Assessment Information

[CoreTrustSeal Requirements 2020–2024](#)

Repository:	GAMS - Geisteswissenschaftliches Asset Management System
Website:	http://gams.uni-graz.at
Certification period:	Feb. 29, 2024 - 28 February 2027
Requirements version:	CoreTrustSeal Requirements 2020-2022

This repository is owned by: **Zentrum für Informationsmodellierung**

CORE TRUSTWORTHY DATA REPOSITORIES REQUIREMENTS

Background Information

Repository Type

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

Response:

- Domain or subject-based repository
- Research project repository

Reviews

Reviewer 1:

Comments:

Reviewer 2:

Comments:

Reviewer 1:

Comments:

Description of Repository

Provide a short overview of the repository.

Response:

GAMS (https://gams.uni-graz.at) is an asset management system for the management, publication and long-term archiving of digital resources from the Humanities. It enables scholars, researchers and students to manage and publish project resources with permanent identification and enriched with metadata.
Design and development of GAMS are carried out by the Centre for Information Modelling at the University of Graz in cooperation with multiple partners inside and outside the university, with regards to the specific requirements of humanistic research.
The repository is fully OAIS (Open Archival Information System)-compliant and covers the full life cycle of digital objects from receiving the SIP (submission information package), archiving the AIP (archival information package) and delivering the DIP (dissemination information package) to the public.
In most cases, data will be deposited in the course of a research project collaboration with the Institute. Each project is assigned a metadata manager from the Institute to assist with the workflow, data modelling, deposition and publication processes of the project. This approach guarantees the creation of high quality data prepared for scientific publication and long-term archiving. This also means that data is always at least basically curated when ingested into the repository. Project partners can come from the Faculty of Humanities or the University of Graz, but also from other local, national or international research or cultural heritage institutions. Funding of the repository thus consists of a team of permanent staff providing infrastructural core services and management and a larger amount of short-term funded project employees acting as metadata managers, data curators and communication interface with depositors.
GAMS is registered with re3data.org (https://www.re3data.org/repository/r3d100011339), Open DOAR (https://v2.sherpa.ac.uk/id/repository/3179) and as a CLARIN-B Centre (http://hdl.handle.net/11372/DOC-161).

Reviews

Reviewer 2:

Comments:

Reviewer 1:

Comments:

Reviewer 2:

Comments:

Designated Community

Provide a clear definition of the Designated Community

Response:

The designated community consists of scholars and students of the Arts and Humanities and related disciplines, as well as cultural heritage institutions (libraries, archives, museums).

Reviews

Reviewer 1:

Comments:

Reviewer 2:

Comments:

Reviewer 1:

Comments:

Level of Curation

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

Response:

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

Reviews

Reviewer 2:

Comments:

Reviewer 1:

Comments:

Reviewer 2:

Comments:

Level of Curation - explanation

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

Response:

Preservation goals and actions are the same for all accepted data regardless of curation level.
A higher level of curation will reflect in enhanced pre-processing of the data, e.g. for enrichment with multiple authority files or vocabularies; this will result in a higher FAIRness and re-use factor. Any additions or changes to the data in the process occur in cooperation with and with permission of the depositor.

Reviews

Reviewer 1:

Comments:

Reviewer 2:

Comments:

Reviewer 1:

Comments:

Insource/Outsource Partners

If applicable, please list them.

Response:

-

Reviews

Reviewer 2:

Comments:

Reviewer 1:

Comments:

Reviewer 2:

Comments:

Significant Changes

Summary of Significant Changes Since Last Application if applicable.

Response:

A major organizational change occurred in 2019, when the Faculty of Humanities decided to transfer the temporary Centre of Information Modelling into a permanent university institute.
The second major change occurred with regard to personnel, where the repository faced the retirement of the chief developer in 2021. To counteract this, the institute could hire proactively one permanent FTE filled by a highly qualified senior technical staff member in 2019 and another permanent 0,5 FTE junior developer in 2022.
From a technical point of view, the migration from Fedora 3.x to a newer version of repository software as a major infrastructure component is still an ongoing challenge.

Reviews

Reviewer 1:

Comments:

Reviewer 2:

Comments:

Reviewer 1:

Comments:

Other Relevant Information

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

Response:

-

Reviews

Reviewer 2:

Comments:

Reviewer 1:

Comments:

Reviewer 2:

Comments:

Organizational Infrastructure

R1 Mission/Scope

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

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

GAMS serves to keep research data and results from the Humanities available over the long-term, thus serving the mission statement of long-term preservation. A major organizational change occurred in 2019, when the Faculty of Humanities decided to transfer the temporary Centre of Information Modelling into a permanent university institute. The rationale of the Faculty behind this decision is reflected in the mission statement published on the website, and lists the maintenance and further development of the GAMS research infrastructure and repository as one of the tasks of the newly created institute (cf. https://informationsmodellierung.uni-graz.at/en/institute/our-mission and https://gams.uni-graz.at/context:gams?mode=about&locale=en). The institute recognizes this responsibility and has now for the first time since the repository was created a permanent mandate to do so. This institutional anchoring significantly enhances the business continuity and preservation perspectives of the infrastructure.
The statement also clarifies the collection scope (mainly research projects from the Humanities) and designated community (primarily scholars and researchers from the Humanities and related sectors like cultural heritage institutions). The institute and repository perceives itself at the intersection of research, infrastructure and teaching. Research is carried out and published using the repository and other infrastructure at the institute and experiences from that research and necessary skills are further disseminated via teaching in the institute's MA course programme.

Links:

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

it would be better to start the answer with "GAMS serves to keep research data and results from.." and then add the information about the organizational change - it is a bit confusing when you start reading the answer. It is basically a repetition of the first sentence in the previous answer.

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

R2 Licenses

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

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

Legal Issues like IPR (Intellectual Property Rights) and licensing (possible limitation of access) are identified and discussed at the very beginning of project planning with the external partner(s). The institute offers consulting and expertise in these fields while project partners are responsible for respecting respective national and international laws.

Depending on the research data, pertinent agreements governing these legal aspects are signed (cf. for instance the sample deposition agreement https://static.uni-graz.at/fileadmin/gewi-zentren/Informationsmodellierung/PDF/Repository-Depositors-Agreement_GAMS_V3.pdf), but due to the diversity of the data itself and the project partner institutions there is no standardized template.

The institute promotes open access and free availability of research data (cf. https://gams.uni-graz.at/context:gams?mode=about&locale=en#openaccess). All resources (e.g. text and images) of the GAMS repository are licensed under an as open as possible Creative Commons license, usually CC BY-NC (https://creativecommons.org/licenses/by-nc/3.0/at/) . This is indicated on the repository's main site (cf. https://gams.uni-graz.at) and clearly displayed also at the individual object level. Usually, a global project license in the form of a graphic is featured in the HTML footer and an individual license in the form of a link is featured in the object metadata (cf. for instance this example: https://gams.uni-graz.at/o:km.9). Both links refer the user to the respective Creative Commons license in English, thus ensuring that non-German speakers can also access license information. The derived Dublin Core metadata are licensed under CC 0.

If personal or other sensitive data is included in the project, access regulations to the digital objects can be put in effect. Fedora supports management of access rights via XACML (eXtensible Access Control Markup Language). Another possibility is to use a password for the web representation, which can be requested by the users directly from the data providers.

Any personal data deposited is dealt with in accordance with the EU General Data Protection Regulation (GDPR). In practice, data sets deposited in GAMS are not sensitive regarding personal data, since our collections contain no data on still living persons. In case of such data-sets, Article 89 of the GDPR and §7 of the Austrian Data Protection Act provide sufficient safeguards and exceptions "for archival purposes in the public interest, scientific or historical research purposes, or statistical purposes" (DSG §7). Where these general legal regulations are insufficient, access to and processing of the data are restricted or the data-set is rejected.

In case of non-compliance with the regulations determined by the data providers (for instance commercial use of non-commercially licensed material), the data providers are free to take legal action against the offenders. Should the repository become aware of a violation of intellectual property or personal rights in the context of the data made available, access to the data sets concerned will be blocked immediately and the depositors will be informed in order to take appropriate steps.

A list of respective national and international laws can be obtained from the repository's preservation plan at https://gams.uni-graz.at/o:gams.preservationplan, p. 8.

Links:

Reviews

Reviewer 2:

Compliance level:

Not Applicable - 0

Comments:

typo: "ecternal partner(s)"
A list of respective national and international laws would be appreciated (can be linked).
A direct link to the deposit agreement would be great to include in this answer:
https://static.uni-graz.at/fileadmin/gewi-zentren/Informationsmodellierung/PDF/Repository-Depositors-Agreement_GAMS_V3.pdf
The criteria for access to personal and sensitive data are not clear

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

R3 Continuity of access

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

Compliance level:

The repository is in the implementation phase - 3

Response:

University of Graz recognizes its responsibility to preserve and maintain the data of the GAMS repository now and in the future. The permanent and continued access to over 70 data collections from the fields of humanities and cultural heritage is of central concern not only to the Centre for Information Modelling but considered an obligation by the whole University. The research data policy of the University (cf. https://static.uni-graz.at/fileadmin/strategische-entwicklung/Dateien/FDM-Policy_DE_FINAL_Layout.pdf, in German) demands the preservation of research data for 10 years. To further emphasize this concern, the organizational unit responsible for this task (ZIM-ACDH) was transformed from a temporary Centre to a permanent department (Institute) of the University of Graz in 2019, which means there is no delimited funding period applicable any more. The operation of the GAMS repository remains to be one of the main duties of this Institute, in addition to continuing research in the Digital Humanities. This constituted a major step towards continuity of access for the data holdings.
The university's commitment is also further underlined by the fact that since 2012 the number of employees has doubled and Austria's first professorship for Digital Humanities was made a permanent position in 2021. Austria's first MA degree in Digital Humanities was implemented in 2017 at the same institute.
If the University of Graz should in the future for whatever reason not be able to fulfill this duty, it will ensure the continuity and sustainability of the data concerned. A data package containing the data in its entirety and in a self-descriptive archival format will be exported from the repository and either be returned to the original owner or transferred to another suitable disciplinary or institutional national repository. Usually, GAMS is the only custodian of the research data in question and recognizes the importance of securing the preserved data, be it in their own custody or by guaranteeing the transfer to a different appropriate environment or infrastructure. To further facilitate the transfer to other repositories if the worst comes to the worst, there are continuous efforts to create a dedicated Austrian repository federation, where existing repositories could act as a fallback solution to each other. This objective has been further pursued by creating a common description ontology for repository objects (cf. http://gams.uni-graz.at/o:dha-ontology / https://github.com/acdh-oeaw/dha-ontology) during the KONDE (Competency Network Digital Edition) project and will receive continuous attention in the DiTAH (Digital Transformation of the Austrian Humanities) project. The federation is also mentioned as a guideline in the national CLARIAH strategy paper (https://gams.uni-graz.at/o:clariah.dha-strategie-2021-en, p. 4). The actual operation of the federation is however still a desideratum, therefore the compliance level is set to 3.

Links:

Reviews

Reviewer 1:

Compliance level:

The repository is in the implementation phase - 3

Comments:

Transforming the temporary Centre of Information Modelling into a permanent institute contributes positively to the continuity of access
The move towards permanent institute quite contradicts the downgrade of compliance level (from level 4 in the previous application)
Having said that, I accept the self-assessment level of 3, as the effort through the federation is still work in progress

Reviewer 2:

Compliance level:

The repository is in the implementation phase - 3

Comments:

Reviewer 1:

Compliance level:

The repository is in the implementation phase - 3

Comments:

what is your current funding period and how sustainable is it? I do not see any information on this

R4 Confidentiality/Ethics

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

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

Depositors are responsible for adherence to national and international law as well as respect of ethical norms and discipline specific rules. This responsibility is also specified in the deposition agreement (https://static.uni-graz.at/fileadmin/gewi-zentren/Informationsmodellierung/PDF/Repository-Depositors-Agreement_GAMS_V3.pdf). If personal or sensitive data with a disclosure risk are part of the project, there will be provisions in place to eliminate or minimize this risk. One possibility is to pre-process the ingested data accordingly; another is that the project-specific ingest workflow will consider the possibility of confidential data and employ suitable measures. This includes for instance anonymization, e.g. blurring of names and addresses on postcard facsimiles (https://gams.uni-graz.at/o:gm.100) or blurring of names on historical
criminal records (https://gams.uni-graz.at/o:km.9) for the facsimiles. With regard to textual (meta)data, the data creation workflow (usually consisting of XSL transformations) can specifically query for confidential data (like personal names) and eliminate or anonymize them. These measures should prevent the ingest of confidential data altogether, also due to the fact that ingest and data modeling are carried out by a metadata manager individually assigned to the project. So far, no written procedures have been needed to address this issue, and confidential data has not been included in the repository by accident. If such an event should occur in the future, the repository managers would be prepared to immediately exclude the respective data.
Usually, IPR is less of an issue in our case, because the data we are dealing with is usually beyond the protection time limits; if necessary, only restricted access to the material will be granted (cf. also the section on Licenses/R2).
A list of respective national and international laws can be obtained from the repository's preservation plan at
https://gams.uni-graz.at/o:gams.preservationplan, p. 8.

Links:

Reviews

Reviewer 2:

Compliance level:

Not Applicable - 0

Comments:

a list of relevant national and international legislation, ethical norms, and discipline-specific rules would be beneficial - a link somewhere on your website would suffice.
A direct link to the deposit agreement would be great to include in this answer:
https://static.uni-graz.at/fileadmin/gewi-zentren/Informationsmodellierung/PDF/Repository-Depositors-Agreement_GAMS_V3.pdf

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

R5 Organizational infrastructure

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

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

The repository is part of the Institute Centre for Information Modelling - Austrian Centre for Digital Humanities at the University of Graz. The institute's main research focus is Digital Humanities, as is the designated community of the repository (see R1). Currently, six staff members with an equivalent of 4 full time equivalents are permanently employed to take care of various aspects of the infrastructure, covering not only technical but also organizational and content-related tasks. These permanent positions are linked to the now permanent institute, no temporal limitation on funding applies.
The repository faced the retirement of the chief developer in 2021. To counteract this, the institute could hire proactively one permanent FTE filled by a highly qualified senior technical staff member as a replacement in 2019 and another permanent 0,5 FTE junior developer in 2022.
Occasionally, this team is supplemented by short-term funded staff responsible for individual additions or dissemination methods. All staff members have the opportunity to attend suitable training courses and relevant conferences (see R6). Expert guidance is also obtained from affiliations with various initiatives like CLARIAH-AT (CLARIN and DARIAH respectively) (for a full list of national and international bodies see also R6).
In general, requirements for the staff usually include a combination of Humanities and IT skills, i.e. a BA or MA degree in a Humanities discipline alongside advanced IT skills (formalized training on secondary or tertiary level, work experience, supplementary courses). A substantial portion of staff is recruited from DH teaching at the University of Graz, the MA Digital Humanities
(https://informationsmodellierung.uni-graz.at/en/studying/master-degree-digital-humanities). However, the high volume of project-based funding acquired by the institute results in an asymmetry between temporarily and permanently employed staff members of the repository, which calls for adjustments in the training and number of permanently employed staff members. This has to be a continuously addressed process. It is one of the main risks of maintaining a trusted digital repository, which can never be fully eliminated and is of particular consequence when a high percentage of the permanently funded working hours is already bound by large and complicated tasks such as the migration of the storage layer. The sudden loss of key staff members is also an inevitable risk, which we seek to reduce by providing and curating sufficient documentation, as well as knowledge transfer among the employees (for instance using our Gitlab instance, see also R16 on risk management).

Links:

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 1:

Compliance level:

Not Applicable - 0

Comments:

add a sentence about your hosting institution that is in line with your DH community you are serving
still lacking information about the current funding period
add any possible affiliations (national, international bodies) - probably at least CLARIN, DARIAH or reference R6

R6 Expert guidance

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

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

A key element of guidance and sustainable networking is the knowledge transfer within the institute itself. Various staff members have affiliations with relevant organizations and communities (TEI Technical Council, Research Data Alliance, DARIAH, RepManNet). The institute is involved with CLARIAH-AT and thus active in various working groups resulting from the CLARIAH strategy, especially of interest is the networking and exchange with fellow research infrastructures in Austria (cf. http://gams.uni-graz.at/o:clariah.dha-strategie-2021-en, p. 4).
Internal communication is facilitated by a designated "research meeting" every Wednesday, where current projects and developments are presented and discussed. Another possibility for networking and exchange with colleagues from other institutions or disciplines is the attendance of designated working groups (Working Group on data centres of the DHd, Research Data Alliance, CLARIN and DARIAH, Fedora User Group, etc.) and special conferences. The Institute also seeks to complement their skills by inviting experts to our "lunchtime lectures" (https://informationsmodellierung.uni-graz.at/de/veranstaltungen/lunchtime-lectures/) or organizing international conferences, workshops and summer schools (https://informationsmodellierung.uni-graz.at/de/veranstaltungen/).
User feedback and requests are usually directed to the departmental e-mail address and distributed to either the GAMS technical team (in case of technical issues) or the pertinent project coordinator (in case of content-related issues). If the issue communicated is larger (e.g. technical functionalities or security issues), it is taken into the weekly 'research meeting'.
The original Scientific Board was dissolved when the Centre was established as a Department (Institut) of the University of Graz. However, we want to re-establish a Scientific Board in 2024. In the meantime, professional exchange and guidance is provided through the CLARIAH-AT working group on "Research data and repositories" (https://clariah.at/the-clariah-at-working-groups/).

Links:

Reviews

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

how do you communicate feedback from your users?

Digital Object Management

R7 Data integrity and authenticity

The repository guarantees the integrity and authenticity of the data.

Compliance level:

The repository is in the implementation phase - 3

Response:

Fedora Commons supports versioning of every aspect of the digital resource from primary source to metadata and associated materials. All changes and previous versions of the material can be retrieved and are accessible from the infrastructure. Fedora uses MD5 checksums to guarantee the integrity of the resources in the digital archive.
The Cirilo client checks well-formedness of XML-formats and validates against the referenced schema upon ingest. This applies also to metadata, as it is stored as an XML-based datastream within the digital object.
Due to the special nature of cooperation projects, a large portion of personal contact is needed with the depositors and their identity can be established from the beginning.
Although GAMS accepts responsibility for providing data integrity and authenticity and is currently already guaranteeing to do so, we are sometimes lacking transparency of these processes to the end user, e.g. previous versions of the data can basically only be accessed with knowledge of the infrastructure and mostly not transparently offered on the surface of the project to the audience.
Also, integrity and authenticity checks tend to be performed more or less event related and should be anchored deeper within standardized workflows. We are aware of those shortcomings and seek to improve especially with regard to the migration process to a new repository version (e.g. Fedora 6) currently underway.
The goal would be to offer the so far largely hidden information transparently to the audience by a standardized module, thereby also improving the scientific quality and transparent and replicable research process reflected in the data and to include this in regular workflow mechanisms.
The timeframe for this is however still pending due to the fact that the major changes in the architecture of Fedora 3-6 impacted our original migration plan massively. Since integrity of our holdings is our top priority we will allocate all the time needed to make sure the selected solution will support all our long-term preservation and authenticity objectives, even if this means further delay. Thus, we completed a smaller migration effort which ported our Fedora 3 environment to Docker to make enough room for a thorough implementation of the larger migration effort including said module. Until we can achieve this, the compliance level is set to 3.

Links:

Reviews

Reviewer 1:

Compliance level:

The repository is in the implementation phase - 3

Comments:

How do you log changes to data and metadata?

Reviewer 2:

Compliance level:

The repository is in the implementation phase - 3

Comments:

Reviewer 1:

Compliance level:

The repository is in the implementation phase - 3

Comments:

R8 Appraisal

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

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

In most cases, data will be deposited as part of a cooperation research project. Such a project usually entails a joint funding application at national or international funding agencies. Thus, the Centre for Information Modelling and the project partner jointly define a research question and establish the (digital) research methods used in the project. The application is supplemented by a data management plan detailing all information on the expected research data to be integrated in the repository. In case of approval, the proposal and integrated data management plan form the basis of the formal cooperation and deposition agreement signed between the partners. The research question often comes from the primary research objectives of the institute, namely Digital Edition and Digitized Cultural Heritage, but other proposals are also welcome to broaden the repository's range of data formats and support the integration of new functionalities (cf. also the collection policy at

http://gams.uni-graz.at/context:gams?mode=about&locale=en#collectionpolicy).
Each project is supported by a metadata manager from the institute assisting project partners with the workflow, data modeling, deposition and publication process and acting as a counselling service for all questions with regard to the repository. This approach guarantees the creation of high quality data prepared for publication and long-term archiving. Metadata is provided in sufficient detail for both purposes.
Quality control is especially supported by the use of controlled vocabularies and authority files. Every digital object must by definition be equipped by a Dublin Core datastream containing sufficient data for information retrieval and resource identification.
GAMS is serialized on XML (eXtensible Markup Language) -based standards and technologies for data storage and representation. If the data in question does not conform to any XML-based international standard, the institute will implement suitable workflows for the conversion of the content in agreement with the project partners. For text and metadata, the institute uses (among others) the following standards: TEI (Text Encoding Initiative), LIDO (Lightweight Information Describing Objects), DC (Dublin Core), METS/MODS (Metadata Encoding and Transmission Standard/Metadata Object Description Scheme), RDF (Resource Description Framework), SKOS (Simple Knowledge Organization System). This list of preferred formats is reflected in the use of dedicated content models for the respective standards (http://gams.uni-graz.at/o:gams.doku#cirilomodels). The Cirilo Client then checks the well-formedness of the
XML and validates the document against the given schema to ensure conformity. Data producers must deliver images in the recognized standards JPEG/JPEG2000 (Joint Photographic Experts Group) or TIFF (Tagged Image File Format); if necessary the institute assists in a conversion process (cf. also the information on preferred formats at http://gams.uni-graz.at/context:gams?mode=about&locale=en#formats).
In our opinion, operating with a limited set of preferred formats and data types is key to keeping a repository maintainable over a long period of time, thus, compliance with standards and preferred formats is closely monitored.

Links:

Reviews

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

R9 Documented storage procedures

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

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

The archival storage of the repository has sufficient measures for storage, identification, retrieval and backup in place. These measures pertain to all levels of security, be it a) data security in the sense of authenticity and integrity (see R7), b) authentication for designated users only (for depositors and managers as well as for users) and c) network and system security itself (see R16). Data storage is provided via SAN by our university's IT department (UNI IT). Data is stored redundantly in two data centers in different campus buildings. Uni IT does not sign formal service level agreements with administrative units of the University; there is however a service description for the server infrastructure offered to the repository. The internal service description is attached as an appendix, please note also the publicly available IT security policy of the University (in German only): https://online.uni-graz.at/kfu_online/wbMitteilungsblaetter.display?pNr=75196.
Data backup in GAMS is part of the central backup processes of the University. Backups run daily and are stored on a disk array and later moved to tape. There is an additional offsite backup managed by the institute which is also run every night. The combination of both strategies ensures that backups are available for seven years. Data recovery is regularly exercised on a spare machine for training purposes of the administrators. Backup consistency is guaranteed because every Fedora object is entirely stored in FOXML format containing all binary data streams in base64 encoding. Additionally, all datastreams are preserved in the original format as distinct files. These processes are documented in detail in the Fedora Commons wiki (https://wiki.duraspace.org/display/FEDORA/All+Documentation and select your version). Only system administrators have direct access to these data, all other operations performed on the data are performed via the Cirilo client requiring authentication via LDAP. As each object provides MD5 checksums for the datastreams, corrupted data can be identified easily.
All services are monitored 24/7 with a reaction time of typically only a few minutes during working hours to some hours during weekends and nights.

Links:

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Thank you for noting the service level agreement, which was a comment noted in your 2019 application.

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

R10 Preservation plan

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

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

Responsibilities and obligations of the contractors are listed in detail in the cooperation and deposition agreement signed with the project partners at the beginning of the cooperation (sample available here:
https://static.uni-graz.at/fileadmin/gewi-zentren/Informationsmodellierung/PDF/Repository-Depositors-Agreement_GAMS_V3.pdf). Applying for the related project funding usually also means handing in a designated data management plan (sample available here:
https://static.uni-graz.at/fileadmin/gewi-zentren/Informationsmodellierung/PDF/Data_Management_Plan_GAMS-Sample.pdf). More general principles are outlined in the About section
(http://gams.uni-graz.at/archive/objects/context:gams/methods/sdef:Context/get?mode=about&locale=en) and the documentation of the infrastructure
(http://gams.uni-graz.at/docs). This especially pertains to the collection policy, the list of preferred formats suitable for preservation, the Fedora object model structuring the data and the data life cycle covering the all functions of the OAIS-model. By definition, the underlying software Fedora Commons is an OAIS-compliant asset management system, addressing and managing all stages of the data life cycle.
The Institute assumes full responsibility for the long-term preservation of the repository content, as stated in its mission statement (see R1). All components of the infrastructure are continuously monitored as part of preservation planning.
Procedures are put in place to further guarantee long-term preservation, most notably in performing necessary migration processes. It is our belief that only by making use of a restricted number of formats and technologies and applying standardized workflows a repository can be maintained over a long period of time and take on the responsibility of long-term preservation. This and other principles are further outlined in the repository's preservation plan available at https://gams.uni-graz.at/o:gams.preservationplan. With regard to the accepted and preferred formats and conversion or migration processes that might be needed, see http://gams.uni-graz.at/context:gams?mode=about&locale=en#formats. Obsolescence of formats as the primary reason for migration is monitored by consulting sources like the Digital Preservation Coalition (https://www.dpconline.org/),
https://www.nationalarchives.gov.uk/PRONOM or https://openpreservation.org.

Links:

Reviews

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 1:

Compliance level:

The repository is in the implementation phase - 3

Comments:

Response Text: fix the link to the deposit agreement and DMP
you should have a link to the preservation plan for the recertification since you were already at level 3 without a preservation plan last time

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

R11 Data quality

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

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

Since data can only be deposited in a cooperative effort, quality control in the curation of data and metadata is an integral part of a project. The metadata manager will not only choose the appropriate standard to represent the deposited information (e.g. TEI for texts, LIDO for museum objects, etc.) and make sure that the documents are well-formed and valid (see R7 and R8 for details), but will also check the data quality with regard to the content. For metadata in Dublin Core, the TEI Header and the respective LIDO and RDF sections, templates and guidelines for appropriate population of the fields are available in the internal GitLab instance of the institute to create consistent metadata records across the repository. This might include links to related works or publications inside and outside of the own repository.
This will include integration of suitable vocabularies and norm data on the formal side, but especially comprise constant communication and training of the scholars responsible for data creation and enrichment. This point has turned out to be crucial for data quality and is therefore fostered by regular project meetings and informal communication among the employees, whenever possible. The metadata managers will usually have a humanities degree and be specifically trained to fill their role in bridging the gap between information science and traditional humanities scholarship. The data and metadata created in this way is directly accessible to the end user, not only through a graphical user interface but usually also by linking to the primary data. This includes information on the publisher responsible for the scientific content and often also the scholar responsible for the data creation. In many cases, there is a direct link to contact the editors and/or publishers with questions, remarks or corrections.
Projects and data collections are included in the catalogue of the university library.

Links:

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

R12 Workflows

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

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

An overview of the data life cycle in the repository can be viewed in the figure and description here:
http://gams.uni-graz.at/context:gams?mode=about&locale=en#workflow.
Archiving takes place following specific procedures laid out in R9. In cooperation with the project partners, the institute takes over the data according to the specifications of the repository, with special emphasis on the list of accepted formats and data quality. This SIP is then ingested using the Cirilo Client. During ingest, metadata is extracted from the source and mapped to a Dublin Core record. Additionally, semantic enrichment (like resolution of place names and ontology concepts based on authority files or thesauri) can take place. Images and other related materials are bundled within the resource automatically. This also includes validation and quality control of the data as well as assignment of a PID (persistent identifier) in the system.
The GAMS repository is not only used for long-term preservation but also for the web-representation of the resources. In that respect, it takes advantage of Fedora's object model, which assumes that all digital assets are completely self-descriptive (cf.
https://wiki.duraspace.org/display/FEDORA36/Fedora+Digital+Object+Model).
The production of DIPs (for instance via stylesheets and transformations) is directly encapsulated in every resource. Thus, the GAMS repository and the Cirilo Client cover the whole lifecycle of objects from SIP to DIP in the OAIS model. These workflows are based on the inherent features of Fedora Commons and its object model, which are both outlined in detail in the documentation (cf. http://gams.uni-graz.at/docs).
Training and information for staff on workflows and respective checklists are provided on the institute's (internal) GitLab instance.
Since the institute is involved in any project from the application stage, the suitability of and compatibility with data for the repository is clearly established from the beginning. If the data in question does not fit the focus of the repository (i.e. arts, humanities and cultural heritage) or is deemed unsuitable for other reasons (for instance legal issues), a deposition and cooperation agreement can possibly not be reached. In this case we may assist the depositor in finding a more suitable solution for their data, for instance by establishing contact with a different institution.

Links:

Reviews

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

R13 Data discovery and identification

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

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

For users, the first point of access will usually be the graphical user interface created specifically for the project in question. It offers suitable ways of interacting with the respective data.

To systematically harvest or integrate data, the OAI-PMH interface at https://gams.uni-graz.at/oaiprovider can be used and queried according to the PMH. Currently, the following metadata prefixes are supported: oai_dc (Dublin Core), oai_europeana (Europeana Semantic Elements) and oai_edm (Europeana Data Model). In addition, since becoming a CLARIN-B Centre, we offer also oai_cmdi_tei (CMDI). Another addition to offer all records also in DataCite is currently in preparation.

With regard to images, all image data stored in the repository can be delivered via a IIIF-compatible image server. To this end, use the syntax https://gams.uni-graz.at/iiif/{object PID}/{image PID}/{IIIF query}, e.g. https://gams.uni-graz.at/iiif/o:sis.2-10%2FIMAGE.1/100,1000,2880,2000/pct:15/0/default.jpg.

In agreement with the partners, data can also be contributed to various aggregation services and metadata registries like Europeana, Kulturpool, Pelagios or Nomisma, supporting discipline-specific ways of data discovery. All resources in the repository have a PID and are addressable with the permalink https://gams.uni-graz.at/{permalink}. Datastreams can be accessed in the same way with https://gams.uni-graz.at/{permalink}/{DATASTREAMID}. This assures direct access, quotability and persistent identification for scientific contexts (cf. https://gams.uni-graz.at/doku#pid). The institute is a member of the Handle network and is running its own handle server. Our handle prefix is 11471. This persistent identifier is stored as part of the objects metadata and of course published in the handle infrastructure (cf. https://gams.uni-graz.at/o:gams.doku#handles). A recommendation for data citation is given explicitly in most recent projects and there is an internal guideline to offer this information in a standardized way; in legacy projects however, the recommended citation might not be present in this standardized way, the necessary information to create a citation is nevertheless always represented.

Links:

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

link not working: https://gams.uni-graz.at/archive/search (403 forbidden)

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Thank you for addressing recommended citations (from a comment in your 2019 application: "For subsequent renewals, it would be good to standardize the provision of recommended citations for each data product").

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

R14 Data reuse

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

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

The XML-based content strategy ensures the re-usability of data and metadata for humans and machines. The reduced list of accepted formats and standards (cf. R8) is considered suitable for long-term preservation and archiving purposes.

A data object is only complete with the obligatory Dublin Core dataset attached to it, as well as information on the possibilities for re-use (see the licensing guidelines in R2) and technical and administrative metadata. A crucial point for re-use are sufficient possibilities for data discovery, especially with regard to the designated communities; thus we seek to disseminate the metadata through appropriate registries listed in R13. Information on the data creation usually forms a part of the resource, e.g. the description of encoding or annotation rules in the TEI header. Data and metadata will be migrated, if the need arises in preservation planning; for instance a conversion from older Europeana Semantic Elements format to the newer Europeana Data Model format. In case of changing expectations from the designated community (for instance newly available vocabularies and norm data), the repository may indicate this to the depositors and there will be an effort to enrich and curate the existing data to meet these new expectations. This pertains also to interoperability with services and data models.

Links:

Reviews

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Technology

R15 Technical infrastructure

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

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

The repository runs on virtual servers in the university's VMware cluster and is operated by a version of Debian Linux. Data is stored in a SAN provided by the IT department (UNI IT) of the Graz University. Both the VMware cluster and the SAN have a redundant setup located in two data centers in different campus buildings. The repository is completely built on open source, platform independent and community driven software projects. GAMS was conceived and developed on the basis of the OAIS-compliant open-source project Fedora Commons (Flexible Extensible Digital Object Repository Architecture) (http://fedora-commons.org) and has been continuously improved in the course of cooperative projects, addressing the specific needs of research.

Further integral technologies include Apache Tomcat, Apache HTTP Server, Apache Cocoon, Blazegraph graph database, Apache Lucene, Apache Solr, PostgreSQL database server, Loris IIIF image server and a Handle server. The bundled infrastructure is available as an archive-in-a-box solution from GitHub (https://github.com/acdh/cirilo). For dissemination purposes, the repository relies on HTML5, CSS, and JavaScript, all recommended W3C standards and validated upon publication of a project.

With regard to connectivity, the repository has a redundant 10-GigaBit connection via ACONet to Vienna, where traffic is routed to other networks.

Infrastructure development is largely guided by demands from preservation planning, i.e. obsolescence of software solutions and formats as well as continuous upgrade to newest software versions. Currently, this results for instance in a major migration project from Fedora 3.x to Fedora 6. There is currently no published disaster and business continuity plan at the University of Graz.

Links:

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Compliance largely follows the details provided in your 2019 application, although you not, "There is currently no published disaster and business continuity plan at the University of Graz."
We encourage you to solicit the university to establish both plans, especially since you are reliant on some of their infrastructure.
Board comment:
You note that "There is currently no published disaster and business continuity plan at the University of Graz." For the next re-certification, we encourage you to solicit the university to establish both plans, especially since you are reliant on some of their infrastructure.

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Board comment:
You note that "There is currently no published disaster and business continuity plan at the University of Graz." For the next re-certification, we encourage you to solicit the university to establish both plans, especially since you are reliant on some of their infrastructure.

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

do you have a disaster and a business continuity plan in place?

R16 Security

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

Compliance level:

The repository is in the implementation phase - 3

Response:

Backup, network security and physical security are part of the university's security strategy handled by the university's IT service (Uni IT). Data is stored redundantly in two data centers in different campus buildings. Backups run daily and are stored on a disk array and later moved to tape. There is an additional offsite backup managed by the institute which is also run every night. The combination of both backups ensures their accessibility over a period of seven years (see R9).
Software security and authorisation management via LDAP is carried out by the system administrators and security officers of the repository. In case of failures or problems of one or more components of the infrastructure, the administrators are also notified via email to provide a reaction as swift as possible. Nevertheless, technical infrastructure is only as good and reliable as the staff maintaining it, thus loss of key staff members and sufficient funding for system administration is recognized as a main risk. Counter strategies like internal documentation, knowledge transfer and redundant

coverage of tasks by different staff members (cf. also R5) seek to minimize this risk. The replacement of retired staff and addition of new staff, both on a permanent basis (see R5), was a major building block towards continuity of business. Formalized risk analysis tools are currently not in use and the adoption is not planned in the near future. Since there is currently no published disaster and business continuity plan at the University of Graz, the compliance is set to 3.

Links:

Reviews

Reviewer 2:

Compliance level:

Not Applicable - 0

Comments:

reference also possible disaster and recovery procedures you/your university might have in case of physical events (fire, floods etc.)
are you planning to have any strategy for managing risks developed in the future?

Reviewer 1:

Compliance level:

The repository is in the implementation phase - 3

Comments:

Reviewer 2:

Compliance level:

The repository is in the implementation phase - 3

Comments:

Applicant Feedback

R17 Applicant Feedback

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

Compliance level:

The guideline has been fully implemented in the repository - 4

Response:

-

Links:

Reviews

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

Thank you for your re-application. One note about R15: Your compliance largely follows the details provided in your 2019 application, although you note, "There is currently no published disaster and business continuity plan at the University of Graz." Outside of this certification process, we encourage you to solicit the university to establish both plans, especially since you are reliant on some of their infrastructure.

Reviewer 2:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments:

would advise some revisions to the comments made

Reviewer 1:

Compliance level:

The guideline has been fully implemented in the repository - 4

Comments: