DAIS – Digital Archive of the Serbian Academy of Sciences and Arts

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:

Institutional repository, Other (Please describe below)

Brief Description of Repository

DAIS – Digital Archive of the Serbian Academy of Sciences and Arts[1] is a multi-institutional repository. It serves as the institutional repository of the Serbian Academy of Sciences and Arts (SASA) and seven institutes under its auspices.[2] DAIS is funded by SASA. The software platform has been developed and is hosted and maintained by the University of Belgrade Computer Centre (RCUB), which is an organizational unit of the University of Belgrade.[3]

DAIS is intended to serve as an exhaustive archive of born-digital and digitized resources created by SASA and its institutes since its establishment in the 1840s until today. The repository covers the following disciplines: linguistics, history, musicology, ethnology, social and cultural anthropology, archaeology, art history, geography, sociology, mathematics, natural sciences, engineering and biomedical sciences, and especially the broad multidisciplinary areas such as Slavic Studies, Balkan Studies and Byzantine Studies.

The supported content types include publications, including preprints, theses, working papers and technical reports, white papers and reports, datasets, conference presentations, conference posters, training materials, images, audio and video recordings, but the list is not exhaustive and other content types may also be considered for inclusion.[4,5]

DAIS is supplied with external applications for repository managers and general users (see R12).

DAIS is a data provider for a number of aggregators (see R13).

1 https://dais.sanu.ac.rs/

2 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Organization

3 http://bg.ac.rs/en/university/scheme.php

4 https://dais.sanu.ac.rs/contact

5 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_General_information#Supported_content_types

Brief Description of the Repository's Designated Community.

The Designated Community of DAIS includes the following user groups [1]:
Internal Users: members of the Serbian Academy of Sciences and Arts, SASA research support staff, and the researchers and research support staff of SASA institutes. They qualify for the status of registered users and can deposit their research outputs in the repository, browse, search and export the metadata, and, in most cases, download content files from all repository collections. Internal users are the primary Designated community and the repository has multiple functions for them (long-term archiving of research outputs, compliance with funder policies, dissemination tool, data source for further research).

Associates, i.e. local and international professional researchers who have joint projects with Internal Users. They can browse, search and export the metadata, download Open Access content from the repository, and access the collection dedicated to their project.

The Designated Community belongs to various disciplines (linguistics, history, musicology, ethnology, social and cultural anthropology, archaeology, art history, geography, sociology, mathematics, natural sciences, engineering and biomedical sciences, etc.) and their research data are in various formats and in various languages.

1 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_General_information#Users

Reviewer Entry
Reviewer 1

Comments:
ok

Reviewer 2

Comments:

Level of Curation Performed. Select all relevant types from:

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

Reviewer Entry
Reviewer 1

Comments:
ok

Reviewer 2

Comments:

Comments

All deposits are subject to basic curation and most deposits are also subject to enhanced curation. Enhanced curation is set as the standard to be achieved, which means that the items that currently fail to meet (poor metadata, low quality scans, no OCR performed) this standard will be subject to additional curation at a later stage (see R7 and R8) [1]. DAIS is supplied with additional tools that support enhanced curation (see R11).

1 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Workflows#Curation

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

DAIS has been developed and is hosted and maintained by the University of Belgrade Computer Centre (RCUB) based on an umbrella cooperation agreement between SASA and the University of Belgrade and a specific service agreement.[1]

RCUB developed the software solution by building on open-source software – DSpace.[2] Apart from an adjusted and localized version of DSpace, RCUB provides a set of in-house developed tools for repository managers and general users (see R12). RCUB is responsible for hosting, regular back-up, software upgrades and development, support for long-term preservation, and user support and training.

RCUB is also responsible for the implementation of interoperability standards and communication with major international infrastructures and aggregators (OpenAIRE, BASE, CORE, WorldCat, Unpaywall) and for onboarding the repository to the NI4OS-Europe Service Catalogue.

Technical support for the implementation of Handles is provided by GRNET, through the GRNET Persistent Identifiers Service.[3,4]

1 https://repowiki.rcub.bg.ac.rs/index.php/TRAP-RCUB_Repository_Services

2 https://duraspace.org/dspace/

3 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Organization

4 https://grnet.gr/en/services/computing-and-storage-services/pid-service/

Reviewer 2

Comments:

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

N/A

Other Relevant Information.

DAIS was established in 2017. In June 2022, its collections include more than 12000 items. Publications (monographs, journal articles, conference proceedings) prevail (ca. 90%), but it is also possible to find photographs (4%), PhD and MA theses (about 1%), posters, research data, leaflets, CD covers, etc.

About 80% of the content is related to Social Sciences and Humanities (SSH). Less than 1% [1] of repository items contain only metadata (without data files). About 90% of the content is Open Access.[2] Currently, the deposited items date back to the early 20th century and contain publications that are commonly used as reference sources of information in SSH (dictionaries, published field research reports, bibliographies, etc.) and are interesting to the general audience (esp. biographical, historical and ethnographic studies).

The content is multilingual: in about 15 languages with Serbian and English prevailing. For most items, basic English-language metadata are provided along with the metadata in the publication language.

Repository-related services are provided by a dedicated team at RCUB (TRAP-RCUB), which includes one development coordinator, two IT experts specializing in repository development, one administrative assistant, and four user support coordinators.[3] The dedicated local staff at SASA include 16 repository managers (nine librarians, six researchers and one research support staff member).[4]

DAIS is registered with re3data [5] and onboarded to the NI4OS-Europe Service Catalogue.[6]

1 http://dais.sanu.ac.rs/RM/

2 https://dais.sanu.ac.rs/discover?filtertype=rights&filter_relational_operator=equals&filter=openAccess

3 https://repowiki.rcub.bg.ac.rs/index.php/Team

4 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Helpdesk

5 https://www.re3data.org/repository/r3d100013425

6 https://catalogue.ni4os.eu/?_=/resources/9b7a3e3c-7160-4166-b13c-79c9d323cb6f

Comments:
ok

Reviewer 2

Comments:

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

Reviewer Entry

Reviewer 1

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

Reviewer 2

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

Response:

The aim of the repository is to provide (preferably open) access to publications and other research outputs resulting from the projects and other activities implemented by the SASA and its institutes. The repository implements standard protocols for metadata and data sharing and ensures long-term preservation.[1]

According to the Law on the Serbian Academy of Sciences and Arts, SASA is the national academy and the most prominent scholarly institution in Serbia. According to the law and Statute of SASA, the institutes are independent legal entities but their work is closely tied to the mission and the activities of SASA (e.g. joint projects, co-publishing projects, joint conferences, etc.). These legal documents are not available in English but the most important provisions are summarized in the public wiki. [2] RCUB (as the Outsource Partner) is an organizational unit of the University of Belgrade.[3] In line with their mission and the role of publicly funded institutions, SASA, the institutes, and RCUB seek to provide reliable and secure archiving for diverse outputs of SASA and its institutes, while ensuring an easy access, long-term preservation, and widest dissemination of the repository content.

DAIS responds to the requirements of national and international funding bodies to share the outputs of publicly funded

research. DAIS is compliant to the Open Science Platform of the Ministry of Education, Science and Technological Development of the Republic of Serbia, which requires institutions to deposit in repositories their publicly funded publications and make them Open Access.[4]

The mission of DAIS is also supported by the institutional Open Science policies of two institutes (Institute for Balkan Studies SASA [5] and Institute of Technical Sciences of SASA [6]).

1 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Mission

2 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Organization#Partners

3 http://www.bg.ac.rs/en/members/centers/computer.php

4 http://roarmap.eprints.org/1959/

5 http://roarmap.eprints.org/3911/

6 http://roarmap.eprints.org/1929/

Reviewer Entry

Reviewer 1

Comments:
ok

Reviewer 2

Comments:

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

Reviewer Entry

Reviewer 1

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

Reviewer 2

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

Response:

Data access and use in DAIS are defined in the repository policy, under Access Policy [1], and in the repository documentation [2]. Access is defined at two levels: the level of metadata and the level of data. Different access and reuse policies apply to metadata and data files. Metadata are available to anyone, under the CC0 licence, whereas the access to data is defined for each item individually (each item is individually tagged with appropriate licence). Access and licence information are mandatory fields. Machine readable Creative Commons licences are integrated into the platform, but All rights reserved is also an option.

By depositing their data, the depositors agree to give to the Serbian Academy of Sciences and Arts only the non-exclusive right to preserve and disseminate data and they express their consent by checking that they accept the Distribution license.[3] Data depositors are Internal Users and Associates of the repository who have valid credentials, and they are legally bound by the regulations imposed by their institutions and funders. Data depositors are held responsible for compliance with any national or international legal regulations. Access to restricted content is reserved to those who are granted credentials and they are legally bound by the regulations imposed by their institutions and funders.

All copyrights over deposited data are retained by copyright holders, who are free to choose a license during the ingest phase, if there are no other legal limitations.[4] The Serbian Academy of Sciences and Arts does not preclude the publishing of the deposited data in journals, monographs, or in other repositories. The repository does not contain sensitive data.

If the deposited resource has already been published, copyright terms and other legal restrictions, such as publishers' embargo periods, must be respected. Any copyright violations are entirely the responsibility of depositors. During the verification step, repository managers will take reasonable measures to check the appropriateness of the licenses assigned by depositors and in case of apparent non-compliance, they may not accept a submission.[5] In case of proven copyright violation in data already published in the repository, repository managers will either limit access to the disputed content or withdraw it from the repository.[6]

In case non-compliance with license conditions or terms of use by a registered user is identified, the repository manager will try to rectify the situation through communication with the user. If misuse is repeated, such a user may be denied further access to the repository. As the last resort, legal action can be taken. In case Open Access content is used and distributed in breach of the license (e.g. distributed commercially despite a non-commercial license), it may be impossible to identify the user involved in license infringement. In such cases, reasonable measures, including legal action, will be taken to stop and mitigate unauthorized content distribution.[2]

Data will be made available to the public, except when forbidden by contracts, rights, or when embargoed for a limited time. Associates and external users may submit a request to access the restricted content. Access requests are resolved at the discretion of the content owner, in line with copyright, data protection and other relevant legislation.[7]

1 https://dais.sanu.ac.rs/contact

2

https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_General_information#Rights

3 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Distribution_Licence

4 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Workflows#Rights_and_licences

5 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Workflows#Reviewing_submissions

6 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Item_lifecycle#Withdrawing_a_published_item

7 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_General_information#Is_it_possible_to_gain_access_to_restricted_content.3F

Reviewer Entry

Reviewer 1

Comments:
ok

Reviewer 2

Comments:

3. Continuity of access

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

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
accept

Reviewer 2

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

Response:

DAIS is funded by the Serbian Academy of Sciences and Arts (SASA) and the funding is not time-limited. Thanks to RCUB's business model, maintenance and development costs are considerably low and could be sustained over a longer period even in case of extreme budget cuts. Even if funding ceased, it would be possible to keep the repository running for a substantial time – at least five years, which is the period covered by the Preservation plan [1].

All repository managers are already employed on regular contracts at SASA and SASA institutes and their involvement with the repository does not incur additional costs for their institutions. RCUB does not plan to change the business model and it is unlikely that the public funding of SASA would cease. At the same time, the current level of funding is sufficient to ensure maintenance, development, security and preservation.[1]

Furthermore, the SLA with RCUB foresees Post-Cancellation Service Time, i.e. a period of time after the termination of SLA during which the repository will be available with the minimum maintenance services provided.[2] Accordingly, even in case of funding disruption, the services will be kept running, providing sufficient time to find a sustainable solution.

1 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Preservation_plan#Sustainability_plans_and_funding
2 https://repowiki.rcub.bg.ac.rs/index.php/Policy_for_Transparent_Access_to_Research_Infrastructures_at_the_Computer_Centre_of_the_University_of_Belgrade:_TRAP-RCUB_IT_solution_and_organizational_model_for_the_implementation_of_institutional_or_thematic_repositories

Reviewer Entry
Reviewer 1
Comments:
ok
Reviewer 2
Comments:

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

Reviewer Entry

Reviewer 1

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

Reviewer 2

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

Response:

In order to be able to submit content to the repository, users must have valid credentials, which can be granted only by the participating institutions. During the submission process, contributors must confirm that they have the right to distribute the data and the right to grant the repository permission to distribute the data on their behalf [1]. Before depositing research data and similar materials, depositors are required to clear possible copyright, privacy, ethical, data protection and other issues with their institutions, collaborators, funders and all relevant stakeholders.

The submissions are reviewed/curated by repository managers. As most submissions are publications, it is usually not difficult to establish their copyright status. If the available information is insufficient or unclear, the repository manager will request additional information from the submitter and will not approve the submission until the status is cleared. The same applies to other research outputs. Access to all items that should not be publicly available will be restricted. DSpace supports sophisticated access control [2], while repository managers are trained and authorized by the participating institutions to take appropriate measures to control access to protected data. Requests to access items that are not publicly available are not resolved at the repository level. Such requests are forwarded to authors, copyright holders, or project managers, which means that a request to access copyrighted, potentially sensitive or protected data would have to be processed by relevant bodies in the institution and, if granted, access would not be ensured through the repository, but through other channels.[3]

The greatest part of the content is Open Access. Some items must remain restricted due to copyright and other legal limitations and some will be publicly available only after the expiration of an embargo period imposed by the publisher. Public availability of an item is indicated by a prominent orange Open Access logo on the item view page. The licence assigned to a repository item is clearly indicated on the item view page using an interactive licence icon that links to the licence page.[4]

The repository currently does not contain sensitive data. Two participating institutions produce research data that could be considered sensitive (recorded interviews, survey data). They are still in the process of developing institutional regulations and adopting good practice, and they do not plan to deposit these data in DAIS until this process is finished. In case such a need arises, repository managers have sufficient expertise to provide advice on data anonymization and data protection.[5]

1 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Distribution_Licence
2 https://wiki.lyrasis.org/display/DSDOC5x/Functional+Overview#FunctionalOverview-AccessControl

3 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_General_information#Is_it_possible_to_gain_access_to_restricted_content.3F

4 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_General_information#Access_and_licences

5 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_General_information#Sensitive_data

Reviewer Entry

Reviewer 1

Comments:
ok

Reviewer 2

Comments:

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:

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
accept

Reviewer 2

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

Response:

DAIS is owned by the Serbian Academy of Sciences and Arts (SASA) and its institutes, and is funded by SASA. Serbian Academy of Sciences and Arts is a national academy operating under the provisions of the Law on the Serbian Academy of Sciences and Arts, which defines it as a legal entity and the "highest scientific and art institution in the Republic of Serbia". SASA's main funding comes directly from the Serbian Government (Article 43 of the Law on the Serbian

Academy of Sciences and Arts) and is not time-limited. SASA institutes have the status of research institutes and are funded through the national ministry responsible for science in accordance with the Law on Science and Research (Article 108). The English translation of the laws is not available but a summary of the provisions relating to SASA and SASA institutes is given in [1] Although funding levels may fluctuate, it is unlikely that either SASA or its institutes will cease operations.

DAIS is hosted and maintained by RCUB, which is an organizational unit of the University of Belgrade and the central infrastructure and computer service provider for the University's faculties and institutes, as well as for the network of publicly funded research organizations in Serbia.[2,3] It specializes in information (establishment of information systems and software development) and communication technologies (establishment of computer networks and the development of internet-based infrastructure and communication services) and is publicly funded. The services related to establishing and maintaining institutional repositories are provided on a non-profit basis and service fees and their use are regulated by the Policy for Transparent Access to Research Infrastructures at the University of Belgrade Computer Centre [4] and the service agreement between SASA and RCUB.

SASA and its institutes are responsible for defining the content policy and organization (collection tree) within their communities, and content access and sharing policies. Deposition and curation rules, as well as the overall repository policy, including the metadata policy, are agreed at the repository level.

RCUB is responsible for hosting, regular back-up, software upgrades and development, preservation, user support and training, and the implementation of interoperability standards and communication with major international infrastructures and aggregators (OpenAIRE, BASE, CORE, WorldCat, Unpaywall). RCUB has appointed a dedicated team (TRAP-RCUB) responsible for repository development. The team also serves as a steering body [5]. Repository-related services are provided by a dedicated team at RCUB (TRAP-RCUB), which includes one development coordinator, two IT experts specializing in repository development, four user support coordinators, and an administrative assistant. Team members have been involved in European infrastructure projects (OpenAIRE, NI4OS-Europe, EOSC Future) and are closely familiar with relevant guidelines and interoperability requirements, especially in the context of EOSC. If necessary, the team's operations are supported by other RCUB staff members.[6]

The dedicated local staff at SASA include 16 repository managers (nine librarians, six researchers and one research support staff member).[7] Repository-related activities are a regular part of librarians' work. In three institutes, researchers are involved to facilitate the process of repository building. Training and support are permanently provided by the RCUB user support coordinator.

As explained under R3, maintenance and development costs are considerably low and could be sustained over a longer period even in case of extreme budget cuts.

1 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Organization#Partners

2 http://bg.ac.rs/files/en/university/StatutUni_eng.pdf

3 http://bg.ac.rs/en/university/scheme.php

4 https://repowiki.rcub.bg.ac.rs/index.php/Policy_for_Transparent_Access_to_Research_Infrastructures_at_the_Computer_Centre_of_the_University_of_Belgrade:_TRAP-RCUB_IT_solution_and_organizational_model_for_the_implementation_of_institutional_or_thematic_repositories

5 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Or

ganization

6 https://repowiki.rcub.bg.ac.rs/index.php/Team

7 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Hel
pdesk

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:

4 – The guideline has been fully implemented in the repository

Response:

The Repository Development Team (TRAP-RCUB) appointed by RCUB, responsible for the development of DAIS, has constant dialogue with national and international communities in the fields of data archiving and dissemination. RCUB is a member of the Academic Network of Serbia, Serbia's national research and education network (NREN), and it played a fundamental role in its establishment.[1] RCUB is involved in international projects, which offer many opportunities for knowledge exchange and access to expert advice. RCUB has participated in projects related to the European Open Science Cloud (EOSC): OpenAIRE Advance and National Initiatives for Open Science – NI4OS-Europe.[2] Technical support and guidance are provided to the development team by the OpenAIRE, BASE and CORE teams, either through

e-mail correspondence or through dedicated online meetings. These collaborations make it possible to assess planned upgrades and improvements from the perspective of aggregators and to modify them towards achieving an optimal interoperability. RCUB also represents the University of Belgrade in the Confederation of Open Access Repositories (COAR) [3] and one team member has joined the COAR Metadata Working Group.

The Repository Development Team (TRAP-RCUB) also serves as a steering body. TRAP-RCUB members collect and evaluate information about new developments in the area and they also receive inputs from the Designated Community through formal and informal channels. Development plans are devised in collaboration with repository managers. The team uses Jira software [4], issue tracking and agile project management tool, and Confluence [5], collaboration software (both developed by Atlassian), to keep track of resources that are potentially relevant for further development. The steering group meets at least once a month to discuss further actions. Decisions are taken by majority vote and are based on a feasibility assessment, paying special attention to the time (hours) required to develop a feature, the number of users benefiting from the action, and the global developments in the area (e.g. standards or expected technical improvements).[6]

The Repository Development Team members regularly attend conferences organized by the projects in which RCUB is a partner [7], especially OpenAIRE (Open Science FAIR), GÉANT (TNC). They have also attended conferences organized by the EOSC Secretariat (EOSC Symposium, EOSC-Hub Week) and the projects related to the European Open Science Cloud (e.g. FAIRsFAIR Week, International FAIR Convergence Symposium), as well as webinars organized by the EOSC Regional Projects (especially National Initiatives for Open Science in Europe – NI4OS-Europe (H2020 no. 857645), in which RCUB is a partner), Social Sciences and Humanities Open Cloud and FAIRsFAIR, etc. Team members responsible for user support and local repository managers attend conferences focusing on repository operation and interoperability, e.g. Open Repositories.

Members of DAIS's Designated Community have the possibility to send feedback by e-mail or through the repository feedback form, available via a link on every page, in the footer [8]. TRAP-RCUB can also be contacted by phone during office hours. [9] Most commonly, feedback is provided either through repository managers or by contacting the TRAP-RCUB user support coordinator by e-mail.[10]

Furthermore, TRAP-RCUB regularly organizes in-person and online training for internal repository users and repository managers and presents its activities at conferences or public webinars.

1 https://www.amres.ac.rs/en/amres/chronological-development
2 https://www.rcub.bg.ac.rs/en/projekti
3 https://www.coar-repositories.org/members/
4 https://www.atlassian.com/software/jira
5 https://www.atlassian.com/software/confluence
6 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Organization
7 https://www.rcub.bg.ac.rs/en/projekti.html

8 https://dais.sanu.ac.rs

9 https://repowiki.rcub.bg.ac.rs/index.php/Helpdesk

10
https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Hel
pdesk

Reviewer Entry

Reviewer 1

Comments:
ok

Reviewer 2

Comments:

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

Reviewer Entry

Reviewer 1

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

Reviewer 2

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

Response:

Detailed information is provided in [1].

Only registered users can deposit items and participating institutions are directly responsible for verifying the user identity.

Provenance information is saved for each item. DSpace supports sophisticated access control.[2]

All submissions are reviewed by qualified staff to ensure the metadata quality and completeness, the compliance of data formats, best practice and preservation requirements, data integrity and quality, and resolve potential legal issues.[3] Once the item is approved and published, only repository managers are able to change the metadata and bitstreams. It is possible to correct and add the metadata in published items but bitstreams can be edited or replaced only exceptionally.[4] If necessary, users may deposit a new version. Relations between versions are established in the metadata (e.g. [5]).

DSpace ensures the integrity of both data and metadata over time regardless of possible changes in the physical storage media. Checksum validation is performed upon upload. To verify that a digital object has not been altered or corrupted, the repository periodically checks the integrity of the data. The checks include the verification of md5 checksums and metadata integrity, and testing that URLs are working.[6,7]

All deposits are subject to basic curation and most deposits are also subject to enhanced curation. Enhanced curation is set as the standard to be achieved, which means that the items that currently fail to meet high standards (due to poor metadata, missing files, low quality scans, no OCR performed, etc.) will be subject to additional curation at a later stage. Also, scanned text documents are gradually replaced with OCRed files. If necessary, curation may involve conversion to open or more sustainable file formats suitable for long-term preservation.[8]

1 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Item_lifecycle

2 https://wiki.lyrasis.org/display/DSDOC5x/Functional+Overview#FunctionalOverview-AccessControl

3 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Workflows#Reviewing_submissions

4 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Item_lifecycle#Modifying_a_Published_item

5 https://dais.sanu.ac.rs/handle/123456789/11757
6 https://wiki.lyrasis.org/display/DSDOC5x/Functional+Overview#FunctionalOverview-DigitalPreservation
7 https://wiki.lyrasis.org/display/DSDOC5x/Validating+CheckSums+of+Bitstreams
8 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Workflows#Curation

Reviewer Entry

Reviewer 1

Comments:
ok

Reviewer 2

Comments:

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

Reviewer Entry

Reviewer 1

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

Reviewer 2

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

Response:

Detailed information is provided in [1].

According to the Content policy [2], The following content categories are considered eligible for inclusion in DAIS:

(1) publications published by SASA and its institutes, current and historical, born-digital and digitized;

(2) publications authored by SASA members and the staff of SASA institutes;

(3) research data and any other research outputs resulting from research projects implemented by SASA and SASA institutes.

Participating institutions are free to define the scope of their collections. In case a resource should belong to multiple collections (e.g. a book co-published by two participating institutions), it will still be deposited only once and will be mapped into other collections (mapping is supported by DSpace).[3] Submissions that do not fall within the scope of the Content policy are not accepted.

Although the software platform supports all file formats, guidelines regarding the preferred file formats are provided. It is also recommended to use open formats.[4]

The same submission interface is used for all submissions and it currently efficiently meets user needs. If a need arises to include additional fields, the submission form can easily be adjusted by the repository development team. The submission interface is separated into several steps. Each step has a set of mandatory fields and contributors are not allowed to move to the next step unless all required fields are filled in. The list of metadata fields is available both in user manuals for the members of the Designated Community and repository managers and in the public wiki. In order to ensure a consistent

quality of metadata, detailed guidance for metadata input (formats, the use of controlled terms, etc.) is provided in the user manuals for repository managers and end-users, and an outline is also given in the public wiki.[5]

The quality and completeness of the metadata are checked by repository managers after submission and before approval. During this step, repository managers may also add and correct metadata, establish links between different versions (if applicable). The general recommendation is to provide as detailed metadata as possible. Repository managers may also convert files to a preferred format, if necessary. In case a submission is missing a bitstream and vital metadata without which it could not be properly identified, it is returned via the editorial workflow for further improvements and re-submission.[6,7] The issue of metadata insufficient for long-term preservation is resolved through enhanced curation and DAIS is equipped with tools that can support advanced curation procedures.[8]

In order to mitigate the risk of format obsolescence, file formats that have reasonable chances of remaining usable over a considerably long period of time are selected: these are the preferred formats and a limited number of accepted formats. The list of preferred and acceptable formats will be periodically revised to include new formats and remove the ones that are at risk of becoming obsolete. The repository has the right to convert file formats if this is necessary to ensure permanent access to a resource.[9]

Published items can only exceptionally be removed from the repository. In this case, its PID (Handle) and URL will be preserved permanently.[10]

1
https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Preservation_plan
2
https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_General_information#Content_policy_and_organization
3 https://wiki.lyrasis.org/display/DSDOC5x/Mapping+Items
4
https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_General_information#Preferred_file_formats
5 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Metadata
6 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Workflows#Reviewing_submissions
7 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Preservation_plan#Ingest_function
8 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Workflows#Curation
9 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Preservation_plan#Content_formats

Reviewer Entry

Reviewer 1

Comments:
ok

Reviewer 2

Comments:

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

Reviewer Entry

Reviewer 1

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

Reviewer 2

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

Response:

The operation of DAIS is guided by the Preservation plan. [1]

In line with the SLA, DAIS is hosted on a dedicated infrastructure at RCUB, which provides storage, backup, and disaster recovery for the data, repository software, support for long-term preservation, and additional services and tools.[2] Backups are regularly performed and replicated at a secondary location (see R16). Storage procedures are described in detail in the internal documentation on Confluence. DSpace storage layer is explained in DSpace documentation.[3]

In the ingestion phase, Submission Information Packages (metadata and files) are received for curation and assigned to a task pool, where repository managers can curate them. Ingestion is usually done via a web-based interface. Only

authenticated users can submit content in the repository. During the Ingest phase, they must accept the terms of the Distribution license to ensure the availability of the submission. Some file formats, such as PDF, are automatically verified when they are filtered into plain text for search indexing and when their thumbnails are generated. Should this procedure fail, the file that caused the failure is then manually inspected by the repository manager, who replaces it with the valid one.[4]

The purpose of archival storage is to ensure that the package resulting from the Ingest phase remains unchanged and accessible. The Archival Information Packages resulting from the Ingest phase are added to the permanent storage facility and the management of the storing is monitored. In DSpace, AIPs are only generated for objects which are currently in the "in archive" state. Uncompleted submissions are not described in AIPs, which means that they cannot be restored after a disaster. Permanently removed objects will no longer be available as AIPs after removal. That is why permanent removal is allowed only exceptionally. Withdrawn objects will still be available as AIPs.[5]

The Access function ensures that Dissemination Information Packages (DIP) are visible to Consumers. DIPs are derived from AIPs: the data are the same as in AIPs, but the Deposition licence, and the TXT file with extracted text are not included in DIPs.[1]

The administration function manages the day-to-day operations of the Repository and coordinates all the other functions. Actions in the Administration phase include automated checks of data integrity, namely the verification of md5 checksums and metadata integrity, and testing that URLs are working. The generated reports are helpful in the identification of possible issues relating to long-term preservation.[1]

All backups follow standardized backup recommendations, including hashes/checksums for ensuring file integrity and automatic monitoring tools to ensure functionality on various levels. For more details, see R15 and R16.

1 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Preservation_plan
2 https://repowiki.rcub.bg.ac.rs/index.php/TRAP-RCUB_Repository_Services
3 https://wiki.lyrasis.org/display/DSDOC5x/Storage+Layer
4 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Workflows
5 https://wiki.lyrasis.org/display/DSDOC5x/DSpace+AIP+Format

Reviewer Entry

Reviewer 1

Comments:
ok

Reviewer 2

Comments:

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 approach to preservation used in DAIS is described in the Preservation plan.[1] The Preservation Plan outlines the principles guiding the main activities of the Serbian Academy of Sciences and Arts (SASA), SASA institutes (repository owners or participating institutions) and the University of Belgrade Computer Centre (RCUB, service provider) regarding sustainable preservation of and access to the digital content of DAIS - Digital Archive of the Serbian Academy of Sciences and Arts. This Plan follows guidelines and standards for digital preservation, such as the FAIR principles, the OAIS Reference Model and CoreTrustSeal. It has been developed by the repository development team at RCUB in collaboration with the representatives of the SASA and its institutes. The Plan is subject to revision in five-year intervals.

The Plan aims at ensuring that the digital content in the Repository remains accessible, understandable, and sufficiently usable over the long term. Efforts are also made to mitigate the risk of deterioration, damage, data loss and corruption, as well as the obsolescence of file formats, storage or dissemination means.

The Plan contains:
- Preservation Strategy, as a general framework, and
- Preservation Policy, detailing the implementation of the principles defined in the Preservation Strategy."[1]

Although the architecture of DSpace does not directly correspond to the OAIS model, it meets the basic requirements.[2] During the Ingest phase, depositors use an interface divided into logical blocks. Depositors are also required to provide at least the basic metadata (mandatory fields) and copyright information, choose an appropriate license for the deposited resource, and accept the Distribution license. Efforts are made to accept only the preferred file formats, suitable for long-term preservation.

As this is not always possible, the following measures are taken to ensure long-term preservation:
- PDF variants not compatible with the PDF/A standard are accepted and will be converted to PDF/A by the repository development team;
- in case of other non-preferred formats, repository managers require depositors to complete file conversion before record validation;
- in case data that should be included in the repository (in line with the Content policy) has already been published elsewhere in a non-preferred format (other than PDF), it is archived in the repository as such; whenever possible, conversion to a preferred format will be done. In such cases, the Repository cannot warrant long-term preservation.[1]
The submitted information is further verified by repository managers during the review step.[3]

The purpose of archival storage is to ensure that the package resulting from the ingest phase remains unchanged and accessible. The AIPs resulting from the ingest phase are added to the permanent storage facility and the management of the storing is monitored. Actions related to the Archival storage phase are covered under R2 and R7. Curation actions taken with the aim of improving the compliance with standards are also relevant for long-term preservation.[4]

The Data management function involves the maintenance of the databases of descriptive metadata and the management of administrative metadata. Actions related to the Data management phase are described under R7 and R12. The Preservation policy of the repository discourages data and metadata removal.[1]

Actions in the Administration phase include automated checks of data integrity, namely the verification of md5 checksums and metadata integrity, and testing that URLs are working.[1]

Actions related to the Access phase are described under R2, R4 and R13.
Depositors grant to the repository the right to copy, transform, store and provide access to the data by accepting the Distribution licence.[5] This makes it possible to take all the necessary actions towards ensuring preservation, including format conversion (if necessary to ensure the continuity of access). Responsibilities are clearly defined in the Distribution license and the Preservation plan.

1 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Preservation_plan
2 https://wiki.lyrasis.org/display/DSDOC5x/Functional+Overview#FunctionalOverview-DigitalPreservation
3 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Workflows#Reviewing_submissions
4 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Workflows#Curation
5 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Distribution_Licence

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:

4 – The guideline has been fully implemented in the repository

Response:

The submission process in DAIS, which relies on a well-organized submission form, supplied with suggestions and hints in tooltips, makes it easy for contributors to provide high-quality metadata. Along with a detailed user manual [1], a summary of the metadata is provided [2].

The following measures are taken to ensure sufficient completeness and quality of metadata:
(1) mandatory fields in the submission process (without which the submission cannot be completed);
(2) some fields are filled in automatically (e.g. URI, accession date, resource URL);
(3) curation and approval by a repository manager;
(4) enhanced curation.
If a submission fails to meet the required standards, the repository manager may return it to the submitter or correct and add the metadata.[4]

A set of customized external tools have been developed to enable enhanced curation and help improve metadata quality:

(1) Ellena (https://dais.sanu.ac.rs/Ellena/), which enables metadata normalization, metadata import (in Endnote XML and RIS formats), massive corrections of metadata;[5]

(2) NomadLite (https://dais.sanu.ac.rs/NomadLite/), which uses text to retrieve funding information, and APIs to find Web of Science and Scopus IDs; [6]

(3) ReportMaker (https://dais.sanu.ac.rs/RM), which discovers missing metadata by running predefined searches.[7]

When publications are deposited in the repository, additional documentation is normally not required. For other data types, depositors should provide additional documentation that may be necessary to understand, interpret and reuse data whenever data is not self-explaining. Relevant information should be placed in a README.txt file. In case the README file is incomplete or insufficiently detailed, the repository manager may edit it or require the depositor to provide additional information when reviewing the submission. README files may be subject to enhanced curation.[8]

DAIS is harvested by a number of aggregators (see R13). Their feedback and tools (OpenAIRE and CORE dashboards) help the development team identify metadata issues.

When necessary, automated maintenance procedures are set up to resolve some issues. For example, some users do not follow instructions and use Latin characters with diacritics or Cyrillic characters in file names. Although this does not cause any problems locally, it has been observed that such items are not properly harvested by some aggregators. To prevent this, file renaming has been included in automated maintenance procedures.

All members of the Designated Community are able to submit comments, suggestions or requests to correct metadata and data through the feedback form available via a link in the footer of every page.[9]

For all journal articles that have a CrossRef DOI and are indexed in the Dimensions citation counts in this citation database are displayed on metadata pages in the form of a widget, powered by an API, making it easy to access information about publications referencing the publication in the repository. Similar APIs are implemented to display citation counts from Scopus and the Web of Science citation databases.[10] In order to enable this, repository managers add Web of Science and Scopus IDs in appropriate metadata fields. This is facilitated by the external application NomadLite.

1 https://drive.google.com/file/d/1teZfwDlznXvsSwBBqZvLUziI7ryNDcdU/view

2 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Metadata

3 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Workflows#Curation

4 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Workflows#Reviewing_submissions

5 https://repowiki.rcub.bg.ac.rs/index.php/Ellena

6 https://repowiki.rcub.bg.ac.rs/index.php/NomadLite

7 https://dais.sanu.ac.rs/RM/

8 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Workflows#Documentation

9 https://dais.sanu.ac.rs

10 https://hdl.handle.net/21.15107/rcub_dais_10293

Reviewer Entry

Reviewer 1

Comments:
ok

Reviewer 2

Comments:

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

Reviewer Entry

Reviewer 1

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

Reviewer 2

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

Response:

Information on the submission and curation workflows can be found here: [1].

The workflow includes:

Submission:

- Creating metadata and uploading data; metadata are submitted in several steps through a submission form. Each step has a set of mandatory fields.
- Specifying a user license
- Uploading file(s)
- Accepting the Distribution license
- Metadata may also be imported into the repository using the external service Ellena (MultiLoad module). MultiLoad supports metadata import via CrossRef and Dissem.in, as well as massive metadata import in the EndNote XML and RIS formats. Import is performed by a repository manager.
- Basic curation: A repository manager assesses the metadata in accordance with the guidelines and best practices, corrects and amends the metadata, or returns the submission to the depositor. Detailed instructions regarding metadata are provided in the manual for repository managers and an outline is also available in the public wiki.[2] A repository manager may also convert data files to a preferred format.[3] In case of PDFs, which account for more than 90% of the repository content, a repository manager would normally do this independently, but for other data formats this would be done in coordination with the depositor and the institution's management to avoid complications that may arise from insufficiently defined institutional data policies.

Publishing the submission
- The metadata are made publicly accessible on the DSpace platform, whereas access to data may be restricted, depending on the specified license
- The metadata/data are made available through other interfaces (OAI-PMH and meta tags)
Enhanced curation: All submissions are subject to basic curation and most submissions are also subject to enhanced curation.

Curation tasks performed by repository managers on a regular basis include:
- normalization of authors' and contributors' names via Ellena by assigning ORCIDs (if available) or internal identifiers; the repository development team has developed an alerting service that informs repository managers about newly registered ORCIDs for researchers from their institutions;
- adding missing funding information retrieved by NomadLite;
- adding Web of Science and Scopus identifiers retrieved by NomadLite;
- mapping "shared" items (e.g. a book co-published by two participating institutions, or research outputs resulting from joint research conducted by multiple participating institutions) into multiple collections.
After a submission is approved, a set of automated actions are launched during which readable text from data files (for PDFs) is extracted into a TXT file and included in the search index, and a thumbnail for the landing page is generated (for PDFs and image files). The repository currently does not perform OCR, nor does it automatically generate front pages. The development of tools for embedding metadata in PDF files and converting PDFs to PDF/A is planned. In case of publications, repository managers may scan and add missing pages and add a custom front page containing information necessary to identify the publication if this information is not contained in the submitted file. Repository managers may also edit incomplete README files (where applicable) or convert images to a recommended format. As for other data types, if additional data curation is required or if deposits contain sensitive data, repository managers would coordinate

their actions with depositors and the institution's management and follow the procedure for handling sensitive data.[4][5]

Workflows are subject to change based on inputs from repository managers and a feasibility assessment by the development team. Changes are usually undertaken with the aim of addressing potential security issues, complying with legal requirements, best practice or technical requirements set by aggregators, and in response to user needs. DAIS has a defined procedure for change management and documenting changes.[6]

1 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Workflows

2 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Metadata

3 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_General_information#Preferred_file_formats

4 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Workflows#Curation

5 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Workflows#Handling_sensitive_data

6 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Workflows#Change_management

Reviewer Entry

Reviewer 1

Comments:
ok

Reviewer 2

Comments:

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
accept

Reviewer 2

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

Response:

The Repository is powered by DSpace and is compliant to the OpenAIRE Repository Guidelines v3.[1] Metadata conform to the Dublin Core Standard.[2]

DAIS supports browsing (using the collection tree and filter facets) and searching. Both basic and advanced search are enabled.[3] Apart from metadata, the search index includes the full text of readable text documents. As the default DSpace search feature does not entirely meet user expectations, some actions have been taken to improve search efficiency.[4]

Also, the external application APP facilitates the searching and browsing of authors and funding information.[5]

All items in DAIS are supplied with unique and persistent Handle identifiers, i.e. permanent identifiers in the form of URLs that will always point to data landing pages. In case an item has other persistent identifiers (such as DOI), they will also be included in the metadata.

DAIS is registered with re3data[6], OpenDOAR[7] and ROAR[8] and onboarded to the NI4OS-Europe Service Catalogue[9].

Metadata are exposed and can be harvested through a public OAI-PMH endpoint. [10] The metadata policy encourages harvesting: metadata are distributed under the CC0 license. [2] The repository is currently harvested by OpenAIRE [11], BASE [12], CORE [13], WorldCat [14] and Unpaywall [15]. The RCUB development team uses the OpenAIRE Provide service and CORE Dashboard to monitor harvesting efficiency. Resolving potential harvesting issues has a high priority.

The Repository uses meta tags optimized for Google Scholar and reference managers.

Data citation is supported both on item view pages [17] and through the external application APP, where BibTeX, RIS, Vancouver and Chicago citations are provided for all items. All users can export citations.[18]

1 https://guidelines.openaire.eu/en/latest/literature/index_guidelines-lit_v3.html

2 https://dais.sanu.ac.rs/contact

3 https://dais.sanu.ac.rs/discover

4 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_General_information#Browsing_and_searching

5 https://dais.sanu.ac.rs/APP

6 https://www.re3data.org/repository/r3d100013425

7 http://v2.sherpa.ac.uk/id/repository/4006

8 http://roar.eprints.org/14158/

9 https://catalogue.ni4os.eu/?_=/resources/9b7a3e3c-7160-4166-b13c-79c9d323cb6f

10 https://dais.sanu.ac.rs/oai

11 https://explore.openaire.eu/search/dataprovider?datasourceId=openaire____::9689110ea9ceb0be3cf0606bb641af74

12 https://www.base-search.net/Search/Results?q=dccoll:ftserbianacadais&refid=dctableen

13 https://core.ac.uk/search?q=repositories.id:(4824)

14 https://www.worldcat.org/search?q=on%3ADGCNT+http%3A%2F%2Fdais.sanu.ac.rs%2Foai%2F&qt=results_page

15 http://unpaywall.org/sources/repository/96891e107a54f59202f

16 https://dais.sanu.ac.rs/handle/123456789/12190

17 https://dais.sanu.ac.rs/APP/faces/publications.xhtml?jftfdi=&jffi=publications

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:

4 – The guideline has been fully implemented in the repository

Response:

It is required that a set of metadata are provided before a submission is published.[1] The descriptive metadata must be sufficient to ensure the identification of the submitted resource. Also, access level and the license information are displayed on item view pages. The aim is to provide as rich metadata as possible. This is achieved through enhanced curation and tools and services have been developed to facilitate this (See R11).

Currently, only the Dublin Core Metadata standard is supported [2] because this is the format required by the aggregators harvesting the repository. If such a need arises, other formats may also be supported.

Depositors are strongly advised to use standard formats that are currently considered suitable for long-term preservation.[3] At the moment, PDF prevails and this is the format that is commonly used by the Designated Community. The Distribution license allows for format conversion in case the current formats become unsustainable.[4]

1 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Metadata
2 http://dais.sanu.ac.rs/oai
3 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Preservation_plan#Content_formats
4 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Distribution_Licence

Reviewer Entry

Reviewer 1

Comments:
ok

Reviewer 2

Comments:

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

Reviewer 1

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

Reviewer 2

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

Response:

The repository rests on DSpace [1], which meets the basic OAIS requirements [2,3]. It is compliant with open standards and follows the OpenAIRE Guidelines for Literature Repositories 3.0.[4] DSpace is a commonly used repository software.[5]

In DAIS, the core DSpace code and Java code have not been modified in order to make the implementation of DSpace patches, upgrades and updates easier. Major modifications have been made to the configuration, localization files and the XMLUI configuration. The system has been enriched with additional applications (See R11).

DAIS is hosted by RCUB on a virtual machine in a Proxmox VE environment with a CentOS operating system. Hardware resources are incrementally adjusted to the database size and the number of visitors. The repository database is stored on a PostgreSQL 9.5 server inside the production-level virtual machine. Database export is enabled.[6] The repository is available 24/7. Monitoring mechanisms, remote services and staff are allocated to ensure this.[7] Along with the internal monitoring, external monitoring is enabled through the ARGO service, jointly developed and maintained by CNRS, GRNET and SRCE, co-funded by EOSC-Hub project (Horizon 2020).[8] The repository provides access to web services through a shared 1 Gbps internet connection supported by the Academic Network of the Republic of Serbia (AMRES). This fully meets the requirements of the Designated Community.[7]

The source code of the customized version of DSpace and all additional applications is stored on a local Git server accessible only to the repository development team. Detailed documentation about software, installation, configuration, maintenance, and troubleshooting is available on Confluence, accessible only to the repository development team through the intranet and VPN. This enables an easy replication of procedures and ensures continuity in case of staff changes. The content of the documentation is briefly described in the public wiki.[9]

Backups are regularly performed at the virtual machine level. Both live instances and their passive backups reside on hardware-enabled and redundant RAID setups. The monitoring and alerting service MONIT, maintained by the RCUB team, constantly monitors the operation of the repository and sends alerts to system administrators in case of unexpected events. Local firewall appliances, such as Iptables and Fail2ban, are used to protect and restrict access to the DAIS instance.

The repository follows a regular upgrade cycle and, where possible, existing and widely accepted best practices. In case

of major software configuration changes or updates, the virtual machine is cloned and all changes are tested on the clone. Before any intervention on the production machine, a snapshot is created in the virtualization system, to enable roll-back and prevent data loss. End users are duly informed about planned changes and upgrades.[10]

Actions aimed at threat management and disaster recovery in DAIS are guided by the Threat Management and Disaster Recovery Plan for Repositories, adopted by RCUB (an internal document). The document applies to all repositories developed and maintained by RCUB. The plan ensures the continuity of the system's operations in the event of unplanned disruptions and provides guidance for dealing with potential threats to integrity and security. The document is aligned with other internal documents guiding infrastructure security, such as the Staff Guidelines (UP 101) and the Guidelines for Resolving Tickets. The plan defines major threats and the corresponding response actions, as well as individuals and teams responsible for their implementation. A brief summary of the document is provided in the public wiki.[11].

Plans for infrastructure development are made based on the development of international standards, feedback from the Designated Community and available resources. The development priorities include: improved preservation, automation of curation procedures, developing workflows for archiving various types of research data.[12]

1 https://duraspace.org/dspace/

2 https://wiki.lyrasis.org/display/DSPACE/DSpaceMETSSIPPProfile

3 https://wiki.lyrasis.org/display/DSDOC5x/DSpace+AIP+Format

4 https://guidelines.openaire.eu/en/latest/literature/index_guidelines-lit_v3.html

5 https://v2.sherpa.ac.uk/view/repository_visualisations/1.html

6 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Security#Technology

7 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Security#Capacity_and_availability

8 https://argo.ni4os.eu/ni4os/report-status/Critical/SITES/RCUB/eu.ni4os.repo.publication/dais.sanu.ac.rs

9 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Security#Documentation

10 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Security

11 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Security#Threat_Management_and_Disaster_Recovery_Plan

12 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Organization

Reviewer Entry

Reviewer 1

Comments:
ok

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

Reviewer Entry

Reviewer 1

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

Reviewer 2

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

Response:

DAIS is hosted at RCUB, which is the organizational unit of the University of Belgrade and the central provider of computer services for the University. The activities of RCUB are covered by the ISO certification scheme (certification bearer is the University of Belgrade): ISO 9001 (renewal pending), ISO 27001 (renewal pending) and ISO/IEC 20000-1 (renewal pending) [1].

The computer hardware that runs the repository is the property of RCUB. A dedicated team at RCUB takes care of the configuration, maintenance, security, software updates and development. RCUB has a dedicated team responsible for infrastructure security. RCUB security officers are responsible for general network security, server security, and service maintenance and they collaborate closely with the repository development team. Servers and network devices are kept in a dedicated area with physical access strictly limited to authorized staff. Access to the backup facilities is strictly limited. The premises are equipped with fire alarms and a fire retardant system. Uninterrupted power supply is ensured by means of an automatic stand-by electric power generator.

Dedicated staff members are physically present on the premises 24/7. Remote security services are also provided. The custom-made monitoring and alerting service MONIT and local firewall appliances are in place. The repository follows a regular upgrade cycle and, where possible, existing and widely accepted best practices. The source code of the customized version of DSpace and all additional applications is stored on a local Git server accessible only to the

repository development team.[4]

In the context of the repository, the security and preservation measures apply to:

(1) Metadata

(2) Bitstreams

(3) Repository software (DSpace) and its configuration

(4) custom-made applications (Ellena, APP, NomadLite, ReportMaker)

(5) Operating system, configuration, etc.

(6) Backups

Backups are regularly performed at the virtual machine level. Both live instances and their passive backups reside on hardware-enabled and redundant RAID setups. In case of major software configuration changes or updates, the virtual machine is cloned and all changes are tested on the clone. Before any intervention on the production machine, a snapshot is created in the virtualization system, to enable roll-back and prevent data loss.[2]

DAIS uses the Authentication by Password method, using the e-mail address/password-based log-in supported by DSpace. DSpace supports multiple authentication methods. If a need arises, the authentication method in DAIS could be changed to ensure greater security.

Plain-text passwords are encrypted using the SHA-512 hashing algorithm. Users are encouraged to use strong passwords. Password reset is supported and can be launched both by the repository manager and the user.

Users can register themselves without needing approval from the administrators, and can set their own passwords. However, users are not members of any special user groups upon registration, which means that they can access only publicly available features even when logged in. In order to authorize users to deposit content in a particular collection and access restricted content, the repository manager must first create appropriate user groups and then assign users to particular user groups. The repository managers will check the eligibility of registered users (institutional affiliation) and will remove (delete) from the system those who are not eligible.

Password handling is guided by the Terms of Service [3] and standard institutional policies applying to credentials for services (e.g. institutional e-mail, intranet, subscribed services, etc.). The credentials for the service backend, project management system and documentation, Git server and back-up facilities are managed in line with the internal document Staff Guidelines (UP 101), adopted by RCUB.[4] Passwords, authorization procedures, access to services, and related security measures are defined in Article 3.10 of this document

1 http://www.bg.ac.rs/en/university/technical-service.php

2 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Se curity

3 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Ter ms_of_Service

4 https://repowiki.rcub.bg.ac.rs/index.php/DAIS_-_Digital_Archive_of_the_Serbian_Academy_of_Sciences_and_Arts:_Se curity#Authentication_and_authorization

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: