criteria to ensure relevance and understandability for data users.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Response:

CUIR has set up its collection development policy (Document no. 8.1) as the guidelines on the selection, storage and collection of Chulalongkorn community scholarly works and also has it announced on CUIR website to inform both the community members who are the creators and the users about the acceptable kinds of works and the conditions apply.

Quality control of digital files and metadata are as follows:

1. Quality control for digital files. Digital files that are acceptable for CUIR must comply with quality and standard as specified in CUIR policy and bear enough information for metadata description to ensure they are searchable and retrievable in the long term. In case the files do not meet CUIR specification, are found damaged or unable to be preserved for future use, the staff will inform the authors with suggestion for modifications before resending the files to CUIR.

2. Quality control for metadata. CUIR creates bibliographic records for information resources using Dublin Core metadata standard. Taking into account users' needs, at the time of its initiation, a survey concerning users' opinion on metadata elements that are sufficient for the searching and decision to download full texts was carried out. The elements that were found necessary for metadata description are creator, title, subject, date, language, publisher, type and rights. In case of thesis and independent studies, there are four more elements needed, i.e. degree name, degree level, degree discipline and degree granter. These four elements enable users to limit their search by the discipline and degree level in advance search. Details of metadata elements are provided for the users on CUIR website at the topic of "Metadata Standard" (Document no. 8.2). To engender same standard of metadata and digital files creation, CUIR also provided training for CUIR staff and librarians from other CU libraries and prepared "CUIR Digital File Management and Submission Manual" (Document no. 8.3). This manual describes the details of each metadata element and the steps of metadata creation, according to resource type, using predefined templates for data entry in each collection. "Submission workflow" is also furnished by the system in order to manage metadata description, files upload, metadata recheck and the publication of academic works in sequence. To ensure the record contains all required elements, automated verification by the system was set in the templates. The record cannot be saved if these elements are missing. Duplicate checking was also placed in the last step of creating new record to avoid repetition.

Further step of quality control is metadata verification by CUIR librarians after the works were submitted into the system. CUIR librarians can correct the metadata and the files or cancel the submissions that have numerous errors. The inputters need to correct the errors before having the resources resubmitted. Only the submissions of accuracy are accepted and released from CUIR to the public.

3. Preferred file formats. On CUIR website, users can find the details of CUIR Standard File Formats for the Storage and Services (Document no. 8.4) which are the formats considered appropriate for information resource preservation by the Office of Academic Resources. The digital files in these formats can be retrieved for long term use and help reduce the problem of obsolescence and usability.

In the event that complaints were made by the users about any works or the contents were found opposed to the submission guidelines later on, the resources will be withdrawn from the database by CUIR staff, following "Guidelines for Managing Sensitive and Classified Documents in Digital Repository" (Document no. 8.5) with causes of withdrawal included in the metadata. Withdrawn resources will be sent to the bin for withdrawn items. The link to "Submit Your Complaint" (Document no. 8.6) has also been provided on CUIR website.

Evidence Links

8.1 CUIR Collection Development Policy

https://cuir.car.chula.ac.th/dspace/sidebar/policy.html

8.2 Metadata Standard

https://cuir.car.chula.ac.th/dspace/sidebar/metadataguide.html

8.3 CUIR Digital File Management and Submission Manual

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/cuirfilemgt.pdf

8.4 CUIR Standard File Formats for the Storage and Services

https://cuir.car.chula.ac.th/dspace/sidebar/fileformats.html

8.5 Guidelines for Managing Sensitive and Classified Documents in Digital Repository

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/sensitivedoc.pdf

8.6 Submit Your Complaint function on CUIR website

https://cuir.car.chula.ac.th/dspace/sidebar/withdraw.html

Reviewer Entry

Reviewer 1

Comments:
accept

Reviewer 2

Comments:
Accept.

9. Documented storage procedures

R9. The repository applies documented processes and procedures in managing archival storage of the data.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Response:

It is the requirement that submissions to CUIR need to follow the instruction in "CUIR Digital File Management and Submission Manual" (Document no. 9.1). The manual describes the details of file management, resource description and submission placement in the collections that are categorized by organizations of Chulalongkorn University.

After receiving the original files from the authors or digitizing the hard copies from library collections, CUIR staff will reproduce a copy then store the originals in the CUIR_SIP server maintained by the Library Information Technology Division to avoid problems if the files would be lost during submission, were deleted or have deteriorated. The copies will be processed by adding bookmarks and CU watermarks, downsizing to appropriate size and indicating terms of use according to CUIR policy. The next steps are metadata creation and file upload into CUIR server as archival information packages (AIP) available to users through search function (Document no. 9.2).

Full backup is scheduled on a daily basis in two backup systems, one at the Office of Academic Resources and the other at Mahitaladhibesra Building, Chulalongkorn University (maintained by the Office of Information Technology). In case problems occur, CUIR system recovery can be done within 5 hours. Besides, the Library Information Technology Division is working on a timetable for regular check and maintenance of the server and storage device system. (details can be found in R15)

Evidence Links

9.1 CUIR Digital File Management and Submission Manual

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/cuirfilemgt.pdf

9.2 Digital File Storage in the document of CUIR Management

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/digitalfilestorage.pdf

10. Preservation plan

R10. The repository assumes responsibility for long-term preservation and manages this function in a planned and documented way.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Response:

The Office of Academic Resources has prepared the document detailing "CUIR Information Resources Preservation Policy" (Document no. 10.1) as operational and preservation guidelines. The process of preservation from accepting the author's work to disseminating it to public is carried out within the framework of Open Archival Information System (OAIS) to maintain permanent access to the University scholarly works.

CUIR will inform the depositors about their rights and ask them to sign "Consent for Publication Form" (Document no. 10.2) to make certain that the storing, duplicating, modification, reproduction and dissemination of the works are legally correct.

To ensure that the works can be accessed and used over the long term, Standard File Formats (Document no. 10.3) for

CUIR were determined with reference to Library of Congress Recommended Format Statement and Sustainability of Digital Formats (Document no. 10.4). It is also the requirement to check the quality of metadata to confirm that they provide correct and helpful information for the users, by both automated system (details in R8) and by librarian. In addition, Data migration and transfer in a matter of urgency were settled as parts of the preservation plan.

Storage equipment and facilities are under regular maintenance with their obsolescence concerned. Performance and risk assessment of CUIR preservation operation are conducted annually with focus on budgets, human resources, information technology, legal issues, stored data and operational process to check whether the requirements had been implemented and to use the findings for the development of future plan.

Evidence Links

10.1 CUIR Information Resources Preservation Policy
https://cuir.car.chula.ac.th/dspace/sidebar/preservation.html

10.2 Consent for Publication Form
https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/webconsent.pdf

10.3 Standard File Formats
https://cuir.car.chula.ac.th/dspace/sidebar/fileformats.html

10.4 Library of Congress Recommended Format Statement and Sustainability of Digital Formats
https://www.loc.gov/preservation/resources/rfs/

Reviewer Entry

Reviewer 1

Comments:
accept

Reviewer 2

Comments:
Accept.

11. Data quality

R11. 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:

3 – The repository is in the implementation phase

Response:

CUIR has set up the procedures of quality control with the purpose of providing service of good quality. There are templates for data entry in every collection to create complete and correct metadata along with DSpace workflow that requires the verification of metadata and digital files by professional staff before publication. "CUIR Digital File Management and Submission Manual" (Document no. 11.1) describes how to process the digital files by following the same standard as well as the detailed information of metadata description for each type of information resource. In case the metadata are not complete or the files cannot be accessed, modifications must be finished before releasing the resources to public. Metadata Guidelines for CUIR (Document no. 11.2) are also prepared to provide information about metadata available for the users which are helpful in resource finding. For integrity and authenticity metadata viewing, it is limited to staff only as CUIR use them in digital file checking. If there are any technical difficulties with the files, users can send their problems or inquiries to CUIR by using these channels:

OAR email address : chulalibrary@car.chula.ac.th

OAR Facebook page : https://www.facebook.com/ChulaLibrary

OAR Line official account: culibrary

Some resources have related or accompanying materials that might already be in CUIR (if the materials are in PDF format) or in other platforms (for example, PDF documents that are not in CUIR, video clip, sound clip, image, etc.) Input of the URL that links to the accompanying materials will be placed in the dc.relation.uri field by the metadata creator. http://cuir.car.chula.ac.th/handle/123456789/62542 is an example of related video clip available in other platform. (Document no. 11.3)

To sort out links that may turn broken, URL validation was planned in every 6 months by random checks. Users are also able to inform CUIR about broken links they found or send any comments and suggestions via the channels stated above.

Evidence Links

11.1 CUIR Digital File Management and Submission Manual

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/cuirfilemgt.pdf

11.2 Metadata Guidelines for CUIR

https://cuir.car.chula.ac.th/dspace/sidebar/metadataguide.html

11.3 A record that has related resources outside CUIR

http://cuir.car.chula.ac.th/handle/123456789/62542

12. Workflows

R12. Archiving takes place according to defined workflows from ingest to dissemination.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Response:

CUIR workflow has already been developed as operating procedures for CUIR staff within the framework of Open Archival Information System, CUIR Digital Collection Development Policy, preservation plan and Creative Common Attribution-NonCommercial-NoDerivatives 4.0 (CC BY-NC-ND 4.0). This is not only an attempt to ensure best practice in work process but also to ascertain that the resources were preserved by means of standard practice and can be accessed and reused in the long term.

There are 3 components in CUIR workflow (Document no. 12.1), i.e. the producer, data management and the user. CUIR staff will carry out the process of data management from resource selection, file standardization, bookmark and CU

watermark insertion, access rights setting, metadata creation, file upload, copyright input, data verification and file testing, submission to archive and digital object identifier (DOI) registration. After this process is done, the resource will already be accessible not only for CUIR users but also for the users of other repositories in collaboration with CUIR.

Evidence Links

12.1 CUIR Workflow

https://cuir.car.chula.ac.th/dspace/sidebar/workflow.html

Reviewer Entry

Reviewer 1

Comments:
accept

Reviewer 2

Comments:
Accept.

13. Data discovery and identification

R13. The repository enables users to discover the data and refer to them in a persistent way through proper citation.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:
4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:
4 – The guideline has been fully implemented in the repository

Response:

CUIR is a multidisciplinary database that collects academic works in all fields of study offered by Chulalongkorn University. CUIR uses Dublin Core Metadata Element Set which is an international standard for resource description that enables the search for information in need. There are 3 search options in the system namely browsing, keyword search and advance search (Document no. 13.1, 13.2, 13.3). Browsing can be done by authors, titles, dates of publication, organizations and disciplines. Search terms will be highlighted in the results to facilitate quick user's decision and Boolean

search is available in advance search to help refine the results as specified. "CUIR Search Manual" (Document no. 13.4) is also provided for the users to learn how it works.

CUIR has assigned Persistent Uniform Resource Identifier (URI) for the access and reference to the location of bibliographic records and digital files in the repository as well as registered with the National Research Council of Thailand, a member of DataCite, for digital object identifier (DOI) to find alternative data backup and support for long term access to the resources in case CUIR service happens to be unavailable. The staff can find instructions to DOI registration in "CUIR Digital File Management and Submission Manual" (Document no. 13.5).

To speed up the process, OAR has also considered applying for CrossRef membership and have DOIs assigned to all CUIR resources within 2023.

DSpace has tools in different forms for data linkage and transmission between systems which are appropriate to different repository. The APIs prepared by the software (Document no. 13.6) are OAI-PMH/SWORD (v1 and V2) and OpenAIRE which are standard protocols widely used and appropriate to data access, ingestion and export as well as the REST API. (Document no. 13.7)

CUIR uses Web Service (API) in data transmission through metadata. APIs are also used for data ingestion, modification, deletion and transmission by REST API via http://cuir.car.chula.ac.th/rest to which the access is restricted by IP address, username and password. These APIs enable data linkage and transmission between CUIR and the following repositories:

1. Thai National Research Repository, National Research Council of Thailand has 51,464 CUIR records.
2. Thailand Agricultural Research Repository, Agricultural Research Development Agency has 360 CUIR records.
3. Digital Object Identifier (DOI), National Research Council of Thailand. At the moment 15,532 CUIR records had already got DOI numbers while creating DOIs with the REST API is in progress.
4. AUNILO Institutional Repository Discovery Service, Libraries of ASEAN University network (AUNILO) has 43,554 CUIR records.

Moreover, CUIR now supports the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) which is a public access service via http://cuir.car.chula.ac.th/oai.

Citing for different kinds of materials can also be found in Citation Guide (Document no. 13.8) available on CUIR website.

Evidence Links
13.1 Search page and browse menu on CUIR webpage
https://cuir.car.chula.ac.th

13.2 Search function details in DSpace Help
http://cuir.car.chula.ac.th/help/index.html#search

13.3 Browse function details in DSpace Help

http://cuir.car.chula.ac.th/help/index.html#browse

13.4 CUIR Search Manual

https://cuir.car.chula.ac.th/dspace/sidebar/images/cuirmanualen.pdf

13.5 CUIR Digital File Management and Submission Manual

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/cuirfilemgt.pdf

13.6 DSpace technical specifications

https://duraspace.org/wp-content/uploads/dspace-files/specsh_dspace.pdf

13.7 DSpace REST API

https://wiki.lyrasis.org/display/DSDOC5x/REST+API

13.8 Citation Guide

https://cuir.car.chula.ac.th/dspace/sidebar/citation.html

Reviewer Entry

Reviewer 1

Comments:
accept

Reviewer 2

Comments:
Accept.

14. Data reuse

R14. 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:

3 – The repository is in the implementation phase

Reviewer Entry

Reviewer 1

Comments:
3 – The repository is in the implementation phase

Reviewer 2

Comments:
3 – The repository is in the implementation phase

Response:

DSpace software has been used in the development of Chulalongkorn University Intellectual Repository. In content management, Dublin Core Metadata Element Set which is an international and widely used standard of resource description is chosen. Fifteen elements of Dublin Core are sufficient for describing the nature of the resources and flexible in assigning additional metadata necessary and appropriate to specific type of materials. In digital file management, DSpace supports a wide range of international standard file formats that are suitable for the users such as MS-Word, Adobe PDF, Postscript, MS-Excel, MS-Power Point, LateX, MPEG, GIF and JPEG , etc. (Document no. 14.1) Moreover, being an open source software though, upgrade versions of DSpace are constantly released by the community of software developers. In case software upgrade or switch to other software is required in the future, standardization of metadata and file management will enable fast and convenient transfer of the metadata and digital files.

These are the details of 2 significant processes in submission to CUIR.

1. Metadata creation

CUIR staff are responsible for creating the metadata of all titles in the Repository. The description should cover 15 elements in three categories (Document no. 14.2).

1.1 Content elements include coverage, description, type, relation, source, subject and title.

1.2 Intellectual property elements include contributor, creator, publisher and rights.

1.3 Instantiation elements include date, format, identifier and language.

CUIR Metadata Guidelines (Document no. 14.3), which are the description of metadata element set used, can be accessed through CUIR website.

The metadata in CUIR consist of 15 core elements as well as additional elements for thesis which are useful for the users in refining their search, i.e. thesis advisor (dc.contributor.advisor), degree abbreviation (records in dc.description), degree name (dc.degree.name), degree level (dc.degree.level) and degree discipline (dc.degree.discipline). The information on how to send CUIR suggestions about metadata can be found in CUIR Metadata Guidelines while bibliographic data entry in each element according to Anglo-American Cataloging Rules, 2nd edition (AACR2) can be found in CUIR Digital File Management and Submission Manual (Document no. 14.4).

2. File management

The formats of digital files required in submission to CUIR are the international standard formats that were recommended by the Library of Congress. Details can be found in "CUIR Standard File Format for the Storage and Service" (Document no. 14.5). This is to ensure that they are in usable formats and enable sustainable storage and reuse. Moreover, the verification of correctness, completeness and usability of the files are major concerns as well. File names also need to be

in English to prevent possible changes into special characters if they are in Thai.

The cutting edge technology is always monitored by CUIR to prepare for change in standards of file and digital preservation platforms that offer automated file upgrade as alternatives for CUIR data transfer, for example, Arkivum.

The Library Information Technology Division manages all the data stored in CUIR. The process of data transfer can be found in "Data Transfer Plan" (Document no. 14.6). The details are as follows:

2.1 The procurement of new system that is appropriate to CUIR data.

2.2 Assessment of data size and time frame for data transfer.

2.3 Data withdrawal with all data intact.

2.4 Verification of withdrawn data.

2.5 Data upload into the new system.

2.6 Verification of uploaded data.

2.7 Release of the new system.

Evidence Links

14.1 DSpace Reference : Metadata and Bitstream Format Registries

https://wiki.lyrasis.org/display/DSDOC5x/Metadata+and+Bitstream+Format+Registries

14.2 CUIR Workflow

https://cuir.car.chula.ac.th/dspace/sidebar/workflow.html

14.3 CUIR Metadata Guidelines

https://cuir.car.chula.ac.th/dspace/sidebar/metadataguide.html

14.4 CUIR Digital File Management and Submission Manual

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/cuirfilemgt.pdf

14.5 CUIR Standard File Format for the Storage and Service

https://cuir.car.chula.ac.th/dspace/sidebar/fileformats.html

14.6 Data Transfer Plan

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/migration.pdf

Reviewer Entry

Reviewer 1

Comments:
accept

Reviewer 2

Comments:
Accept.

TECHNOLOGY

15. Technical infrastructure

R15. 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:

4 – The guideline has been fully implemented in the repository

Response:

CUIR system is installed on virtual server with 184 virtual cores processor and 690GB of RAM. The virtual server resources that are allocated specifically for CUIR have 32 VCPU, 32GB of RAM, and 4TB of storage capacity which are sufficient for functionality and extendable for future support. In addition, there are 72GB storage capacity prepared for CUIR data backup and recovery.

CUIR data are full backed up every day on OAR server by Library Information Technology Division, as indicated in Data Backup and Recovery Plan (Document no. 15.1) and a copy of backup data is stored up to 1 month at backup site, a data center supervised by the Office of Information Technology, Chulalongkorn University, located at Mahitaladhibesra Building which is on the other side of the campus, 1.2 kilometers away, across the street. Archival Information Packages (AIP) are backed up every 6 months. In case that there is any damage to CUIR data stored in the server, Library Information Technology Division can recover the data within 5 hours. If data in CUIR need to be moved to a new system or platform, there is Data Migration Plan (Document no. 15.2), issued by Library Information Technology Division, as guidelines for data migration.

The Library Information Technology Division has set up maintenance schedule for servers, information systems, network

equipment, and uninterruptible power supplies (UPS) in every 3 months. If there are any problems with network equipment or system operation is close to full capacity, the Library Information Technology Division will resolve the problems in accordance to Computer System Maintenance Manual (WI-ITM-03) (Document no. 15.3) or upgrade the equipment to meet the new requirements of operation. In critical situation or emergency, for example, a power outage, the Library Information Technology Division will follow the instructions in Server Room Power Outage Checklist (SD-ITM-01) (Document no. 15.4). Nevertheless, to prevent the problem of unexpected power outage, the Library Information Technology Division had uninterruptible power supply system for the servers installed. The system consists of 2 high capacity uninterruptible power supplies (10 KVA for each unit) that can provide electricity to the servers up to 10 hours.

CUIR is an open access institutional repository. No registration or login required to access the data in CUIR. The framework or model that CUIR has adopted for the ingestion, archiving, and dissemination of information resources is Open Archival Information System Model (OAIS Reference Model) (Document no. 15.5) to ensure that data in CUIR are preserved, archived, and accessible in the long term.

In technical aspect, CUIR is powered by DSpace version 5 while PostgreSQL is used as relational database management system. All files and data stored in the system are encrypted for security purposes. Ubuntu Linux is the operating system of CUIR server and Tomcat is used as web server software. The Library Information Technology Division uses Network Management System for monitoring and detecting irregular activities in the network.

CUIR is connected to the network via 10 Gbps network channels from the Office of Information Technology, Chulalongkorn University (Document no. 15.6). Two main internet providers are providing internet services for the Office of Information Technology.

1. The Office of Information Technology Administration for Educational Development (UniNet), Thailand provides 6 internet channels for domestic and international connections.

2. Private internet service providers provide 4 internet channels for domestic connection and other 4 channels for international connection.

This can ascertain that even though there might be disruptions in any internet channels, there are still the alternates to secure the continuity of CUIR online service.

In the aspect of software, DSpace is an open source software that is widely used as repository software in many educational institutions. There are many user and developer communities that support their members in case any problems are encountered while using DSpace. In addition, DSpace developers have been continuously developing new versions and new features of DSpace since the software was first released. From these factors, DSpace is a trusted software for long-term use. Furthermore, all information and resources about DSpace can be found for further inquiries at DSpace Lyrasis website (Document no. 15.7). For documents and manuals, DSpace provides the documents for submitters at https://cuir.car.chula.ac.th/help/index.html (Document no. 15.8) and for administrators at https://cuir.car.chula.ac.th/help/site-admin.html (Document no. 15.9)

In 2022, Library Information Technology Division has planned to set up a disaster recovery site (DR Site) (Document no. 15.10) as a backup site in case of data center system failure dues to unexpected event. The DR site will be operated and fully substituted the main site to continue all the services, include CUIR, seamlessly.

In addition, Office of Academic Resources has issued Business Continuity Plan (BCP) (Document no. 15.11) as guidelines for uninterruptedly operating and running the services in the event that the Office is encountering an emergency or critical situation.

Evidence links

15.1 Data Backup and Recovery Plan

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/backupplan.pdf

15.2 Data Migration Plan

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/migration.pdf

15.3 Computer System Maintenance Manual

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/systemmaintenance.pdf

15.4 Server Room Power Outage Checklist

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/poweroutage.pdf

15.5 OAIS Reference Model (ISO 14721)

http://www.oais.info/

15.6 Technology infrastructure of CUIR

https://cuir.car.chula.ac.th/dspace/sidebar/technical.html

15.7 DSpace Website

https://duraspace.org/dspace/

15.8 DSpace Help: a document for data submitters and users

http://cuir.car.chula.ac.th/help/index.html

15.9 Site Administrator Help: a document for DSpace administrator

http://cuir.car.chula.ac.th/help/site-admin.html

15.10 DR Site Project Plan

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/drsite.pdf

15.11 Business Continuity Plan (BCP) of the Office of Academic Resources, Chulalongkorn University

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/bcp.pdf

16. Security

R16. The technical infrastructure of the repository provides for protection of the facility and its data, products, services, and users.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Response:

The Library Information Technology Division maintains CUIR servers, network and security system in accordance with ISO 9001:2015. For the safety of IT network and infrastructure and to avoid the threats of cyberattack, all IT security procedures must comply with Chulalongkorn University IT Security Policy (Document no. 16.1) issued by the Office of Information Technology. The policy covers physical security of IT assets, preparation before network installation, data backup and recovery, computer network management, access control, and rules and regulations of network and system usage. The information security management system of the Office of Information Technology is certified by ISO/IEC 27001:2013.

To ensure the safety of computer network, the Library Information Technology Division has implemented tools to detect security threats as follows:

1. Network Management System for regularly monitoring suspicious activities in computer network.

2. Commix software for web vulnerability monitoring (runs every 6 months).

3. Firewall to filter inbound and outbound network traffic and protect computer network from suspicious activities.

The information about IT infrastructure is provided on Technical Information page of CUIR website (Document no. 16.2).

In addition, the Office of Information Technology always audits and monitors overall network traffic of the Office of Academic Resources. If any threats are detected, the Office of Academic Resources will be notified immediately.

The main server of CUIR is located at the Office of Academic Resources. Only the staff of Library Information Technology Division have authorization to access the server room. To emphasize the security of the site, CCTV cameras and fingerprint access control are implemented to monitor activities in the room and to prevent unauthorized staff to access the area.

CUIR has a data backup server that is located outside the building of the Office of Academic Resources. The data backup server is placed at data center of the Office of Information Technology located inside Mahitaladhibesra Building. The data center runs under ISO/IEC 27001:2013 standard to reduce the risk of data loss during backup and ensure data safety.

The authorizations and user accounts of CUIR staff in DSpace are also designated for CUIR system safety. The details of authorizations are indicated in User Authentication (Document no. 16.3).

Evidence links

16.1 Chulalongkorn University IT Security Policy

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/cuitsecurity.pdf

16.2 Technical Information of CUIR

https://cuir.car.chula.ac.th/dspace/sidebar/technical.html

16.3 User Authentication

https://cuir.car.chula.ac.th/dspace/sidebar/images/upload/userauthen.pdf

Reviewer Entry

Reviewer 1

Comments:
accept

Reviewer 2

Comments:
Accept.

APPLICANT FEEDBACK

Comments/feedback

These Requirements are not seen as final, and we value your input to improve the CoreTrustSeal certification procedure. Any comments on the quality of the Requirements, their relevance to your organization, or any other contribution, will be considered as part of future iterations.

Response:

Reviewer Entry

Reviewer 1

Comments:
Over the course of this process the application has improved considerably. A big thank you for the effort of providing so many English summary translations of supporting evidence. Some of the organisational requirements need attention in the coming year to increase some level 3 assessments to a 4, but overall my advice would be to approve.

Reviewer 2

Comments: