Assessment Information

[CoreTrustSeal Requirements 2020–2023](#)

Repository:	AUSSDA - The Austrian Social Science Data Archive
Website:	https://aussda.at/
Certification period:	09 November 2023 - 08 November 2026
Requirements version:	CoreTrustSeal Requirements 2023-2025

This repository is owned by: **University of Vienna**

CORE TRUSTWORTHY DATA REPOSITORIES REQUIREMENTS

Background Information

Re3data Identifier

Please fill you Re3data identifier from the website: https://www.re3data.org/

Compliance level:

In Progress: the repository is in the implementation phase - 0

Response:

http://doi.org/10.17616/R39G72

Links:

Reviews

Reviewer 1:

Compliance level:

In Progress: the repository is in the implementation phase - 0

Comments:

Reviewer 2:

Compliance level:

In Progress: the repository is in the implementation phase - 0

Comments:

Repository type

Please select your repository type.

Compliance level:

In Progress: the repository is in the implementation phase - 0

Response:

- Specialist repository

Links:

Reviews

Reviewer 1:

Compliance level:

In Progress: the repository is in the implementation phase - 0

Comments:

Reviewer 2:

Compliance level:

In Progress: the repository is in the implementation phase - 0

Comments:

Overview

Provide a short overview of key characteristics of the repository, reflecting the repository type selected. This should include information about the scope and size of data collections, data types and formats. Further contextual information may also be added.

Compliance level:

In Progress: the repository is in the implementation phase - 0

Response:

AUSSDA is a domain-based repository specialising in research data from the social sciences.
AUSSDA – The Austrian Social Science Data Archive [https://aussda.at/] is a core social science research infrastructure in Austria, offering research data and archiving services. It is located at the Universities of Vienna, Graz, Linz and Innsbruck. At the University of Vienna, AUSSDA is established as a core facility and part of the Vienna University Library and Archive Services. At the University of Graz, the University of Linz and the University of Innsbruck, AUSSDA is part of the Centre for Social Research, the Institute for Sociology, and the Faculty of Social and Political Sciences, respectively. The subject of this self-assessment is the AUSSDA Dataverse (AUSSDA's main repository) [https://data.aussda.at/], the network storage virtual machine where we store our Data Packages (the Submission Information Package (SIP), the Archival Information Package (AIP) and the Dissemination Information Package (DIP)), and supporting processes.

Links:

Reviews

Reviewer 1:

Compliance level:

In Progress: the repository is in the implementation phase - 0

Comments:

Reviewer 2:

Compliance level:

In Progress: the repository is in the implementation phase - 0

Comments:

Designated Community

A clear definition of the Designated Community demonstrates that the applicant understands the scope, knowledge base, and methodologies—including preferred software/formats—of the group(s) of users at whom the curation and preservation measures are primarily targeted. The definition should be specific so that reviewers can assess whether that community is being served in the responses to other requirements.

Compliance level:

In Progress: the repository is in the implementation phase - 0

Response:

The primary beneficiaries of AUSSDA's services are social science researchers. Secondary user communities include students, educators, media representatives and the general public (addressed in AUSSDA's mission statement [https://aussda.at/en/about-aussda/mission/]). To monitor and respond to the changing needs of our designated community, AUSSDA has established a User Advisory Board and an AUSSDA User Conference in 2022 [https://aussda.at/en/aussda-usercon/]. Most resources are available in English. However, datasets may require German language skills to understand the original questionnaires and variable labels in the datasets. Statistical analysis skills are expected for using the research data (e.g. Stata, SPSS, R, Python) and knowledge of what constitutes good scientific practice is expected throughout (e.g., for citing resources).

Links:

Reviews

Reviewer 1:

Compliance level:

In Progress: the repository is in the implementation phase - 0

Comments:

Reviewer 2:

Compliance level:

In Progress: the repository is in the implementation phase - 0

Comments:

Levels of Curation

Please fill you level(s) of curation.

Compliance level:

In Progress: the repository is in the implementation phase - 0

Response:

- B. Basic curation – e.g. brief checking, addition of basic metadata or documentation
- C. Enhanced curation – e.g. conversion to new formats during ingest, enhancement of documentation and metadata
- D. Data-level curation – as in C above, but with additional editing of deposited data

Links:

Reviews

Reviewer 1:

Compliance level:

In Progress: the repository is in the implementation phase - 0

Comments:

Reviewer 2:

Compliance level:

In Progress: the repository is in the implementation phase - 0

Comments:

Levels of Curation - explanation

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

Compliance level:

In Progress: the repository is in the implementation phase - 0

Response:

AUSSDA adds value to the data deposited in the archive. Different levels of curation are applied to different datasets, depending on the licence agreement between depositor and archive as well as the appraisal of the data performed by AUSSDA staff. To ensure data integrity, we store all incoming content in a Submission Information Package (SIP). Usually, the SIP contains data files, metadata information and additional documentation, e.g. method reports. Content relevant for the next steps is then transferred to an Archival Information Package (AIP), where different stages of curation are conducted. For most data deposits, AUSSDA performs curation level C and checks the data, metadata and documentation, focusing on comprehension and completeness, and ensuring that no direct personal identifiers such as names etc. appear in the data files. Further included are quality measures such as plausibility checks. In addition, documentation is compared to the data to ensure that documentation accurately describes the data. Before publishing data, several data formats used by the designated community are generated to increase the content's accessibility. In some cases, we curate the data even further (level D - data-level curation) by altering the data (in accordance with the signed licence) to publish it for our users. AUSSDA also offers a separate self-deposit service for its partner universities, where trained and accredited depositors can archive and publish data. For these deposits, AUSSDA adds value to the data by training the depositors in data curation and additionally performs basic curation (B), by briefly checking the self-deposits.

Links:

Reviews

Reviewer 1:

Compliance level:

In Progress: the repository is in the implementation phase - 0

Comments:

Reviewer 2:

Compliance level:

In Progress: the repository is in the implementation phase - 0

Comments:

Cooperation and outsourcing to third parties, partners and host organisations

Please describe any cooperation and outsourcing to third parties, partners and host organisations.

Compliance level:

In Progress: the repository is in the implementation phase - 0

Response:

AUSSDA is an integral part of the Vienna Library and Archive Services at the University of Vienna, where it benefits from the support of two other university units. The Vienna University Computer Center (ZID) maintains the technical infrastructure of the university, overseeing areas such as email services, data networks, storage solutions, web servers, telecommunication systems, SSL certificates, large file transfers, and IT security. Additionally, the "Research Services and Career Development" unit of the university provides assistance to university staff, particularly during grant preparation phases, offering expertise in areas such as budgeting and approval procedures. For collaborations with entities outside of the university, e.g. the law firm consulting AUSSDA, there are service contracts in place. General legal advice is currently provided in-house by the universities data protection officer (DPO) and the department of research services. Legal advice on more specific topics, such as copyright, or licences for research data, is provided by the external law firm.

Links:

Reviews

Reviewer 1:

Compliance level:

In Progress: the repository is in the implementation phase - 0

Comments:

Reviewer 2:

Compliance level:

In Progress: the repository is in the implementation phase - 0

Comments:

Applicants renewing their CoreTrustSeal certification: summary of significant changes since last application.

Please fill this field when you are renewing your CoreTrustSeal Certification.
This field can be marked with not applicable (N.A.) if you are acquiring a CoreTrustSeal certificate for the first time.

Compliance level:

In Progress: the repository is in the implementation phase - 0

Response:

Since the last certification in 2020, AUSSDA has transitioned from a project to a long term consortium of universities. We have secured the archives operation and its funding on a long term basis. We have also gained a new partner university to the consortium in 2020. Due to these changes, we have updated our governance structure to our current needs and have established a new steering board and a user advisory board. The archive has expanded its service portfolio to meet the evolving needs of its designated community. We have established, tested and rolled out: A Self-deposit service, a service to archive qualitative data and a fast track service which allows for timely publishing and quick turnarounds in projects. The latter was heavily used in our Covid-19 data collection [https://data.aussda.at/dataverse/covid19]. We have further implemented new preservation processes to align the different AUSSDA partner locations and have implemented fixity checks, see R14. To ensure effective user communication, we have published an FAQ section on our website [https://aussda.at/en/faq-downloads/], started to send out regular newsletters and have simplified our mission statement [https://aussda.at/en/about-aussda/mission/] to increase clarity and focus.

Links:

Reviews

Reviewer 1:

Compliance level:

In Progress: the repository is in the implementation phase - 0

Comments:

Reviewer 2:

Compliance level:

In Progress: the repository is in the implementation phase - 0

Comments:

Organisational Infrastructure

R1 Mission & Scope (R01)

R01. The repository has an explicit mission to provide access to and preserve digital objects.

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Response:

AUSSDA's mission statement states its main objective: "We make social science data accessible and reusable." [1] and continues as follows: "AUSSDA - The Austrian Social Science Data Archive is a certified, national research infrastructure for the social science community. We offer sustainable and easy-to-use services in the field of digital archiving and preservation. The main beneficiaries are researchers, students, educational institutions and media professionals.

We implement international standards to make research data findable, accessible, interoperable and reusable according to the FAIR principles. AUSSDA supports the open science movement to maximize the potential for data reuse. We stand for integrity in archiving and advocate for compliance with data protection and ethical principles in research data management.

AUSSDA represents Austria as a national service provider in CESSDA ERIC, has locations at the Universities of Vienna, Graz, Linz and Innsbruck and works within a network of national and international partners." [1]

The mission statement was approved by AUSSDA's steering board ("Leitungsgremium"). The steering board consists of members of the AUSSDA consortium universities based in Vienna, Graz, Linz and Innsbruck, and a representative of the Austrian Federal Ministry of Education, Science and Research (see R6: Expertise & Guidance).

Links:

- [1] Mission Statement

Reviews

Reviewer 1:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

Reviewer 2:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

R2 Rights Management (R02)

R02. The repository maintains all applicable rights and monitors compliance.

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Response:

AUSSDA has agreements and contracts for data deposits (various licence contracts) and data usage (terms of service and access policy). These agreements comply with the respective EU and national law (General Data Protection Regulation - GDPR, Datenschutzgesetz - DSG [Austrian Data Protection Act] and Forschungsorganisationsgesetz - FOG [Austrian Research Organisation Act]) and respect the general code of conduct of scientific research. Information on available licence models [2], the terms of service [3] and our access policy [4] are accessible on the AUSSDA website.

Licence agreement and access conditions

AUSSDA signs a contract for each deposited dataset and receives all necessary rights to curate, copy, archive and publish the data, as well as all rights that might become necessary in the future to secure the preservation of this data [5]. Currently, AUSSDA offers two different standard contract models: Open Access (incl. optional embargo period) and Scientific Use (incl. optional embargo period). Since the protection of personal data – with respect to both legal and ethical standards and restrictions – is of utmost importance, AUSSDA regulates access to data as open as possible, but as closed as necessary. The open access contract is based on the Creative Commons licence "Creative Commons Attribution 4.0 International" [6]. Depositors who publish data under a Creative Commons licence must ensure that the data is anonymised before it can be shared. In addition to the standard contracts, in certain cases AUSSDA also hosts data with individual licence contracts (for example to implement special protection needs).

Due to special provisions regulated in the GDPR and national law (DSG and FOG) in the areas of science, research and for archiving purposes, AUSSDA is also allowed to host non-anonymised data and to offer access to pseudonymised data to users that are allowed to process pseudonymised data. For this purpose, the repository offers licences for scientific use only. With this licence, datasets can contain pseudonymised as well as anonymised data. Metadata to the datasets are always published under a CC0 1.0 Universal (CC0 1.0) Public Domain Dedication [7]. Access to datasets is granted on different levels according to their sensitivity, need for restriction and based on our Access Policy [4]. AUSSDA offers (a) open access without restriction, (b) access with the requirement to log in with an account or institutional login, and (c) access with required log in and upon request (on demand). Each

dataset states the applicable access conditions in the AUSSDA Dataverse under the heading "Terms". To ensure compliance with intellectual property rights, the depositor must declare that she*he holds the required rights to the data or has the necessary permissions from all rights holders to issue the licences specified in the transfer and licence agreements signed with AUSSDA.

Conditions of Use

The conditions of use concerning data available in the AUSSDA Dataverse are specified in our terms of service [3]. The users of the repository must agree to these terms before access to data is granted, either when logging in (with the institutional account or by creating an account during the registration procedure) or when downloading publicly available data. The terms communicate the rights as well as obligations that apply when using the repository's services, including information on licences, use and access conditions, warranty and liability, lawful conduct and possible consequences in case of non-compliance with these terms of service.

Non-Compliance

In case users do not comply with the aforementioned conditions of use or the general AUSSDA Terms of Service, AUSSDA has the right to take action and apply the sanctions stated in the Non-compliance Policy [8].

Links:

- [5] Transfer and licence agreement
- [6] Creative Commons Attribution 4.0 International Licence
- [7] CC0 1.0 Universal (CC0 1.0) Public Domain Dedication
- [8] Non-compliance Policy
- [2] Transfer and licence agreements
- [3] Terms of Service
- [4] Access Policy

Reviews

Reviewer 1:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

Reviewer 2:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

R3 Continuity of Service (R03)

R03. The Repository has a plan to ensure ongoing access to and preservation of its data and metadata.

Compliance level:

In Progress: the repository is in the implementation phase - 0

Response:

AUSSDA has committed itself to ensuring ongoing access and preservation as stated in the transfer and licence agreements [2]. The contracts do not include a guaranteed preservation period. The University of Vienna, as host organisation of AUSSDA, signed an agreement with the Austrian Federal Ministry of Education, Science and Research (BMBWF), which includes a commitment to the obligations as a CESSDA ERIC service provider [9]. Furthermore, the University of Vienna states in its research data management policy its obligation to provide research infrastructure for long term archiving and in order to provide access to research data [10]. The medium-term plan (2016-2021) to move AUSSDA from its project-based funding into the global budget of the universities forming the AUSSDA consortium was successful. The Universities of Vienna, Graz, Linz and Innsbruck signed a consortium agreement with the University of Vienna as coordinator, stating their commitment as members of AUSSDA. This consortium agreement is a permanent contract and specifies the membership fees of the partner universities in order to secure the ongoing operation of the archive. If a partner wants to leave the consortium AUSSDA, the contract states that they have to send a notice 12 months ahead of time and they can only leave at the end of a 3-year cycle. This gives the remaining organisations at minimum a full year to accomodate to a change. The long-term plan (> 5 years) ensures that

AUSSDA will be part of the University of Vienna's obligations towards the BMBWF, as the ministry has made AUSSDA the CESSDA ERIC service provider for Austria. Furthermore, AUSSDA is included in the Development Plans of the University of Vienna (2025), the University of Graz (2019-2024) and the University of Linz (2019-2024) [11, 12, 13, 14].

AUSSDA currently has no agreements with other archives to transfer the data in case of its cessation. In the unlikely event that AUSSDA should be closed down, the Vienna Library and Archive Services, which have existed for centuries, will prepare and execute a project to keep the AUSSDA Dataverse online for a transition period that will be used to develop a workflow to transfer the data to a suitable repository. The repository could then be either part of the library or an external institution. The collection could be transferred to the existing institutional repository in case of unexpected withdrawal of funding to ensure long-term preservation. The transfer and licence agreements [2] have taken precautions for such an unlikely event: "§3 (6) In order to be able to store and make the transferred Archive materials and metadata available on a long-term basis, AUSSDA is entitled to conclude contracts and take measures for this purpose. The Licensor agrees that the rights under this Agreement may be transferred at any time for this purpose. This applies in particular in the event that AUSSDA is dissolved or can no longer pursue its original purpose. AUSSDA reserves the right to engage third parties with the provision of the Archive materials and metadata." To establish an additional safety net, CESSDA ERIC is reviewing options to ensure continuity of access in case a service provider ceases to function.

(Note: [14] Annex A: Summary of performance agreements and development plans was shared with the CoreTrustSeal reviewers and Board. It is not public since it contains sensitive information.)

Links:

- [10] RDM Policy
- [9] CESSDA ERIC service provider for the country
- [2] Transfer and licence agreements
- [13] Development Plan University of Linz (see also Annex A for a summary)
- [11] Development Plan University of Vienna (see also Annex A for a summary)
- [12] Development Plan University of Graz (see also Annex A for a summary)

Reviews

Reviewer 1:

Compliance level:

In Progress: the repository is in the implementation phase - 0

Comments:

Reviewer 2:

Compliance level:

In Progress: the repository is in the implementation phase - 0

Comments:

R4 Legal & Ethical (R04)

R04. The repository ensures to the extent possible that data and metadata are created, curated, preserved, accessed and used in compliance with legal and ethical norms.

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Response:

AUSSDA has a thorough understanding of the importance of legal and ethical aspects, and regarding the management of personal data in the social sciences, especially when dealing with sensitive and potentially disclosive data. Therefore, the repository requests confirmation that data collection or creation was carried out in accordance with legal criteria and ethical standards while considering differing standards in different disciplinary norms. This confirmation is obtained for each dataset during the acquisition process when signing the transfer and licence agreement, specified in paragraph 2.5 and 2.6: "The Licensor assures that she/he has taken into account all requirements arising from data protection laws when collecting or creating the Archive materials." "The Licensor warrants that the Archive materials have been collected or have been produced in accordance with the principles of good scientific practice and in accordance with ethical principles."

Our commitment to integrity with regard to data archiving and the promotion of ethical research principles is also mirrored in our mission statement, which

states that "We stand for integrity in archiving and advocate for compliance with data protection and ethical principles in research data management" [1].

- Concerning the repositories' data storage – including data with disclosure risk – AUSSDA ensures that its data is stored on secure servers hosted by the Vienna University Computer Center (ZID).

- Regarding data deposited at the repository, AUSSDA established a number of procedures to identify data with disclosure risks and to further ensure that necessary steps are taken to anonymise/pseudonymise data and provide secure access. These procedures include checks with a list of predefined, potentially identifying or sensitive variables and how to handle them for different access options.

- The access to data that is considered to have a disclosure risk is regulated in accordance with the access policy [2].

- The specific access conditions are agreed upon between the depositor and the repository.

- The repository is in contact with the depositors during the data processing and archiving process, and gives advice concerning potential risks of personal data disclosure and provides guidance on the responsible use of data. If necessary, an indication of disclosure risk is given to the depositor by AUSSDA's staff, including possible measures for anonymisation. If the risks are deemed unmanageable, the repository reserves the right to decline publication and return the data to the depositor (this is specified in the licence agreement).

- If users violate the Terms of Service or the licence agreement, the Non-compliance Policy [3] and the measures specified in the Terms of Service [4] come into effect.

- All data curators are trained in data management and disclosure risks. All staff members undergo training in the areas of data protection, security and data protection laws, with a focus on the GDPR. This ensures a good general awareness of issues when dealing with personal data and data disclosure risks amongst staff. Procedures are in effect to ensure all measures for the management of (sensitive) data are met [15].

Links:

- [15] Data Deposit Guideline
- [8] Non-compliance Policy
- [1] Mission Statement
- [3] Terms of Service
- [4] Access Policy

Reviews

Reviewer 1:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

Reviewer 2:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

R5 Governance & Resources (R05)

R05. The repository has adequate funding and sufficient numbers of staff managed through a clear system of governance to effectively carry out the mission.

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Response:

Governance

AUSSDA is a consortium of currently four partner universities. The University of Vienna is the coordinator of this consortium. AUSSDA's governance is described on the website [16]. AUSSDA has a Steering Board that directly supports the management of AUSSDA and advises on all important and strategic decisions and future developments. Members of the Steering Board are two official representatives from each partner university, as well as a member of the Ministry for Education, Science and Research as an observer (without voting rights). We have further established a User Advisory Board to communicate better with our user community and receive feedback about our services. The members of the User Advisory Board are part of different scientific institutions with a social science background in Austria. The members of both boards are listed on the website.

Stability and Sustainability

AUSSDA is hosted by the University of Vienna, the oldest and largest university in the German-speaking world, and one of the largest in Europe [17]. Within the university, AUSSDA is part of the Vienna University Library, which provides access to more than 7.7 million books, 1.3 million e-books, and 119,000 e-journals [18]. AUSSDA is an established core facility of the University of Vienna. Core facilities are central institutions that provide research infrastructure required by several research groups and departments. The Sociology Departments at the University of Graz, Linz and Innsbruck each assigned staff to AUSSDA. The employees in Graz and Linz conduct research on AUSSDA-related topics and provide services to the designated communities in the southern and western federal states in Austria. The employee in Innsbruck offers RDM services related to AUSSDA. The Universities of Graz, Linz and Innsbruck have been renowned, stable and sustainable institutions for decades, and in the case of Vienna, Graz and Innsbruck, even centuries.

Funding

The repository is sufficiently funded, including staff resources, IT resources, and a budget for travel and education. Since 2020, the AUSSDA consortium partners pay a membership fee in addition to providing staff, which gives AUSSDA the possibility to invest, among else, in projects to develop and launch new services. The Republic of Austria has been a member of CESSDA ERIC since 1991 and AUSSDA is the national service provider [19]. AUSSDA's funding is guaranteed through the performance agreements between the Ministry of Education, Science and Research and the Universities of Vienna, Graz, Linz and Innsbruck [14]. All current performance agreements, which are legally binding, include AUSSDA as an integral part of the respective universities. The current funding period is three years (2022-2024). AUSSDA has been acquiring substantial additional funding through projects (national and European: H2020, CESSDA ERIC, EOSC) [20], while the structural funds of the universities of the consortium still constitute the main proportion of AUSSDAs funds. At the moment, AUSSDA has 16 staff, of which 7 are employed on permanent basis and 2 more on long term scientific contracts (>6 years).

(Note: [14] Annex A: Summary of performance agreements and development plans was shared with the CoreTrustSeal reviewers and Board. It is not public since it contains sensitive information.)

Links:

- [16] Overview of AUSSDAs governance and set up
- [17] Facts and Figures about the University of Vienna: The University of Vienna was founded in 1365 by Duke Rudolph IV. About 88.000 people study, and 10.000 people work, teach and conduct research on the premises of the University of Vienna (June 2022)
- [18] Facts & Figures of the Vienna University Library
- [19] Statutes of CESSDA ERIC
- [20] Projects by AUSSDA

Reviews

Reviewer 1:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

Reviewer 2:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

R6 Expertise & Guidance (R06)

R06. The repository adopts mechanisms to secure ongoing expertise, guidance and feedback-either in-house, or external.

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Response:

Guidance

AUSSDA management reports to its steering board ("Leitungsgremium") [16]. The steering board advises on questions of budget, strategy and future developments. The board consists of representatives of the Universities of Vienna, Graz, Linz and Innsbruck, and the Austrian Federal Ministry of

Education, Science and Research.

AUSSDA's User Advisory Board provides a communication channel to our designated community to determine the future direction of the archive and its services. Members are invited from AUSSDA's partner institutions and other scientific institutions to allow for a good (disciplinary, regional, institutional, gender) balance among members. Both boards meet several times each year. For each board there is a mailing list in place that supports announcements and discussions. On an informal basis, throughout the year, AUSSDA also seeks feedback with the members of the boards. Internationally, AUSSDA is in regular exchange with other European social science data archives through CESSDA ERIC to improve its services. AUSSDA staff participate in CESSDA ERIC working groups, as well as CESSDA ERIC work plans, to ensure the alignment of its services. In addition, AUSSDA participates in several professional associations such as in working groups of the EOSC Support Office Austria or the Austrian repository managers' group and contributes to task forces such as the EOSC task force for EOSC Financial Sustainability. AUSSDA keeps track of international developments through participation in the CESSDA ERIC Technical Working Group, CESSDA ERIC Trust Working Group, the Dataverse community, conferences, and workshops. Concerning legal issues, AUSSDA cooperates with the universities' data protection officers as well as an external law firm that specialises in data protection, copyright and contract law. AUSSDA is regularly being evaluated as part of the quality assurance cycles within the university.

Training and Professional Development of Staff

Within the annual staff appraisal talk, team members agree with the AUSSDA head on individual training and qualification measures corresponding to individual needs, incl. refreshing GDPR knowledge. Furthermore, AUSSDA staff participate in training sessions offered by CESSDA ERIC and other institutions – online and off-line. Staff members regularly complete training courses and have extensive expertise in relevant domains [21]. New AUSSDA team members undergo introductory training tailored to their position.

Range and Depth of Expertise of Both the Organisation and its Staff

AUSSDA staff have expertise in multiple social sciences and beyond (political science, sociology, communication science, economics, psychology, law, computational social science, international development, global studies, German studies, Slavic studies) [22]. Six team members hold a doctorate degree, most have a master's degree or equivalent, and one has a technical background. AUSSDA is involved in national and international exchange through scientific publications, its European projects, and is part of several associations (CESSDA ERIC, RDA - Research Data Alliance, RepManNet - Network for Repository Managers).

Communication with the Designated Communities

The designated communities of AUSSDA are asked for feedback through AUSSDA's user advisory board and user conference [23], through communication activities and other measures such as workshops. On our website, news items with calls to action are published regularly. Through email, phone, and AUSSDA's Twitter account users engage with AUSSDA [24].

Links:

- [22] The AUSSDA team
- [23] AUSSDA User Con 2022
- [24] AUSSDA on Twitter
- [16] Overview of AUSSDAs governance and set up
- [21] Human resources (University of Vienna)

Reviews

Reviewer 1:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

Reviewer 2:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

Digital Object Management

R7 Provenance and authenticity (R07)

R07. The repository guarantees the authenticity of the digital objects and provides provenance information.

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Response:

Authenticity in Changes and Versions of Data and Metadata

The strategy for data changes is documented in the preservation plan [25] and on the AUSSDA website [see section "Deposit data" in 46]. The preservation plan states that the SIP is the source of any further processing. Alterations to data and/or documentation take place in the AIP and are documented in four internal files (Data Lifecycle Log – DLC Log, statistical syntax for Stata or SPSS, report on data checks that are sent to depositors, and the internal metadata sheet) and at least one file that is accessible to users (data curation protocol). The DLC Log [27] serves both as a tracking device across work clusters (see R11 for a description of the clusters) during the whole curation process (it stores details on appraisal, ingest, curation, preservation and access). It also includes an overview of all received, discarded and created files along with descriptions and accessibility status. It is also used to track needed insignificant minor changes or metadata updates to already published datasets. The statistical syntax file (available as Stata .do or SPSS .sps) includes all checks and changes made to the data by the data curator (a slightly adapted do-file version for public use can be found online [28]). The metadata sheet stores metadata in both English and German. Public information on mandatory metadata fields can be found in [29]. Data depositors receive feedback on the results of the data checks in an excel sheet that they send back with updated files and curators track the status of all suggested changes [30].

The data curation protocol (file name schema: archivenumber_readme.pdf) is created and published by AUSSDA, it includes title, archival number, recommended citation and an overview of file names and their descriptions. If data depositors do not include changes to the data in their documentation, this information is also added to the data curation protocol (see 10063_readme.pdf in the tab "Files" in [31]).

Concerning the versioning procedures, AUSSDA distinguishes between major updates (e.g. deletion or insertion of a variable or case) and minor updates (significant minor changes like a variable recoding versus insignificant minor changes like typos), with changes additionally being tracked in the DLC Log [27]. Whereas major and significant minor updates are published immediately, insignificant minor changes (e.g. non-significant typos) are put on a waiting list and published when more have accumulated or together with the next major or significant minor update [see section "Deposit data" in 46]. For published datasets, changes are documented in the data curation protocol. The AUSSDA Dataverse shows the version history in the tab "Versions", see for example the versioning of a data set [31]. The version number of the dataset and the Digital Object Identifier (DOI) of the study are included in numeric data files as variables. AUSSDA does not use different DOIs for versioning of files as DOIs are assigned on the dataset level. The version number is included in the suggested citation that is shown for each dataset in Dataverse.

Provenance Information and Related Audit Trails

AUSSDA stores provenance data: In the Submission Information Package (SIP), all authentic formats we received from a data producer are archived. In the AIP, the signed contract, the curation files and all curated files for all versions are stored and documented [27]. Lastly, the Dissemination Information Package (DIP) contains all files ready to be published and distributed either via the AUSSDA Dataverse or file transfer on demand.

Comparison of the Essential Properties of Different Versions of the Same File

At the end of the curation process, different formats of the same data file (for example Stata and SPSS) are compared to each other. This includes comparing the original file in the SIP with the curated file in the AIP and then comparing it to the version in the DIP. Before datasets are published, data files are downloaded from Dataverse and compared to the DIP data files. If any of these comparisons show discrepancies, the data curator will identify and trace back changes in the syntax file [28] until all discrepancies are accounted for.

Identity Information of Depositors

Data depositors need to sign a deposit agreement where they provide their name, affiliation and address. The depositing entity is part of the metadata in the AUSSDA Dataverse (field "Depositor" in the tab "Metadata") and the depositor name is also kept in the internal provenance documentation.

Links:

- [25] AUSSDA Preservation Plan
- [46] FAQs at AUSSDA
- [27] AUSSDA Data Lifecycle Log
- [28] Recommended Datachecks in Stata format
- [29] Information on metadata for depositor
- [30] Report on Data Checks to Data Depositor (Template)
- [31] Eberl, Jakob-Moritz; Vonbun, Ramona; Haselmayer, Martin; et al., 2022, "AUTNES Manual Content Analysis of the Media Coverage 2013 (SUF edition)", AUSSDA, V1.

Reviews

Reviewer 1:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

Reviewer 2:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

R8 Deposit & Appraisal (R08)

R08. The repository accepts data and metadata based on defined criteria to ensure relevance and understandability for users.

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Response:

Deposit Process

Depositors receive a package with a metadata form [32], the transfer and license agreement [2] and AUSSDA's Data Deposit Guideline (DDG) [15]. The DDG includes information about the deposit process, information about mandatory, recommended and optional data, documentation, file formats, and information about required metadata. The transfer of custody and responsibility during the handover from the depositor to the repository is specified in chapter 3.6 of the transfer and licence agreements [2]. After receiving the Submission Information Package (SIP) we first check for completeness and give feedback whether material is missing or not in the preferred format.

Data Collection Policy

AUSSDA's data collection policy, outlining the principles determining the collection and the development of the archive, is available on the AUSSDA website [33]. Target disciplines as well as requirements for data depositors, data and documentation, and metadata are listed in the policy.
Data that do not fit the collection profile are not accepted by AUSSDA. Instead, AUSSDA recommends other data repositories such as the digital humanities infrastructure CLARIN/DARIAH at the Austrian Academy of Sciences or the University of Vienna's institutional repository PHAIDRA.

Preferred formats

An overview of file formats recommended by AUSSDA for depositing and archiving can be found in AUSSDA's Data Deposit Guideline [15]. It describes data types and recommended storage formats. Furthermore, it outlines which formats are accepted by AUSSDA, and what actions depositors can take when they would like to deposit and share data that are out of scope of the recommended formats. During the first steps of ingest and data processing, submitted file formats are checked. This detects encoding issues, for example. Data deposited in non-preferred formats are either sent back to the data depositor, with the request to provide a preferred data format, or, if possible, are converted by ingest staff following internal conversion protocols.

Prioritisation and Different Curation Levels

Each AUSSDA location (Vienna, Linz, Graz and Innsbruck) maintains its own pipelines for incoming datasets and is responsible for datasets of the institutions in their region. Datasets are processed within the pipelines in order of contract signing and data delivery. In general, AUSSDA performs curation level C as described under R0 (5) for datasets that are meant for scientific or public use by conducting quality checks and conversions to different file formats that are common in the designated community. Datasets aiming only at replication purposes are not converted to other formats than used in the original study. Curation Level B applies to datasets within our self-deposit service where training for accredited depositors and brief checks of the self-deposits take place.

Metadata

We follow international metadata standards set by CESSDA ERIC (DDI2.5 as part of the CESSDA ERIC Metadata Model - CMM 1.0) [34, 35]. Data depositors receive a metadata form [32] to be filled out to the best of their knowledge. During the ingest and data processing phase, the primary data curator checks the depositor's completed form and transfers it to an internal metadata sheet, which is used to insert data in the AUSSDA Dataverse. Certain fields require special attention from the curator (e.g. topics and keywords) as they use standardised vocabularies (controlled vocabularies) and can be used to find similar datasets in the AUSSDA Dataverse. A manual check of the metadata sheets ensures that the metadata are compliant with the CMM. The metadata fields of the AUSSDA Dataverse correspond with the CMM and ensure that all mandatory fields receive an entry before publishing. If metadata is deemed insufficient for long-term preservation, archive staff work on improving it, or ask the depositor to fill in the missing information. Some metadata may be extracted from the documentation and the data itself.

Links:

- [34] Data Documentation Initiative, DDI
- [15] Data Deposit Guideline
- [32] AUSSDA_metadata sheet
- [33] Data collection policy

- [2] Transfer and licence agreements
- [35] CESSDA ERIC Metadata Model, CMM

Reviews

Reviewer 1:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

Reviewer 2:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

R9 Preservation plan (R09)

R09. The repository assumes responsibility for long-term preservation and manages this function in a planned and documented way.

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Response:

In terms of long-term preservation, we define all measures necessary in our preservation plan [25], where requirements are defined. AUSSDA follows the OAIS reference model and manages the files with the approach of packages: Submission Information Package (SIP), Archival Information Package (AIP) and Dissemination Information Package (DIP). The preservation process follows a workflow through the packages to their final destination, the upload in the Dataverse repository system, where users can access the data holdings. The workflow and process of the data packages is established through a Data Lifecycle Log (DLC Log) file, where all changes are documented and versioned. The files get transformed into the most important statistical software formats of our designated community: Stata and SPSS, tab-separated values (TSV) [33]. For long time preservation, the comma-separated value (.csv) format is in use as well. Documentation material is stored as PDF/A or as ASCII (UTF-8) text file. For file formats and metadata schemas see R13.
The AUSSDA approach for long-term preservation is to migrate to new formats, when formats currently used become obsolete. Digital preservation is implemented on three levels: bit-level preservation, logical preservation, and semantic preservation. According to the approach of logical preservation, new formats can be created when technical obsolescence or new requirements of the designated community make this necessary (for details see the preservation plan [25], for bit-level preservation see R14: Storage & Integrity). Long-term preservation tasks are performed for all deposited data.
The data depositor will be guided and accompanied through the whole process, from finding a suitable licence for re-use and signing the transfer and licence agreement, the preparation and anonymisation/pseudonymisation of the data, the study documentation with eligible metadata, to access of the published data [15]. Preservation is done by AUSSDA's preservation cluster (see R11). This cluster is responsible for tasks described in the preservation plan, the transfer from the working volumes to archival storage volumes. The ingest & data processing cluster is responsible for data preparation according to the preservation plan.
Digital preservation ensures that digital information remains accessible and usable. AUSSDA does not specify a maximum storage period, i.e. that the data will be archived "forever".
Re-appraisal is always done for digital objects that are migrated into new data formats (for example from a binary into a current software format in the case of legacy data). The datasets re-enter ingest, resulting in curation and updates of metadata, data and documentation files. In addition, re-appraisal of digital objects can be triggered, if a policy was updated, a depositor wants to change access conditions to their data, or an error in the data has been reported, and it is expected that this can affect the metadata or objects themselves. This might then result in metadata updates and/or curation of the data files. The ingest coordinator gives a recommendation to the head of AUSSDA about the need to re-appraise individual datasets or a complete collection and the head decides about appropriate actions.
In general it is not possible to delete archived and published data. The purpose of archiving data at AUSSDA is to safeguard research data in the long term. In exceptional cases (e.g. if justified copyright or data protection concerns arise), access to data can be permanently blocked – but the metadata and the persistent identifier DOI of the dataset remain preserved and visible on a so called tombstone page in any case.

Links:

- [15] Data Deposit Guideline
- [25] AUSSDA Preservation Plan

-

Reviews

Reviewer 1:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

Reviewer 2:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

R10 Quality Assurance (R10)

R10. The repository addresses technical quality and standards compliance, and ensures that sufficient information is available for end users to make quality-related evaluations.

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Response:

Quality in metadata is assured by following metadata standards and controlled vocabularies (see R08). Quality in data is ensured by following procedures for different curation levels (see R08) and maintaining a list of preferred file formats. Process quality is ensured by following prescribed protocols documented in the Preservation Plan, such as keeping extensive provenance information and authenticity of data (see R07).

Quality Control Checks and Issue Resolving

Following Deposit and Appraisal (R08), AUSSDA Data Curators take the Submission Information Package (SIP) and assign an archival number to the dataset. If needed, preservation staff converts deposited data following internal conversion protocols. In the Archival Information Package (AIP), quality control checks are applied to metadata, data and documentation (see R07). Every data curator documents all processing in the DLC Log [27] and follows the curation syntax (available as Stata .do and SPSS .sps) for checking the data in a reproducible fashion, see [28]. In the first months of onboarding a new data curator, all checks are done by two curators. If the data, documentation and/or metadata quality, plausibility and anonymisation checks identify faults, we provide depositors with feedback and develop a strategy to resolve the issues found [30]. Except for some migration projects, all changes are made by depositors. If depositors do not reply to this feedback, staff will decide whether changes can be done by the archive or whether the ingest process is terminated. If depositors make changes, they will either be documented in accompanying documentation or the data curation protocol file that is uploaded along with the dataset in the AUSSDA Dataverse (e.g. see file 10063_readme.pdf in the tab "Files" in [31]).

The only sub-Dataverse that does not undergo AUSSDA's rigorous quality control checks is the Self-Deposit Dataverse [36] where AUSSDA-accredited self-depositors share their datasets directly with other users and AUSSDA conducts brief checks. This information is clearly marked in the Dataverse description.

Change Management

AUSSDA is listening to demands of the designated community and discusses and adopts changes. This is done systematically as part of the steering board, user advisory board and the AUSSDA user conference, and also discussed as part of regular meetings between the acquisition and ingest work clusters. One example of a past change would be the provision of open csv files via the AUSSDA Dataverse, following restructured teaching by universities and increased demand for open data formats due to the COVID-19 pandemic.

As we are part of the CESSDA Consortium, we benefit of the wide network of knowledge concerning different stages of the data life cycle and implement new technical developments in data repositories. AUSSDA also actively contributes to changes to CESSDA standards for example by updating the German version of ELSST [37] in cooperation with the German CESSDA partner GESIS.

More about change management can be found in Workflows (R11) and Reuse (R13).

Linkage to Other Digital Objects

To foster recognisability and increase findability, datasets of the same journal, research group or project can be linked to each other in the AUSSDA Dataverse, if they have their own sub-Dataverse [38]. A dataset's metadata can reference other digital objects: authors can add their ORCIDs to their names [31]; a list of related publications [39]; related datasets [39]; links to previous data publishers in the field "Other ID" [31]; links to controlled vocabularies like ELSST [37].

Links:

[1] AUSSDA Data Lifecycle Log: https://aussda.at/fileadmin/user_upload/p_aussda/Documents/Template_DataLifeCycle_Log.xlsx

[2] Public Version of Recommended Datachecks in Stata format:

https://aussda.at/fileadmin/user_upload/p_aussda/Documents/recommended_datachecks.do

[3] Report on Data Checks to Data Depositor (Template):

https://aussda.at/fileadmin/user_upload/p_aussda/Documents/Template_report_on_data_checks.xlsx

[4] Example dataset: Eberl, Jakob-Moritz; Vonbun, Ramona; Haselmayer, Martin; Jacobi, Carina; Kleinen-von Königslöw, Katharina; Schönbach, Klaus; Boomgaarden, Hajo G., 2022, "AUTNES Manual Content Analysis of the Media Coverage 2013 (SUF edition)", https://doi.org/10.11587/JCOZJB, AUSSDA, V1.

[5] Self-Deposit Dataverse: https://data.aussda.at/dataverse/self-deposit

[6] ELSST – European Language Social Science Thesaurus: https://elsst.cessda.eu/id

[7] AUTNES Dataverse: https://data.aussda.at/dataverse/autnes

[8] Example dataset: Perlot, Flooh; Hermann, Andrea; Praprotnik, Katrin; Ingruber, Daniela; Hainzl, Christina, 2020, "Democracy Radar Wave 1 (SUF edition)", https://doi.org/10.11587/16RCPU, AUSSDA, V1.

Links:

- [27] AUSSDA Data Lifecycle Log
- [28] Recommended Datachecks in Stata format
- [30] Report on Data Checks to Data Depositor (Template)
- [31] Eberl, Jakob-Moritz; Vonbun, Ramona; Haselmayer, Martin; et al., 2022, "AUTNES Manual Content Analysis of the Media Coverage 2013 (SUF edition)", AUSSDA, V1.
- [36] Self-Deposit Dataverse
- [37] ELSST – European Language Social Science Thesaurus
- [38] AUTNES Dataverse
- [39] Perlot, Flooh; Hermann, Andrea; Praprotnik, Katrin; et al., 2020, "Democracy Radar Wave 1 (SUF edition)", AUSSDA, V1.

Reviews

Reviewer 1:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

Reviewer 2:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

R11 Workflows (R11)

R11. Digital object management takes place according to defined workflows from deposit to access.

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Response:

Workflows and Business Processes

In order to organise the archive's daily work, AUSSDA is divided into 12 work clusters, which align with the OAIS model: 1. Business development & administration, 2. Data acquisition, 3. Ingest & data processing, 4. Access & use data, 5. Preservation, 6. Data protection & compliance, 7. RDM support & trainings, 8. Communication, 9. Archival technologies, 10. Projects, 11. Research, 12. Teaching. The clusters are led by a coordinator, who, among other things, is responsible for documentation and research of recent developments in international best practices. Every core process is covered by at least two team members, one of them being the lead, the other having the role of deputy. AUSSDA's data workflows follow the logic of the research data lifecycle and align with AUSSDAs organisational clusters: Acquisition, Ingest, Access, and Preservation [40].

Data Curation Workflow

Tasks and the communication with clients and depositors is organised and documented in a project management software and integrated ticket system. The depositor receives a package with all relevant information and forms. All processes along the core clusters are guided by guidelines and policies (i.e. Data collection policy, Data Deposit Guideline, Access Policy, etc.) [33, 15, 4]. Different types of data or the use of different AUSSDA services require the application of different workflows within AUSSDA. After the initial appraisal of the data, different factors (e.g. the potential for reuse, the chosen license, the file format, or the use of the self-deposit service) determine which processing workflow is applied [41]. For example in the self-deposit service, the curators doing self-deposits have to conduct a training at AUSSDA and are then supervised during the initial publications. Initially curators do not have publication rights. The full self-deposit service that includes publication rights is only enabled after a supervisor has confirmed that the curation processes are being followed and meet the required quality.

Clear Communication to Depositors and Users about Handling of Data

Depositors receive information about AUSSDA's data management through direct communication (email, telephone, video conference, workshops), printed material and online sources [42]. Before data is archived, depositors consult AUSSDA's acquisition agents. Depositors also sign the transfer and license agreement, which, among other things, lays out its data management [2]. For general questions concerning data handling, AUSSDA provides advice and a template for a data management plan [43] and regularly informs about CESSDA's Data Management Expert Guide [44]. Users of data can find orientation in the AUSSDA Dataverse User Guide [26]. In order to download data, users have to agree to the Terms of Use and Terms of Access, which also inform how the data can be handled.

Decision Handling and Change Management

Each cluster has a dedicated coordinator who is responsible for facilitating decision-making within the defined workflows. In cases that cannot be resolved by members of a respective cluster, the staff report to experts with designated roles to resolve specific issues (e.g. curators can contact staff in the data protection and compliance cluster), or to the head of AUSSDA. The refinement of regular workflows is undertaken in the organisational clusters and documented in the internal wiki. The development of new workflows is driven by the organisational clusters and requires the approval of the head of AUSSDA. Additional feedback loops may include the steering board or other advisory groups (e.g. User Advisory Board, CESSDA ERIC, external law firm see also R6: Expertise & Guidance). Changes of data types used by the designated community are monitored and may result in alterations to the AUSSDA workflows and the development of additional services.

(Note: [40] Annex B: AUSSDAs organisational chart and [41] Annex C: Visualisation of data curation workflow were shared with the CoreTrustSeal reviewers and Board. They are not public since they contain sensitive information.)

Links:

- [33] Data collection policy
- [2] Transfer and licence agreements
- [4] Access Policy
- [42] Example of information for depositors
- [43] DMP Template
- [44] Data Management Expert Guide
- [26] AUSSDA Dataverse User Guide
- [15] Data Deposit Guideline

Reviews

Reviewer 1:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

Reviewer 2:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

R12 Discovery and Identification (R12)

R12. The repository enables users to discover the digital objects and refer to them in a persistent way through proper citation.

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Response:

The Repository Offers Different Search Facilities

AUSSDA ensures that data follow the FAIR principles: findable (e.g. by using a unique identifier - DOI), accessible (e.g. by applying metadata that allow the use of a standardised communications protocol and by the AUSSDA Dataverse API), interoperable (e.g., metadata use controlled vocabularies, open file formats), re-usable (e.g. using metadata standards and publishing under standardized and public licences). Datasets are published in the AUSSDA Dataverse [45]. Data can be accessed by using the search function, requesting and downloading the data. In some cases, data is provided by using a filesender which is hosted by the University Computer Center (ZID). On our website, information on archiving and downloading data is accessible [46].

The Repository Maintains a Searchable Metadata Catalogue to Appropriate (Internationally Agreed) Standards

The AUSSDA Dataverse offers free text search, faceted search in metadata and supports automated search by means of an application programming interface (API). With the AUSSDA Dataverse, AUSSDA maintains a searchable metadata catalogue adhering to internationally agreed standards (CESSDA ERIC Metadata Model (CMM 1.0)) [35], multilingual controlled vocabularies (European Language Social Science Thesaurus - ELSST) [37] and DDI2.5 controlled vocabulary for sampling procedure, kind of data, and type of time method among others [47], and the CESSDA ERIC's topic classification.

The Repository Offers Unique and Persistent Identifiers

In the repository software Dataverse, AUSSDA assigns a DOI (digital object identifier) to each publication (dataset level). The repository software Dataverse has an integration with DataCite for registration and publication of the DOI. Dataverse ensures that the DOI links resolve. With a DOI, research data are uniquely and permanently identifiable.

The Repository Facilitates Machine Harvesting of the Metadata

Metadata are available to all users of the AUSSDA Dataverse without registration. Adherence to the above-named standards sets the basis for machine harvesting of the metadata. The AUSSDA Dataverse repository software offers an API for different usage scenarios. The API offers access to the metadata and the data itself. AUSSDA Dataverse runs a metadata server that supports OAI-PMH (Open Archives Initiative Protocol for Metadata Harvesting).

The Repository Is Included in One or More Disciplinary or Generic Registries of Resources

Among other listings, AUSSDA is registered in re3data (Registry of Research Data Repositories) [48] and OpenDOAR (Directory of Open Access Repositories) [49]. AUSSDA's data holdings can be searched for and found in third-party services such as the CESSDA ERIC Data Catalogue [50] and general search engines, for example Google (see also R0: Context). Furthermore, AUSSDA is listed at following platforms: fairsharing.org [51], Bielefeld Academic Search Engine (BASE) [52], the list of CoreTrustSeal certified data repositories [53], and the database of research infrastructures in Austria from the Federal Ministry Republic of Austria [54].

The Repository Offers Recommended Data Citations

The AUSSDA Dataverse explicitly displays recommended data citations and offers the possibility to export the citation in three different data citation standards (EndNote XML, RIS, BibTex). In our uploaded data curation protocol users also see how the data should be cited.

Links:

- [54] Research infrastructures in Austria by the Federal Ministry Republic of Austria; Education, Science and Research
- [46] FAQs at AUSSDA
- [35] CESSDA ERIC Metadata Model, CMM
- [37] ELSST – European Language Social Science Thesaurus
- [45] AUSSDA Dataverse
- [47] DDI standardised vocabularies
- [48] re3data
- [49] OpenDOAR
- [50] CESSDA ERIC Data Catalogue
- [51] Fairsharing
- [52] BASE
- [53] CoreTrustSeal certified data repositories

Reviews

Reviewer 1:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

Reviewer 2:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

R13 Reuse (R13)

R13. The repository enables reuse of the digital objects over time, ensuring that appropriate information is available to support understanding and use.

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Response:

The Repository Engages with Designated Community of Users to Identify Their Needs

As mentioned in R06 we engage with our designated community via email, phone, Twitter, various meeting formats, and conferences. In a systematic approach to identify the needs of our designated community we organize workshops with the AUSSDA User Advisory Board, for example on how to improve reuse in teaching for students.

The Data Formats, Metadata Schemas, Controlled Vocabularies and Ontologies Used to Support Reuse, and how These Meet the Community Needs

The AUSSDA Dataverse usually provides data files in the formats Stata, SPSS, and tab-separated values. The two proprietary formats are the main formats used by the designated community, whereas the tab-separated format is more accessible and can be read by humans and machines. For most data files, an R download of the tab-separated files is available, too.

Required Metadata and Documentation to support Reuse

The AUSSDA Dataverse provides metadata under a CC0 1.0 Universal (CC0 1.0) Public Domain Dedication [7] allowing reuse for any purpose. We use internationally agreed upon metadata standards [35, 37, 47]. These standards improve the search experience for researchers. In the AUSSDA Dataverse, the file naming, metadata and tags (labels) help to describe the files that users can download. The data curation protocol file (see R07) helps users to navigate the files in a publication. Furthermore, the FAQ section on the AUSSDA website helps users to get answers to many questions that might occur when reusing data from AUSSDA [46].

Measures to Ensure Understandability of the Data

AUSSDA provides detailed information for depositors in its Data Deposit Guideline [15] with checklists of what to include and document to increase understandability and reuse potential of the data right from the beginning. In the AUSSDA Dataverse, datasets are clearly labelled as open access or scientific use files in the terms. In many cases this information is also included in the title and abstract. Files have descriptions and tags added to them. We provide data in proprietary formats, but also upload machine-readable tab-separated files that can be processed with free software. In addition, we upload variable identifiers and descriptors in a separate tab-separated machine-readable file to facilitate reuse. Documentation material such as codebooks and method reports help users to understand the data in more depth.

The website includes a User Guide, where additional information is provided to improve the AUSSDA Dataverse user experience [26]. Further information about finding and using data can also be found in the news section of the website [55] and most common questions get an answer in the FAQ section [46].

Management of Changes to Data, Metadata, Documentation or Other Information that Supports Reuse

We store data in proprietary file formats and in text files (see R09). This way, exchanging information between statistical software and databases is possible. In case technical evolution proceeds and/or the proprietary statistics programs currently used by our designated community are no longer available, the text files - stored in the repository's Archival Information Package (AIP) - can be transformed to future formats. As for the documentation files of the archive material, we store them as PDF/As which is an archive format.

Regarding metadata the dictionary that is updated most often is the ELSST for the keywords [37]. We always use the most recent version. Other controlled vocabularies are updated less frequently. We use a data curation protocol (see R07) to ensure users have a full overview over changes and are able to find a complete list of files that belong to a dataset.

Links:

[1] CC0 1.0 Universal (CC0 1.0) Public Domain Dedication: https://creativecommons.org/publicdomain/zero/1.0/deed.en
[2] CESSDA ERIC Metadata Model (CMM 1.0): https://vocabularies.cessda.eu/
[3] Multilingual standardised vocabulary, ELSST – European Language Social Science Thesaurus: https://elsst.cessda.eu/id

[4] CESSDA ERIC's topic classification and DDI standardised vocabulary (provided by DDI - Data Documentation Initiative DDI2.5): https://ddialliance.org/

[5] AUSSDA Website, FAQs: https://www.aussda.at/en/faq-downloads/faq/

[6] Data Deposit Guideline: https://aussda.at/aussda-data-deposit-guideline

[7] AUSSDA Dataverse User Guide: https://aussda.at/en/aussda-dataverse-user-guide/

[8] AUSSDA Website, Finding data: https://www.aussda.at/en/find-data/

Links:

- [55] AUSSDA Website, Finding data
- [46] FAQs at AUSSDA
- [35] CESSDA ERIC Metadata Model, CMM
- [37] ELSST – European Language Social Science Thesaurus
- [47] DDI standardised vocabularies
- [7] CC0 1.0 Universal (CC0 1.0) Public Domain Dedication
- [26] AUSSDA Dataverse User Guide
- [15] Data Deposit Guideline

Reviews

Reviewer 1:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

Reviewer 2:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

Information Technology & Security

R14 Storage & Integrity (R14)

R14. The repository applies documented processes to ensure data and metadata storage and integrity.

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Response:

Storage Locations

The Vienna University Computer Center (ZID) [56] hosts and manages our two data storage locations, the AUSSDA Dataverse virtual machines [45] and the network storage, where we store our Data Packages – the Submission Information Package (SIP), the Archival Information Package (AIP) and the Dissemination Information Package (DIP). The workflow for the archival packages to the archival storage volumes is documented in the AUSSDA Preservation Plan [25]. The location of the hardware is protected by advanced access control, see R16. The ZID-hosted services are part of their internal project management strategies and documentation, which are developed for highest demands in terms of business continuity, security and liability. We can recover daily backups of the network storage and the AUSSDA Dataverse. For long-term backup, a tape recorder is used. Executed recovery processes have proven successful.

The ZID covers storage and deterioration, including regular maintenance of their systems to ensure stability. For more detailed information regarding backup, physical and logical security, recovery and business continuity, see R15 and R16.

To guarantee file integrity, the AUSSDA Dataverse uses UNF and MD5 hash sums for fixity checks for data files, so users can check their data download. For the data packages on our internal network storage, i.e. the long-term storage, MD5 and SHA256 checksums are calculated for all files and stored together with information about file name and folder location. At least once per quarter but usually each month, we conduct semi-automated audits to

ensure that no unplanned changes have occurred.

Backup and Recovery

The backup and recovery plan ensures that there are multiple copies of all running virtual machines backed up and that data can usually be recovered within 24 hours.

The network storage is backed up every day (Shadow Copy) and stored on another disk. There is also a daily mirror and another daily backup routine for redundancy purposes. For long-term backup, a tape recorder is used to store data on tape. The recovery process has proven successful.

The AUSSDA Dataverse virtual machine runs on a RAID-6 [57] system with Citrix virtualisation [58]. It is backed up every day. For long-term storage and physical separation of backups, backups are stored on a hard drive in another location every two weeks. This recovery process has also proven successful. Central backup is administered by the ZID [59]. The backup software is IBM Spectrum Protect. This provides comprehensive data resilience for physical file servers and virtual environments.

Links:

- [56] ZID
- [25] AUSSDA Preservation Plan
- [57] RAID
- [58] Citrix Hypervisor
- [59] ZID Central backup
- [45] AUSSDA Dataverse

Reviews

Reviewer 1:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

Reviewer 2:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

R15 Technical Infrastructure (R15)

R15. The repository is managed on well-supported operating systems and other core infrastructural software and hardware appropriate to the services it provides to its Designated Community.

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Response:

The data services at AUSSDA comply with well supported operating systems, which are suitable for the data services offered to its designated communities. The Vienna University Computer Center (ZID) hosts and manages our two data storage locations, the AUSSDA Dataverse virtual machines [56] and the network storage [56]. AUSSDA uses a project management software (internally) [61] and GitHub (internally and public) [62] to create and process tickets that drive workflows, feature requests, bug reports, versioning and other issues related to our software, web services and infrastructure. To monitor the uptime/downtime of our web services, we use Uptime Robot [63]. Uptime Robot monitors AUSSDA's web services every 5 minutes (e.g. AUSSDA website, AUSSDA Dataverse) and alerts AUSSDA if a website is down.

Dataverse

AUSSDA supports the open source movement. The Dataverse software [64] is being developed at Harvard's Institute for Quantitative Social Science (IQSS), along with many collaborators and contributors worldwide and is published under the Apache Licence, Version 2.0. The open source software is running on more than 80 installations world-wide, relying on other open source software, e.g. Linux distributions, postgreSQL [65] as application database, Solr [66] for indexing, Payara [67] as application server and Java [68] as front end application. Our AUSSDA Dataverse runs on a virtual machine. It offers standardised, machine-readable access to its data via a RESTful API and DDI 2.5 compliance [69]. For authentication, we support Shibboleth [70].

Infrastructure Development Plan

The work cluster Archival Technologies is responsible for the infrastructure planning and is receiving input from the steering board, the User Advisory Board as designated community, and CESSDA ERIC. AUSSDA maintains a work plan for the infrastructure development. New work plans are drawn up once a year. The work plan includes topics such as migrations of data, software upgrades, usability improvements, and performance tests of the infrastructure.

Software Inventory

AUSSDA keeps track of its software through two separate inventories. One focuses on the legal requirements regarding GDPR conformity, and one on the costs and licences. System documentation is maintained by the Vienna University Computer Center (ZID). AUSSDA does not process or provide near real-time data streams.

Links:

- [56] ZID
- [61] Teamwork Projects
- [62] GitHub
- [63] Uptimerobot
- [64] Dataverse
- [65] postgreSQL
- [66] Solr
- [67] Payara
- [68] Java
- [69] Dataverse Metadata Reference
- [70] Shibboleth

Reviews

Reviewer 1:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

Reviewer 2:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

R16 Security (R16)

R16. The repository protects the facility and its data, metadata, products, services, and users.

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Response:

In order to reduce the risks of breaches of confidentiality, data corruption and data loss, there are specific security measures and regulations in place, which have been implemented in the workflows across all work clusters. These measures are adopted from the policies of the University of Vienna and the regulations of the Library and Archive Services, further specified where needed and documented in the wiki. A security policy detailing the aforementioned policies has been approved by the governing body [71]. On a broad level, these measures affect the general conduct of all staff members, e.g. through the adoption of specific measures ensuring physical or virtual access control to hardware and data. More specific to the archiving process, different security levels impact the workflows from ingest to dissemination, through certain processes to identify and handle data protection issues with information contained in datasets as well as through restrictions regarding the publication of datasets for more sensitive data. As general security measures, access to our offices and to their storage shelves is only possible for employees with a key. Restricted physical materials are stored in locked shelves. Workstations have regular access restrictions and are password-protected. The location of the hardware is protected by advanced access

control. Unauthorised personnel do not have access to these areas. Authorised personnel must have a password and a physical key. Logical access is only allowed for the the SysAdmin and the head of AUSSDA as a fall-back. Passwords are stored in encrypted password containers [72]. AUSSDA has implemented risk management measures against common threats, such as data corruption, data loss, theft, and unauthorised access [71]. Employees are trained in security-relevant issues on a regular basis, e.g. data anonymisation, General Data Protection Regulation (GDPR) compliance, password management and how to use secure technology in everyday work. Regarding the protection of information by employees, the Austrian bargaining agreement includes a non-disclosure agreement for employees by default.

At the University of Vienna, AUSSDA is responsible for managing the AUSSDA Dataverse [45] as our primary service for data access on the application layer, while the AUSSDA Dataverse hosting and maintenance (on the virtualisation layer), network configuration and firewall setup and also the network storage management are being managed by the Vienna University Computer Center (ZID) [56]. The network storage and AUSSDA Dataverse are virtualised solutions [58]. The operating systems of the virtual machines, and all layers above, can be determined by AUSSDA. We work closely together with ZID to keep requirements, developments, changes and procedures up to date. The location used for the hardware managed by ZID is protected with advanced access control. Unauthorised personnel do not have access to these areas. Authorised personnel must have a password and a key.

Network security is assured by ZID. ZID provides a firewall between the Internet and the data centre network and enforces strict routing rules. Only incoming HTTPS connections are accepted from external networks, and from the AUSSDA local network only HTTPS and SSH connections are routed. The AUSSDA Dataverse virtual machine uses its own firewall accepting only HTTPS and SSH connections. Authentication methods include log-in with password as well as Shibboleth-based federated login (AAI) coupled with the eduGAIN federation [73]. The AUSSDA Dataverse is provided with SSL. Extensive user rights in the AUSSDA Dataverse are restricted to as few persons as necessary. Administration of the AUSSDA Dataverse is limited to two persons. The head of AUSSDA can gain the necessary rights to execute these functions in an emergency.

Besides the AUSSDA Dataverse, we use Filesender – a software hosted and maintained by ZID – to send files [74]. The software creates secure links (https) that are valid for a set time frame (up to 10 days), in which sensitive and/or restricted data can be shared directly with users.

Risk Assessments

As a core facility at the University of Vienna, the university's risk protection procedures also apply to AUSSDA. The risk management includes physical and informational security. AUSDA has implemented risk management measures against common threats, such as data corruption, data loss, theft, and unauthorised access. To handle incidents a management/reporting system is in use [75]. Performance of Dataverse is monitored with Prometheus [76] and Grafana [77]. Performance problems or anomaly incidents can be detected and alert notifications are send to handle incidents.

(Note: [71] Annex D: AUSSDA Security Policy and [75] Annex E: WIKI Incidents Management/Reporting were shared with the CoreTrustSeal reviewers and Board. They are not public since they contain sensitive information.)

Links:

- [56] ZID
- [58] Citrix Hypervisor
- [72] KeepassX
- [73] eduGAIN
- [74] Filesender
- [76] Prometheus
- [77] Grafana
- [45] AUSSDA Dataverse

Reviews

Reviewer 1:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

Reviewer 2:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

Applicant feedback

R17 Applicant Feedback

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

Compliance level:

In Progress: the repository is in the implementation phase - 0

Response:

Change log for resubmission 2:
1. Re reviewer's comment in section "cooperation and outsourcing". Reviewer requested "Please clarify the support provided by the University of Vienna's Research Services Department and Corporate Communications. What is the function or service they provide, as well as the nature of the relationship or agreement (contractual, Service Level Agreement, Memorandum of Understanding, etc.)?"
Answer:
We rewrote the first part. It now is:
"AUSSDA is an integral part of the Vienna Library and Archive Services at the University of Vienna, where it benefits from the support of two other university units. The Vienna University Computer Center (ZID) maintains the technical infrastructure of the university, overseeing areas such as email services, data networks, storage solutions, web servers, telecommunication systems, SSL certificates, large file transfers, and IT security. Additionally, the "Research Services and Career Development" unit of the university provides assistance to university staff, particularly during grant preparation phases, offering expertise in areas such as budgeting and approval procedures."
Additional explanation for reviewers: "Corporate Communications" offered advice in setting up AUSSDA initially 6 years ago, but is no longer actively involved with AUSSDA, hence the deletion. There is no special formal agreement or relationship with the units within the university as we are all part of the same organisation and their services are provided as part of their duties.
2. Re reviewer's comment R07: CTS office informed us that since the comment was not updated and we did extensive changes to the text before, we should treat it as accepted (solved). No change needed.
3. Entered all links in the system according to the request of the CTS board.

Links:

Reviews

Reviewer 1:

Compliance level:

In Progress: the repository is in the implementation phase - 0

Comments:

Thanks for the revisions. Also for the separate PDF with the changing log and additional explanation. Very helpful.
Board comment:
* Thank you for the feedback on the online tool. The bugs you mentioned should be solved and in the meantime we have implemented a feature to upload attachments, see manual.

Reviewer 2:

Compliance level:

Implemented: the requirement has been fully implemented by the repository - 1

Comments:

Thank you for an excellent re-certification submission.