Assessment Information

[CoreTrustSeal Requirements 2020–2023](#)

Repository:	FDZ at IQB
Website:	https://www.iqb.hu-berlin.de/fdz
Certification period:	08 August 2023 - 07 August 2026
Requirements version:	CoreTrustSeal Requirements 2023-2025

This repository is owned by: **Institut zur Qualitätsentwicklung im Bildungswesen e.V. an der Humboldt-Universität zu Berlin - Forschungsdatenzentrum (FDZ)**

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:

https://www.re3data.org/repository/r3d100010427

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

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:

Domain or subject-based repository. Educational Research

The Institute for Educational Quality Improvement (IQB), founded in 2004, is a research institute that supports the 16 states (Länder) of the Federal Republic of Germany—who collectively fund the institute—in improving the quality of the educational system. The IQB is responsible for regularly monitoring the extent to which Germany's schools are achieving the national educational standards through sample-based, large-scale school achievement studies. The IQB is considered one of the leading institutes actively engaged in empirical educational research in Germany.

The research data centre at the IQB (FDZ at IQB) was founded in 2007 with the goal of providing access to the datasets of national and international (German subsample) large-scale school assessment studies. While the focus is still on these studies (IQB Trends in Student Achievement, PISA, TIMSS, PIRLS), the collection scope has been expanded to also include data from different study designs as long as they include measures of domain-specific achievement or competence. In addition to the data, the FDZ at IQB also provides comprehensive information material. With more than 15 years of experience, the FDZ at IQB has extensive expertise in data curation and offers a selection of well-curated, high-quality datasets making it one of the central research infrastructure institutions in German educational research.

As another central part of its mission, the FDZ at IQB offers its target group support in all phases of the research process (or the data lifecycle). The FDZ at IQB thus not only consults secondary data users, but also supports data providers by offering consultation on data management, data documentation, data preparation, and data provision. The FDZ also focuses on the training of early career researchers by offering consultations and biannual workshops on methods of empirical educational research.

The FDZ at IQB is well connected within the German research data field. It has been accredited by the German Data Forum (1) and follows its criteria (2) (=at least one data access path, providing sufficient data documentation as well as ensuring the long-term availability of data) for research data centres. The FDZ at IQB is one of the core members of the German Network for Educational Research Data (VerbundFDB) (3), which also provides funding for three positions at the FDZ at IQB. In addition, it partakes in (third-party funded) projects with other research data centres, most recently the joint project "Domain Data Protocols for Empirical Educational Research" (DDP), funded by the Federal Ministry of Education and Research (BMBF) and coordinated by GESIS - Leibniz Institute for the Social Sciences (4). The project ran from 2019 to 2022 and developed a structured template for research data management in the field of educational research that can be used by applied researchers.

The Repository's collections have grown in size and scope, i. e., the FDZ at IQB holds data from 71 studies (January 2023) and receives about 50 to 60 data applications per year (each data application project can include several researchers). Overall, 220 publications have resulted from data applications at the FDZ at IQB. This includes bachelor and master theses, dissertations, book chapters as well as articles (104 in peer-reviewed journals). Since 2010, 104 publications in peer-reviewed journals were based on data provided by the FDZ at IQB.

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(1) see https://www.konsortswd.de/en/ratswd/

(2) see https://doi.org/10.17620/02671.4 (This document is only available in German.)

(3) see https://www.forschungsdaten-bildung.de/?la=en

(4) https://www.forschungsdaten-bildung.de/stamp-nutzen

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 Research Data Centre (FDZ) at the Institute for Educational Quality Improvement (IQB) archives and documents datasets from large national and international school achievement studies in Germany that are part of the national strategy for educational monitoring (e. g., IGLU, PISA, TIMSS, IQB National Assessment Study) as well as other national educational studies that include school achievement tests (e. g., ASCOT, BiKS, BiLieF, BilWiss, BiSpra, ELEMENT, PHONO) and makes them available to researchers for secondary analyses. Interested researchers gain access to the datasets after a successful application and resulting Data Use Agreement.
The FDZ at IQB's Designated Community consists of researchers from various disciplines in which educational processes are studied such as educational science, psychology, sociology, economics, and political science. Data access is granted to researchers from either universities or non-university research institutions, students being equally welcome.

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:

- D. Data-level curation – as in C above, but with additional editing of deposited data

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:

Level D: checks of metadata, enrichment of metadata, intellectual checks of data (in relation to data protection and anonymisation issues), data preparation, enrichment and editing of documentation, transformation to preservation file formats

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:

• Humboldt-Universität zu Berlin (5) (organisational): The IQB is affiliated with the Humboldt-Universität zu Berlin (HU). Humboldt-Universität zu Berlin provides the FDZ at IQB with its IT infrastructure (6) (such as network, server, and backup technology).
• da|ra – Registration agency for social and economic data (contractual) (7): National Centre for registration of research data from social sciences and economics, it assigns and manages the DOIs for the FDZ at IQB in cooperation with DataCite (8) and jointly with the Leibniz Information Centre for Economics (ZBW).
• IZA – Forschungsinstitut zur Zukunft der Arbeit / Institute of Labour Economics (contractual) (9): IZA developed and maintains JoSuA (Job Submission Application), a controlled remote execute system that allows users to analyze sensitive data that cannot be handed over to data users in scientific use files. The IZA provides its JoSuA service for the FDZ at IQB where it is used for remote access to sensitive data as well as data access for applications from countries that do not offer an adequate level of data protection in terms of the General Data Protection Regulation (GDPR), see the list of countries with an adequate level of data protection maintained on the European Commission's website (10). Like the FDZ at IQB, IZA is a member of the German Data Forum (RatSWD), fulfilling the German Data Forum's quality standards for data repositories.
• Verbund Forschungsdaten Bildung (VerbundFDB) / German Network for Educational Research Data (11) (organisational): The FDZ at IQB is one of the core members of the German Network for Educational Research Data. It is a central platform of various German research data centres in the field of education on which data depositors can provide and document metadata on the research data of their projects; archiving is then decentralized at the VerbundFDB partners. Further tasks of the VerbundFDB are: Production of information material, offer of workshops, consulting (on e. g. data management (plans). Therefore, VerbundFDB can be understood as a network of research data centres that aim to standardize and synergize their services. VerbundFDB is coordinated by the DIPF | Leibniz Institute for Educational Research. After an initial funding period as a BMBF project from 2023, the VerbundFDB now receives permanent funding from the Leibniz Association to the DIPF. Because the FDZ at IQB is one of the core partners taking part in the decentralized archiving strategy, some of the funding is passed on by the DIPF to the FDZ at IQB for a total of three positions.

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(5) see https://www.hu-berlin.de/en?set_language=en/

(6) see https://www.cms.hu-berlin.de/en/dl-en/

(7) see https://www.da-ra.de/dara/mydara/index?lang=en/

(8) see https://datacite.org/

(9) see https://josua.iza.org/

(10) see
https://ec.europa.eu/info/law/law-topic/data-protection/data-transfers-outside-eu/adequacy-protection-personal-data-non-eu-countries_de#dataprotectionincountrieso

(11) see https://www.forschungsdaten-bildung.de/?la=en

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:

The following changes and extensions have been made since the last CoreTrustSeal certification at the FDZ at the IQB:
- The IQB has published its document on good scientific practice including the handling of data at the IQB. (12)
- The IQB has issued an internal guideline for respectful cooperation (=Code of Conduct) (internal use only).
- The FDZ at the IQB has documented its processes concerning long-term preservation (13).
- The FDZ at the IQB offers a search (simple, filter) for (meta-)data on the archived studies on its website (14).
- The FDZ at IQB has rebuilt the FAQ page on its website in the sense of a user portal so that more questions (directly from the community) and the
corresponding answers can be found. (15)
- The FDZ at IQB is involved in KonsortSWD (16).
- The FDZ at IQB has continuously optimized its data preparation processes (e. g. starting to use Git for documenting data curation code, increased use
of R, and automated routines).

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(12) see https://www.iqb.hu-berlin.de/research/Empfehlungenzurg.pdf (This document is only available in German.)

(13) see https://www.iqb.hu-berlin.de/fdz/Grundlagen/Langzeitverfuegb_1.pdf

(14) see https://www.iqb.hu-berlin.de/fdz/studies/

(15) see https://www.iqb.hu-berlin.de/fdz/faq/

(16) see https://www.konsortswd.de/en/

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:

The research data centre at the IQB (FDZ at IQB) was founded in 2007 to archive and provide access to educational large-scale assessments to monitor educational standards in Germany. (17) After initial funding by the Ministry for Research and Education (BMBF), it has been funded since 2011 by both the federal states and the BMBF as part of the Centre for International Student Assessment (ZIB)—a multi-institution collaborative network (coordination: TU Munich) responsible, amongst others, the national project management of the PISA study. The FDZ at IQB has two major goals: (1) archiving datasets in the field of education and (2) promotion of young scientific talents in the field of educational research through providing data access and training. The FDZ at IQB aligns its yearly work programs and reports (which are approved by the governing boards of the Centre for International Student Assessment (18) and the IQB (19)) with these two goals. The most recent yearly work program and yearly report are attached (20).

The FDZ at IQB archives and documents datasets from large national and international school achievement studies in Germany that are part of the national strategy for educational monitoring (e. g., IGLU, PISA, TIMSS, IQB National Assessment Study) as well as other national educational studies that include school achievement tests (e. g., ASCOT, BiKS, BiLieF, BilWiss, BiSpra, ELEMENT, PHONO; for a comprehensive list of available studies see (21)) and makes them available to researchers for secondary analyses. Its collection policy (22) describes in more detail the scope of datasets that the FDZ at IQB aims to archive. The FDZ at IQB provides information on and access to data. It also offers consultation and professional training for educational researchers, e. g., by holding workshops on methods for analyzing large datasets.

The FDZ at IQB's services are targeted primarily at researchers who work in the field of empirical educational research inter alia with a focus on school achievement studies. The FDZ at IQB is actively communicating its services to this target group in numerous ways (exhibition stands and talks at conferences, publications, brochures, newsletter mailings, Twitter (@iqb_media), etc.).

The FDZ at IQB also supports the open access policy of the Humboldt-Universität zu Berlin (23) to make publicly funded research data accessible free of cost for scientific purposes. Furthermore, researchers using data made available by the FDZ at IQB are contractually obligated to conduct their research following good scientific practice as defined in the rules of the IQB (24), the German Research Foundation, and the Humboldt-Universität zu Berlin (25).

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(17) see https://www.iqb.hu-berlin.de/fdz/20190131_FDZ_Ver_1.pdf, Article 1 (1) on the topic Tasks and Procedures of the FDZ at IQB, https://www.iqb.hu-berlin.de/institut/impressum/IQBSatzung_idFv0.pdf on the topic IQB's Charter (This document is only available in German.)

(18) see https://zib.education/en/about-zib.html

(19) see https://www.iqb.hu-berlin.de/institut/impressum/

(20) see attachments no. 1 on the topic Yearly Work Program: 1_FDZ-Arbeitsprogramm-2023.pdf (This document is only available in German, and for internal use only.), no. 2 on the topic Yearly Report: 2_FDZ_ZIB_Stand-Arbeiten_2022.pdf (This document is only available in German, and for internal use only.), and on the topic Activities Report: https://www.iqb.hu-berlin.de/TaetigkBerichtIQB2014.pdf, section 7, p. 89ff. (This document is only available in German.)

(21) see https://www.iqb.hu-berlin.de/fdz/Daten/

(22) see https://www.iqb.hu-berlin.de/fdz/Grundlagen/CollectionPolicy.pdf

(23) see https://www.cms.hu-berlin.de/de/dl/dataman/hu-rdm-guidelines/@@download/file/HU-Berlin-RDM-Guidelines_v1-3.pdf

(24) see https://www.iqb.hu-berlin.de/research/Empfehlungenzurg.pdf (This document is only available in German.)

(25.1) see https://gremien.hu-berlin.de/de/amb/2014/06/06_2014_20140130%20Beschlussversion%20Satzung%20Wissenschaftliches%20Fehlverhalten_DRUCK.pdf (This document is only available in German.)

(25.2) see https://www.cms.hu-berlin.de/de/dl/dataman/hu-rdm-guidelines/@@download/file/HU-Berlin-RDM-Guidelines_v1-3.pdf

1. https://www.iqb.hu-berlin.de/TaetigkBerichtIQB2014.pdf

2. https://www.iqb.hu-berlin.de/fdz/Daten/

3. https://www.iqb.hu-berlin.de/fdz/Grundlagen/CollectionPolicy.pdf

4. https://www.cms.hu-berlin.de/de/dl/dataman/hu-rdm-guidelines/@@download/file/HU-Berlin-RDM-Guidelines_v1-3.pdf

5. https://www.iqb.hu-berlin.de/research/Empfehlungenzurg.pdf

6. https://www.cms.hu-berlin.de/de/dl/dataman/hu-rdm-guidelines/@@download/file/HU-Berlin-RDM-Guidelines_v1-3.pdf

7. https://gremien.hu-berlin.de/de/amb/2014/06/06_2014_20140130%20Beschlussversion%20Satzung%20Wissenschaftliches%20Fehlverhalten_DRUCK.pdf

8. https://www.iqb.hu-berlin.de/fdz/20190131_FDZ_Ver_1.pdf

9. https://www.zib.education/en/about-zib/

10. https://www.iqb.hu-berlin.de/institut/impressum/

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:

Licenses
All metadata are available free of restriction under the Creative Commons CC0 1.0 Universal Public Domain Dedication (26).

Contract with data depositors (Data Provision Contract) (27)
The contractual agreements with data depositors allow for the FDZ at IQB to make further data preparation steps that help to implement the preservation steps. For example:
• The FDZ at IQB acquires the right to process the records and the accompanying materials to archive and record them in suitable formats.
• With the takeover of the materials, the FDZ at IQB acquires the right to pass on the data and the accompanying materials to interested researchers (= data users).
• The data depositors assure that they are entitled to hand over the datasets to the FDZ at IQB for the stated purposes and that the rights of third parties do not conflict.
• The FDZ at IQB is entitled to transfer the data in the event of its dissolution to another suitable data centre under the same conditions.
• The FDZ at IQB acquires the right to document the data based on metadata in a suitable form, preferably in an electronic database, and to make this metadata generally accessible to the public (integration in browser and search functions within and between studies on the FDZ at IQB's website). The data depositor explicitly agrees to this form of publication.
• The FDZ at IQB is allowed to create metadata according to its own standards.

Contract with data user/s =Data Use Agreement (28)
Datasets (=Scientific Use Files) are provided to data users for specific research projects and not for commercial use. They are made available upon application. Applications may be submitted by researchers with an academic affiliation, typically in the field of empirical educational research, educational sciences, psychology as well as other social sciences. Academic staff and students are equally welcome to apply; eligibility is normally determined by institutional affiliation to a university or a publicly-funded research institution.
A template of a Data Use Agreement can be found online. The metadata and most accompanying materials are openly available.

Applications for data access are submitted online and include a brief project outline with a summary of the theoretical background, hypotheses, and planned analyses of the research project. The application should be approximately 2-3 pages long (in some cases, a more extensive application is required, e. g., for analyzes with regional indicators). Application guidelines, a sample project proposal, and the application form are available online (29). Staff at the FDZ at IQB first checks applications to ensure they meet the formal criteria for approval. These criteria primarily cover four areas:

1) Are the data to be used for purely non-commercial and scientific purposes?

2) Is data privacy protection respected?

3) Do the intended analyses correspond to contractual agreements with the data depositor?

4) Is it ensured that the planned analyses do not endanger the ongoing qualification and publication work of the data depositors, i. e., that they do not concern research questions that have been temporarily blocked by the data depositors?

If these formal criteria are met, the applicant will be sent a Data Use Agreement which must be returned signed and in duplicate to the FDZ at the IQB before access to the data can be granted.

To ensure data and privacy protection, data users agree to the following in their Data Use Agreements with the FDZ at IQB:

• Use is only allowed for scientific purposes in research and teaching.

• A transfer of rights of use of the data to third parties by the data user is inadmissible.

• No attempts may be made to re-identify people from the dataset. If an accidental re-identification happens, the FDZ has to be notified.

• No data of individual persons or groups of fewer than five persons may be reported.

• Data must be deleted on completion of the project (or on the expiration of the Data Use Agreement at the latest).

Furthermore, data users undertake to comply with relevant provisions under privacy law, including the General Data Protection Regulation (GDPR), the German Federal Data Protection Act (BDSG), as well as any applicable privacy laws at the state level. In case of a violation of contract terms, the right of use becomes void immediately and the data user incurs a penalty amounting to €10,000 (30).

Data received from the FDZ at IQB have to be destroyed after the completion of the analyses for which they were provided.

Any person who is to be the author or co-author of any publication derived wholly or in part from the data and/or materials supplied, and who requires access to the data for this purpose, has to conclude his/her own Data Use Agreement with the FDZ at IQB.

Conditions of data use include that users may store the data received from the FDZ at IQB only on password-protected storage media or in the form of a password-protected ZIP file. Data may only be brought to countries that have an appropriate level of data protection. Data users have to comply with relevant provisions under privacy law, including the General Data Protection Regulation (GDPR), the German Federal Data Protection Act (BDSG), as well as any applicable privacy laws at the state level.

Any publication that relies on the supplied materials in whole or in part must cite the FDZ at IQB and the dataset (using its DOI). After completion of the research project and/or expiration of the Data Use Agreement, all materials provided must be destroyed. For documentation purposes, data users are asked to submit to the FDZ at IQB copies of every publication derived from the data. The FDZ at IQB checks if data depositors are cited correctly in publications by data users. It is not permitted for the data user to continue using the materials, including any modified records, after the expiration of the Data Use Agreement.

Further sanctions (such as a) reprimand, b) information to the community (German Data Forum, other research data centres), c) temporary or permanent suspension of the services of the research data centre for affected persons) are not planned at present.

Usage Regulations for Campus Files (CF)

CF users undertake to comply with Usage Regulations and the Guidelines of Good Scientific Practice when handling the data. (31)

Sensitive data

Depending on the sensitivity of the data, there are various possibilities for accessing the data:

• In the case of less sensitive data—i. e., data in which more fine-grained demographical information has been removed—the applicant is provided the requested data in the form of scientific use files, usually in SPSS format. To enhance protection, scientific use files may only be brought to countries that have an adequate level of data protection as defined by the European Commission (32). In the Data Use Agreements is contractually ruled out that data users take any records provided by the FDZ at IQB with them if they change location to a country that does not provide this level of data protection.

• In the case of more sensitive data—i. e., data containing fine-grained demographic information— data users are provided with scientific use files in which sensitive variables have been emptied. Data users can use these scientific use files to create command files for their analyses, which are processed using the controlled remote computing system JoSuA (Job Submission Application) developed by the Institute of Labour Economics (IZA). This indirect way of access ensures that data users obtain no direct hold of sensitive data, as they cannot copy the data onto their computers. The results outputs of their calculations are checked by FDZ staff for disclosure risk and only sent on to the data user if they are considered unproblematic.

The ultimate responsibility for the careful use of research data that respects the ethical principles of confidentiality, copyright, and scientific probity belongs to the user of the research data.

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(26) see https://creativecommons.org/publicdomain/zero/1.0/deed.de

(27) see https://www.iqb.hu-berlin.de/fdz/Grundlagen/Datenbereitstell.pdf (This document is available in German, the English version is for internal use only, see attachment no. 3: 3_Data Provision Contract.pdf)

(28) see https://www.iqb.hu-berlin.de/fdz/Muster_FDZDatenn_1.pdf

(29) see https://www.iqb.hu-berlin.de/fdz/Datenzugang/SUF-Antrag/FormularSUFs/

(30) see https://www.iqb.hu-berlin.de/fdz/Muster_FDZDatenn_1.pdf, Article 7

(31) see https://www.iqb.hu-berlin.de/fdz/Datenzugang/CF-Antrag/NutzungsordnungCFs

(32) see https://ec.europa.eu/info/law/law-topic/data-protection/international-dimension-data-protection/adequacy-decisions_en

1.   https://creativecommons.org/publicdomain/zero/1.0/deed.de

2.   https://www.iqb.hu-berlin.de/fdz/Grundlagen/Datenbereitstell.pdf

3.   https://www.iqb.hu-berlin.de/fdz/Muster_FDZDatenn_1.pdf

4.   https://www.iqb.hu-berlin.de/fdz/Datenzugang/SUF-Antrag/FormularSUFs/

5. https://www.iqb.hu-berlin.de/fdz/Muster_FDZDatenn_1.pdf
6. https://www.iqb.hu-berlin.de/fdz/Datenzugang/CF-Antrag/NutzungsordnungCFs
7. https://ec.europa.eu/info/law/law-topic/data-protection/international-dimension-data-protection/adequacy-decisions_en

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:

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

Response:

The FDZ at IQB is funded by the German federal states and the BMBF until the end of 2023 as part of the ZIB. After a positive evaluation of its work in 2020, the ZIB including the FDZ at IQB has applied for permanent funding from 2024 onwards. The FDZ at IQB aims to continue to be the major point of access to educational large-scale assessments and school achievement studies in Germany. The educational monitoring strategy of the Kultusministerkonferenz (KMK, Standing Conference) will be continued indefinitely—thus datasets from the regular large-scale educational monitoring studies such as the IQB National Assessment studies and PISA will continually be produced and need to be archived. Thus, even though permanent funding has not yet been achieved, it is extremely unlikely that funding will stop at any point as it would require a completely reversal of the KMK strategy on school assessment and educational research—there is a (slim) possibility, however, that another 6-year funding period will follow from 2024 instead of permanent funding. Compared to the last certification process, the FDZ at the IQB is in a much better position because, on the one hand, the VerbundFDB, in which the FDZ at the IQB is a core partner, has been made permanent and, on the other hand, because of the great efforts of the Länder and the Federal Government to devise a plan for permanent funding.

Furthermore, the IQB is embedded in the HU infrastructure (see section R05) and the IQB's IT is state of the art (for details see sections R15, and R16). The FDZ at IQB assures the data depositor that its research data will be archived and made available for scientific (re-) use by the scientific community. This is stated in the Data Provision Contract between the data depositor and the FDZ at IQB (33). Data storage and archiving are guaranteed as long as the FDZ at IQB exists and for at least 10 years (in accordance with good scientific practice as defined in the rules of the German Research Foundation (34)).

To ensure the continued availability and accessibility of the data it is contractually agreed between the FDZ at IQB and the data depositors that in the event of cessation of funding resp. in the case of the FDZ at IQB's dissolution, the FDZ at IQB is entitled to transfer the data to another suitable data centre under the same conditions (35). Should such a case arise, no separate consent of the data depositor shall be necessary for the purpose.

The IQB management assures that long-term archiving can be continued at the IQB and is thus also guaranteed in the event of a dissolution of the FDZ at the IQB. Should the FDZ at the IQB be dissolved (as its funding is separate from the funding of the institute itself), long-term archiving could be carried out unproblematically via the IQB as a fallback option until an appropriate research data center to transfer the data too is found – there would be no risk of data loss. This option does not require a separate written agreement between the IQB and the FDZ at the IQB, as the FDZ at the IQB is part of the IQB.

When considering the possible transfer of the research data to another research data centre, it is important to note that the FDZ at the IQB's data stock is not to be considered as a homogeneous entity, but needs to be differentiated according to data type and contractual basis. From a legal point of view, most of the data may be transferred to another data centre, because, as mentioned above, the data provision contracts also include that option. The main question concerning the aspects of cessation is, may data be transferred to another, comparable repository at all? The following aspects must be considered here: 1) There may be data that may not be transferred due to contractual provisions (e.g., because there is no paragraph in the contracts that allows the data to be transferred to another repository if the data center is dissolved). 2) In the case of data that requires special protection, the question arises as to whether it may in principle be transferred to another data center - and is there another data center at all that could provide the necessary protection? 3) The question of the unique selling point of one's own data center also plays a role here. I.e., which data sets should be

transferred in any case, and 4) is it necessary to weigh up the transfer of the entire data stock vs. specific data sets?

Furthermore, the FDZ at IQB is trying to develop a collaborative solution for continuity of services within the already permanently established VerbundFDB (central platform of various German research data centres) together with the other data centres that have joined forces there. A so-called "task force cessation" is to be set up in order to further raise awareness of the issue and to develop practicable solutions for the mutual transfer of data in the event of the dissolution of any of the network's data centres.

In addition, the FDZ at IQB provides measures for the technical preservation of its datasets (see sections R15, and R16).

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(33) see https://www.iqb.hu-berlin.de/fdz/Grundlagen/Datenbereitstell.pdf, section 1 (1) (This document is available in German, the English version is for internal use only, see attachment no. 3: 3_Data Provision Contract.pdf)

(34) see https://zenodo.org/record/3923602

(35) see https://www.iqb.hu-berlin.de/fdz/Grundlagen/Datenbereitstell.pdf, section 8 (2) (This document is available in German, the English version is for internal use only, see attachment no. 3: 3_Data Provision Contract.pdf)

1. https://zenodo.org/record/3923602
2. https://www.iqb.hu-berlin.de/fdz/Grundlagen/Datenbereitstell.pdf
3. https://www.iqb.hu-berlin.de/fdz/Grundlagen/Datenbereitstell.pdf

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:

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:

Disciplinary and ethical norms
Research activities at the IQB are conducted following the rules of good scientific practice, which are set out in recommendations (36). Moreover, the work of the FDZ at IQB is based on the HU's code of conduct (37) and is bound to the rules of good scientific practice by the German Research Foundation. The FDZ at IQB makes sure that study participants' data privacy is respected. All data deposited at and offered by the FDZ at IQB are anonymized.

The FDZ at IQB complies with the relevant data protection provisions, in particular the General Data Protection Regulation (GDPR) and the Federal Data Protection Act (BDSG).

The FDZ at IQB supports data depositors in data protection and anonymization issues by referring users to information material provided within VerbundFDB (38) or in personal counseling. Trained staff are available and advise data depositors on the handling and processing of sensitive data as well as to data users on accessing and handling sensitive data and on ensuring non-disclosure of sensitive data in the presentation of their results.

More specifically, a standardized anonymization strategy for data preparation, comprehensive Data Use Agreements (also see R02), and access limitations for sensitive data (see below) serve as organisational and technical measures to ensure data and privacy protection.

Data preparation: Anonymization
Relevant person characteristics concerning data protection:
a) direct identifier: Full names, Addresses, Birth dates, Social security numbers, Phone numbers
b) indirect identifier: First names, City names, Street names, School names, Regional codes, Occupations, Pictures, Dates, Language at Home, Rare

variable values (n≤5)

c) highly sensible information: Ethnicity, Political views, Religion, Sexual orientation

d) Medical and genetic data: Collection of such characteristics must be mentioned and explained in informed consent

The FDZ at IQB checks incoming datasets from data depositors whether they contain any direct identifiers (such as names, postal or email addresses, or telephone numbers) or other variables regarded as sensitive from a data protection standpoint (including, for example, information on income, country of origin, birth place, place of residence or other regional information, information on diseases or disabilities and string variables including information from open-ended questions).

Direct identifiers must not be included in datasets made available to users and are, therefore, removed from these datasets. Concerning further sensitive variables, FDZ staff weighs the risk of disclosure against the potential for secondary analysis on a variable-by-variable basis. These appraisals are regularly reviewed by colleagues to ensure common standards. Further strategies of anonymization then applied to the datasets include, for example, removal, aggregation, suppression, and/or recoding of variables. These strategies of anonymization aim at decreasing the risk of identifying persons in the dataset.

After consultation with data depositors, scientific use files for direct access as well as files where more fine-grained information has been retained (protected access only) are created. Before the publication of data, the datasets are again screened by trained staff at the FDZ at IQB to ensure that all necessary steps of anonymization have been conducted. A double verification procedure is conducted in each step, this mean a 4-eyes-principle.

Data Use Agreement

To ensure data and privacy protection, data users agree to conditions of use (see section R02).

Data access

How data users may access the data is determined by the data's sensitivity (see also section R02).

The most common datasets provided at the FDZ at IQB are Scientific Use Files (SUFs), usually in SPSS format. SUFs are datasets that have been anonymized in such a way that no personal reference can be established without a disproportionate effort. The provision of scientific use files is the default form of data access offered by the FDZ at IQB to data users.

Data users receive a list with cleared variables if applicable and can apply for remote access to those variables. Data users also receive a list with the file names and descriptions to facilitate syntax-based analyses.

As scientific use files may not be brought to countries that do not have an adequate level of data protection, data users located in such countries are not provided with scientific use files even for less sensitive data but are only given indirect access to the data via the controlled remote computing system JoSuA described above. In this case, data users can use the dummy datasets (i. e., datasets containing only the variable names and variable and value labels but no data) available for download from the FDZ at IQB's website to prepare the command files for their analyses.

More sensitive data datasets that are similar to the SUFs but also include more confidential information can be analyzed via remote access. Each output is then checked by FDZ at IQB staff for disclosure risk before being sent to the data user.

Alternatively, the FDZ at IQB provides on-site access for guest researchers who want to work with more sensitive data. Similar to remote access, each output is manually checked by the FDZ at IQB staff before being handed over to the data user.

Furthermore, the FDZ at IQB provides a data format for selected studies called Campus Files (CFs) (39), designed for use in university teaching. Campus Files are completely anonymous, synthetic datasets derived from the scientific use files of the corresponding studies but containing significantly reduced numbers of cases and variables. They are available to any person with a university or research institution affiliation (evidenced by an institutional email address) who agrees to comply with the FDZ at IQB's usage regulations for Campus Files by ticking the appropriate box on the Campus Files application form on the FDZ's website; no research proposal is required.

Complaints Office

Furthermore, the FDZ at IQB refers on its website to the Complaints Office of the German Data Forum which was opened in July 2016. If confronted with problems concerning the usage of FDZ data that cannot be resolved together with the person in charge of the FDZ at IQB, users can refer these problems to the German Data Forum through an electronic contact form. The contact form as well as further information on fields of responsibility and details of the complaint procedure can be found on the website of the German Data Forum (40) linked to from the FDZ at IQB's website.

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(36) see https://www.iqb.hu-berlin.de/research/Empfehlungenzurg.pdf (This document is only available in German.)

(37) see https://www.cms.hu-berlin.de/de/dl/dataman/hu-rdm-guidelines/view

(38) see https://doi.org/10.25656/01:21970

(39) see https://www.iqb.hu-berlin.de/fdz/Datenzugang/CF-Antrag/NutzungsordnungCFs/

(40) see https://www.ratswd.de/en/info/complaints-office/

1. https://www.iqb.hu-berlin.de/research/Empfehlungenzurg.pdf

2. https://www.cms.hu-berlin.de/de/dl/dataman/hu-rdm-guidelines/view

3. https://doi.org/10.25656/01:21970

4. https://www.iqb.hu-berlin.de/fdz/Datenzugang/CF-Antrag/NutzungsordnungCFs/

5. https://www.ratswd.de/en/info/complaints-office/

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:

Funding/Sustainability
As mentioned in more detail above (see sections R01, and R02), the FDZ at IQB is funded by the German federal states and the BMBF until the end of 2023 as part of the ZIB; that means the funding is project-based. The ZIB including the FDZ at IQB is going to apply for permanent funding from 2024 onwards. The FDZ at IQB is governed by the IQB governing board and the ZIB governing board (41). As Germany continues its educational monitoring strategy permanently, producing a continuous output of school achievement data, and as the IQB is the institution chosen by the German federal states to implement this educational monitoring strategy, it is highly unlikely that the FDZ at IQB will lose its funding in the near future.
The organisational chart of the IQB illustrates its structure. (42) More detailed information on respective responsibilities regarding the FDZ at IQB can be found on the pages of the FDZ at IQB. (43)
In total, the FDZ at IQB employs 6 scientific staff members (including the academic head), 1 administrative staff member, 1 staff member for IT support, and 4 student assistants. 2 staff members are employed permanently, 3 more for the duration of the VerbundFDB, the other 3 temporarily with specific doctoral or postdoctoral qualification goals.
The FDZ at IQB is affiliated with the Humboldt-Universität zu Berlin (which is permanently funded by the federal state of Berlin). Three staff positions are further funded by the VerbundFDB network that has been described above. VerbundFDB is permanently funded from 2022 onwards.
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(41) see https://www.iqb.hu-berlin.de/institut/impressum/ , and http://zib.education/en/about-zib.html
(42) see https://www.iqb.hu-berlin.de/institut/staff/Organigramm
(43) see https://www.iqb.hu-berlin.de/fdz/Team/

1. https://www.zib.education/en/about-zib/
2. https://www.iqb.hu-berlin.de/institut/staff/Organigramm
3. https://www.iqb.hu-berlin.de/fdz/Team/
4. https://www.iqb.hu-berlin.de/institut/impressum/

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:

The expertise extends across the entire staff of the FDZ at IQB.

Internal advisers

Both the IQB and the FDZ at IQB have governing boards including experts from educational policy and research (IQB-Kuratorium and ZIB-Kuratorium) that govern their activities (see section R05). The governing boards evaluate the FDZ at IQB's written activity reports at regular intervals (yearly). Furthermore, general evaluations of the IQB and the ZIB are conducted at regular intervals by selected panels of external experts (last in 2020 for the ZIB and in 2021 for the IQB). The FDZ at IQB is in constant exchange with the ZIB. For example, method experts at the ZIB provide the FDZ at IQB with information and workshops about new data types in the field of educational science (e. g., log files, social network data) and appropriate statistical tools to analyze such data types.

The IQB has a Data Protection Officer (44) who can be approached for any questions regarding data protection and privacy. When needed, the IQB also has access to consultations by lawyers of which the FDZ at IQB has previously made use (e. g., to check the Data Use Agreements).

Qualified staff

The FDZ at IQB holds academic employees with skills in the fields of data management, research data, research data management, metadata, data protection as well as data preparation according to data protection and individual rights in addition to their disciplinary expertise in educational sciences or psychology.

Academic staff members of the FDZ at IQB hold university degrees in psychology, educational science, sociology, and library and information sciences. Staff members participate regularly in internal and external training on file/code documentation, data management routines and automations in data preparation, data management in R, reproducibility of research results, metadata, and other relevant fields. Furthermore, academic staff members take up doctoral studies as well as postdoctoral qualifications (e. g., habilitation) in the field of empirical educational research working with datasets available at the FDZ at IQB. This facilitates a deeper understanding of the content of the datasets as well as of the statistical methods necessary for analyzing them. Stuff members have been publishing not only their own scientific research in peer-reviewed journals, but have also been involved in several publications on topics of research data management (REFs). The staff also publish in the area of research data management. (45)

Moreover, academic staff members themselves give talks and workshops on Open Science, psychometrics, software tools for statistical analyses, and data management at conferences and meetings and biannual workshops called the FDZ academies on methods of empirical educational research (46).

Expertise/Exchange in the community

The FDZ at IQB is an active member of an expert community in the field of data storage, preparation, and provision. Through membership or other forms of affiliation it is engaged in organisations like the German Data Forum, VerbundFDB, Research Data Alliance (RDA) (47), and ZIB (48). Furthermore, the FDZ at IQB has been involved in committees and working groups developing metadata standards for educational science ("AG Metadaten" of the extended VerbundFDB network) and recommendations for data management and data sharing in the educational sciences ("AG Forschungsdaten" of the GEBF [Gesellschaft für Empirische Bildungsforschung/Society for Empirical Educational Research], the largest German association for empirical educational research).

Particularly in the VerbundFDB project and the German Data Forum mentioned above, there is a strong focus on harmonizing and standardizing processes across different research data archives with a focus on developing and spreading "best practices". For example, in the field of data management, the FDZ at IQB was a co-applicant of the "Domain Data Protocols for Empirical Educational Research" which developed standardized and pre-filled templates for research data management for different prototypes of studies in educational research. (49.1)

Furthermore, the research data centres in the VerbundFDB network use common metadata standards and data ingest processes. The VerbundFDB network includes large institutions such as GESIS [Leibniz-Institut für Sozialwissenschaften/Leibniz-Institute for the Social Sciences], which is the largest infrastructure-focused institute for the social sciences in Germany and already certified with the CoreTrustSeal. The continuous working relationships with GESIS and other institutes have tremendously helped to further professionalize processes at the FDZ at IQB and will continue to do so.

Through these networks, the FDZ at IQB is in regular discussion with other research data centres and has easy access to their expertise regarding organisational, technical, and legal questions.

Furthermore, the FDZ at IQB staff participates in conferences like RDA and Open Science Conferences to be well informed in the field of research data, metadata, and open science.

Feedback and input from the research community

To receive feedback from expert users, the FDZ at IQB conducts regular surveys of data depositors and data users.

The FDZ at IQB evaluates the surveys and considers the data providers' and users' results and comments. The results of the surveys helps, for example, to improve the online presence and optimize the visibility of the data, but also to prioritize the processing of applications. Feedback from data users also helps keep the FAQ current and accurate, as does the guidance on data use found on specific study pages.

Furthermore, they also helps in the externally funded project on meta-research in empirical educational research. The METARep project deals with questions of reproducibility and robustness of research results based on secondary analyses in empirical educational research. (49.2)

Moreover, staff members participate frequently in scientific conferences in the field of empirical educational research, the designated community of data users. Here, the FDZ at IQB engages in scientific exchange and acquires up-to-date knowledge about current trends in data generation and the data

demands of the scientific community.

The FDZ at IQB participates in the Forum4MICA (50), a commenting forum for the designated community to comment and/or rate data and metadata, as well as engage with data centres on issues around data usage and understanding.

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(44) see https://www.iqb.hu-berlin.de/institut/datenschutzerklaerung

(45.1) see https://doi.org/10.25656/01:22303

(45.2) see https://doi.org/10.25656/01:22322

(45.3) see https://doi.org/10.25656/01:22321

(45.4) see https://doi.org/10.25656/01:21993

(45.6) see https://doi.org/10.17620/02671.62

(45.7) see https://doi.org/10.17620/02671.53

(45.8) see https://doi.org/10.17620/02671.49

(45.9) see https://doi.org/10.17620/02671.27

(45.10) see https://doi.org/10.17192/bfdm.2021.1.8310

(46) see https://www.iqb.hu-berlin.de/fdz/workshops/

(47) see https://www.rd-alliance.org/

(48) see https://zib.education/en/about-zib.html, and https://zib.education/en/home.html

(49.1) see https://www.forschungsdaten-bildung.de/stamp-nutzen

(49.2) see https://www.iqb.hu-berlin.de/fdz/Projekte/#METAREP

(50) see https://www.open-science-conference.eu/

1. https://www.iqb.hu-berlin.de/institut/datenschutzerklaerung

2. https://doi.org/10.25656/01:22322

3. https://doi.org/10.25656/01:22321

4. https://doi.org/10.17620/02671.62

5. https://doi.org/10.17620/02671.53

6. https://doi.org/10.17620/02671.49

7. https://doi.org/10.17620/02671.27

8. https://doi.org/10.17192/bfdm.2021.1.8310

9. https://doi.org/10.25656/01:22303

10. https://www.iqb.hu-berlin.de/fdz/workshops/

11. https://www.rd-alliance.org/

12. https://www.zib.education/en/about-zib/

13. https://www.zib.education/en/

14. https://forum.lifbi.de/c/iqb/18

15. https://www.iqb.hu-berlin.de/fdz/Projekte/#METAREP

16. https://www.forschungsdaten-bildung.de/stamp-nutzen

17. https://doi.org/10.25656/01:21993

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:

Ingest check
All data is transferred to the FDZ at IQB in encrypted form. Any incoming data is first decrypted (via the certificate manager Kleopatra) and then checked by staff at the FDZ at IQB. Ingest checks follow standardized evaluation criteria (=Procedure of ingesting and evaluation sheet of minimum requirements (51)); for further information see section R08.
For further information about the FDZ at IQB's workflows and processes see section R11.
The FDZ at IQB operates a metadata management system (FDZ-StDB) suitable for documenting all processes of ingesting archival storage, and data access. This is done by checklists, metadata enrichment, and information about data access. The metadata management system is accessible to authorized staff only. Regular backups are made.

The integrity of data is monitored as follows: Changes to data are documented and can be traced to the rationale and originator of the change (52). Syntax/setup files documenting the changes between the different versions are retained in addition. Data processing and data changes follow internal guidelines ensuring both data protection as well as improving data documentation. Changes to syntax files are version-controlled using Git and a self-hosted Gitlab instance provided by Humboldt Universität zu Berlin. Changes in the original datasets are made in consultation with data depositors and are documented by creating a document listing all suggested changes/modifications/adjustments (e. g., further anonymization steps and data cleaning), which is shared with the data depositors. This document will be exchanged with the data depositors and continuously adjusted until all data preparation steps are agreed upon (a copy of the original data will also be archived without any changes).

Version control
Every data package receives a DOI. This system enables transparency, visibility, citability, and traceability. Through the allocation of a DOI, the data can be easily cited in the long term. The FDZ at IQB publishes the metadata of research data, making them findable on the internet. Once a DOI is assigned, it can be found online (53) and is also indexed by other services (such as VerbundFDB, da|ra, GESIS data search, Google Dataset Search, the Web of Science, DataCite, BASE) (54).
Furthermore, each data package receives a version number. Versioning of data is governed by a versioning guideline (55). The version history is documented in the metadata management system. All dataset versions from the original to the latest version are kept in the archive. The version control for all digital objects is ensured: after every change, the data package (according to the FDZ at IQB's guideline (56)) is assigned a new DOI. The older version together with its DOI is transferred to the archive but remains valid.

Authenticity
Regarding the identity of data depositors, there is no formal proof of identity. However, the FDZ at IQB concludes data provision contracts with the data depositors. Data depositors must have an institutional affiliation, and every data provision contract must bear the stamp of the depositor's institution. Moreover, data provision contracts are negotiated in personal communication (by email, telephone, or face to face) between staff of the FDZ at IQB and of the data depositors' institutions, which involves at least some degree of personal acquaintance.
Metadata includes relevant information about authorship, members of the research group producing the data, and the license terms for every data package.

_____

(51) see https://www.iqb.hu-berlin.de/fdz/Datenuebergabe/Vorlage_AbkStudi.pdf (This document is available in German, the English version is for internal use only: see attachment no. 8: 8_Rueckmeldedokument_Datengebende_englisch.pdf)
(52) see https://www.iqb.hu-berlin.de/fdz/Datenuebergabe/Template_Ingest_.pdf/ (This document is available in German, the English version is for internal use only: see attachment no. 9: 9_Template_Ingest_WiMi_englisch.pdf), and
https://www.iqb.hu-berlin.de/fdz/Datenuebergabe/00_Checkliste_te.pdf
(53) see https://www.iqb.hu-berlin.de/fdz/studies
(54) see https://www.da-ra.de/search; https://commons.datacite.org/; https://www.forschungsdaten-bildung.de/; https://datasearch.gesis.org/; https://www.base-search.net/
(55) see attachment no. 4: 4_Versionierung_Konzept_EN.pdf (This document is available for internal use only.)
(56) see http://iqbstaff.pbworks.com/w/page/150924531/FDZ_Start (The guideline is only available for staff (requires registration) and in German, for internal use only.)

1. https://www.iqb.hu-berlin.de/fdz/Datenuebergabe/Vorlage_AbkStudi.pdf
2. https://www.iqb.hu-berlin.de/fdz/Datenuebergabe/Template_Ingest_.pdf/
3. https://www.iqb.hu-berlin.de/fdz/studies
4. https://www.da-ra.de/search
5. https://commons.datacite.org
6. https://www.forschungsdaten-bildung.de
7. https://datasearch.gesis.org

8. https://www.base-search.net/
9. http://iqbstaff.pbworks.com/w/page/150924531/FDZ_Start

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:

The appraisal of datasets is based on the following criteria:
• consistency with the collection policy of the FDZ at IQB (57) focusing on studies with competence or achievement measures
• the scientific value and re-use potenzial of the data
• research ethics and protection of rights of study participants
The appraisal can take place at several points of the data curation process. Sometimes, data depositors will approach the FDZ at IQB beforehand and ask if their study is suitable. In other cases, data depositors will submit their data through the VerbundFDB data submission system and there will be a discussion for which research data centre the data is best suited. In either case, a first decision will be made whether the data seem suitable for the FDZ at IQB. If digital objects do not fall within the FDZ at IQB's mission the depositors of these data will be re-directed to re3data.org, Zenodo (58), and/or SowiDataNet|datorium (59) or another VerbundFDB partner.

Later, during the data-level curation process, the FDZ at IQB will evaluate the quality of data and data documentation. In the following, the different steps of data ingest will be described in more detail.

Collection policy
Based on its mission and funding (see sections R01, and R03), the FDZ at IQB has developed a collection policy in which the criteria for data selection are described.

Submission of data to the FDZ at IQB: Contract with data depositors (=Data Provision Contract) (60)
When researchers deposit their data at the FDZ, the FDZ team and the researchers agree on a concept of access governing which material will be supplied to third parties in which manner (openly on the FDZ's website, together with dataset submission after signing a data use contract, only on demand, or never). This concept of access is included in a data provision contract with the data depositors which also includes further legal issues. For example, the data depositor assures that the rights of third parties are not affected by archiving the data at the FDZ, that all other copyrights of the data depositor remain unaffected, and that all parties involved adhering to generally recognized rules and regulations for academia and technology such as laid out, for example, in the DFG's "Guidelines for Safeguarding Good Research Practice – Code of Conduct".

Metadata creation
Research data are transmitted via the central file transfer portal (61) of the German Network for Educational Research Data (VerbundFDB), a joint project of GESIS, the DIPF, and the IQB. As part of the secure upload of the data, this tool mandates researchers to create comprehensive metadata to provide additional information about their data(sets).

Hereafter, staff at VerbundFDB institutes determine which repository's scope the dataset falls into. Metadata of studies allocated to the FDZ at IQB are reviewed and enriched by trained FDZ staff.

The metadata scheme used at FDZ at IQB is compliant with da|ra and DataCite metadata schemes. Further structural and administrative metadata are created for internal use, i. e., technical and provenance information. The FDZ at IQB's metadata scheme can be viewed online on Github and the so-called MDR – the metadata registry in the field of educational research (62).

Generating metadata is based on standards, thesauri, and other controlled vocabularies from the designated community and can be viewed on the MDR

(63).

Requirements for data publication

Requirements for data publication, like preferred formats and documentation standards, are published on the FDZ at IQB's website (64).

Data and accompanying material are usually delivered in well-established formats such as SPSS (.sav) and Stata (.stat), as well as .pdf, .doc(x) and .xls(x). Incoming objects in non-compliant formats are converted by the FDZ at IQB staff into suitable formats.

A detailed paper jointly developed within VerbundFDB on how to prepare quantitative data for publication is available and cross-referred on the FDZ at IQB's website (65).

Data depositors can also ask for personal advice from an experienced staff of the FDZ at IQB.

Quality control

For all incoming data, FDZ at IQB checks whether the delivered material is complete, correct, and in a suitable condition (readable, virus-free, etc.). Further checks concerning plausibility, consistency, and data protection are carried out. Inconsistencies and errors are reported to the data depositors, any necessary corrections are made and missing information is added in close cooperation with the data depositors. This ensures that the data is complete, usable, and interpretable, which is an important prerequisite for all the following steps.

All work steps are documented in a database. Regular meetings of the FDZ at IQB staff take place to optimize, harmonize and standardize procedures. To standardize procedures, the whole ingest process is guided by FDZ at IQB documents, checklists, and record sheets which are regularly updated if necessary. (66)

In detail this means:

a) The ingest procedure includes:

• decrypting encoded data

• executing virus scan

• creating checksums

• checking file names, especially deleting special characters (=These are merely formal corrections without renaming the content.)

• creating working copies of the data packages (=Further data preparation will be based on those working copies.)

• checking files for functionality (=All files can be opened and (are) checked for readability.)

• checking that all datasets meet technical and documentation requirements (=clarity of dataset and documentation) as well as legal requirements (=compliance with data protection, copyright(s) (law)) (67)

• checking the completeness of the data by trying to replicate published results and statistics with the datasets

b) Minimum requirements that have to be met are technical, documentation (=clarity of dataset and documentation), and legal requirements (=data protection, copyright(s) (law)) (68). On this basis, a decision is made whether the dataset will be accepted and made available for secondary analysis, or rejected. Furthermore, the decision is documented in regular meetings. In addition, the FDZ at IQB evaluates the data's potential for secondary analysis. The ingest checklist contains clearly formulated criteria (e. g. sampling size, number of measurement points) that can be rated with high interrater reliability. The FDZ at IQB consistently is in communication with researchers to define and operationalize criteria that are accepted and deemed relevant by our community. The results of this step are used to allocate resources to those studies first that are most urgently awaited by the FDZ at IQB's designated community.

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(57) see https://www.iqb.hu-berlin.de/fdz/Grundlagen/CollectionPolicy.pdf

(58) see https://zenodo.org/

(59) see https://data.gesis.org/sharing/#!Home SowiDataNet|datorium is a research data repository for social sciences and economics that enables researchers to easily and securely document, publish and share (quantitative) primary and secondary data.

(60) see https://www.iqb.hu-berlin.de/fdz/Grundlagen/Datenbereitstell.pdf (This document is available in German, the English version is available for internal use only, see attachment no. 3: 3_Data Provision Contract.pdf)

(61) see https://www.forschungsdaten-bildung.de/daten-teilen/

(62.1) see https://github.com/iqb-berlin/mdc-researchdata

(62.2) see https://mdr.iqb.hu-berlin.de/#/catalog/c09f72c7-36cc-1580-b32f-605401c3c830

(63) see https://mdr.iqb.hu-berlin.de/#/catalogs/

(64) see https://www.iqb.hu-berlin.de/fdz/Datenuebergabe/

(65) see https://doi.org/10.25656/01:21967

(66) see http://iqbstaff.pbworks.com/w/page/150924531/FDZ_Start (The guideline is only available for staff (requires registration) and in German, for internal use only.)

(67) see https://www.iqb.hu-berlin.de/fdz/Datenuebergabe/00_Checkliste_te.pdf

(68) see https://www.iqb.hu-berlin.de/fdz/Datenuebergabe/Template_Ingest_.pdf/ (This document is available in German, the English version is for internal use only: see attachment no. 9: 9_Template_Ingest_WiMi_englisch.pdf)

1. https://www.iqb.hu-berlin.de/fdz/Grundlagen/CollectionPolicy.pdf

2. https://zenodo.org/

3. https://data.gesis.org/sharing/#!Home

4. https://www.iqb.hu-berlin.de/fdz/Grundlagen/Datenbereitstell.pdf

5. https://www.forschungsdaten-bildung.de/daten-teilen/

6. https://github.com/iqb-berlin/mdc-researchdata

7. https://mdr.iqb.hu-berlin.de/#/catalog/c09f72c7-36cc-1580-b32f-605401c3c830

8. https://mdr.iqb.hu-berlin.de/#/catalogs/
9. https://www.iqb.hu-berlin.de/fdz/Datenuebergabe/
10. https://doi.org/10.25656/01:21967
11. http://iqbstaff.pbworks.com/w/page/150924531/FDZ_Start
12. https://www.iqb.hu-berlin.de/fdz/Datenuebergabe/00_Checkliste_te.pdf
13. https://www.iqb.hu-berlin.de/fdz/Datenuebergabe/Template_Ingest_.pdf/

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:

Following the functional model of the Open Archival Information System (OAIS), the FDZ at the IQB is the archive/repository or the link (connector) between data depositors and data users. (69)
The data that the FDZ at IQB receives from data depositors are considered original data at the FDZ at IQB and, according to OAIS terminology, denote the so-called Submission Information Packages (=SIP). The research data and documentation materials that are finally made available to the data users are referred to as Dissemination Information Package (=DIP). Those data that are archived long-term at the FDZ at IQB are called Archive Information Package (=AIP). The AIP contains all the materials received from the data depositors (i. e., the SIP), the materials provided (i. e., the DIP), but also all the documentation and processing steps that were carried out at the FDZ at IQB to get from the SIP to the DIP. The AIP of a study thus consists of the SIPs, the DIPs, and additionally of the accompanying materials provided; all available data are also available in long-term formats and a checksum is created for each object (file) automatically.

Archival storage includes the digital archive storage, its organisation as well as its structure in the narrower sense. This is about the procedure for creating archival packages. In the archive storage of the FDZ at the IQB, the AIPs are compiled in such a way that their retrievability, as well as their readability and interpretability, are ensured (see below). The AIPs are then transferred to the long-term storage facility of the Computer and Media Service (CMS) of the Humboldt-Universität zu Berlin (HU) and stored there. The IQB and therefore also the FDZ at IQB is embedded in the infrastructure of the HU. That means, the HU and the IQB have concluded a cooperation agreement, from which it follows that the CMS will work within the framework of a service agreement for the IQB and thus also for the FDZ at IQB. Further rules apply there, including that the checksums of the AIPs are regularly checked (bitstream) so that the integrity and authenticity of the data are maintained.

As part of long-term availability, digital data is stored in unencrypted, non-compressed, non-proprietary formats using open, documented standards.

Redundancy in data is useful and sensible in terms of data security, i. e., the FDZ at IQB stores text files in both PDF/A and .txt formats, and table data in .csv format. The .txt files are only stored in case the primary PDF/A format should no longer be functional. Therefore, text files are additionally converted to .txt formats, but nothing more is done with them.

We do not save in SPSS portable format, since it is not recommended as an archive format by the Library of Congress (70).

In concrete terms, this means that after receipt of the original data and the decision to make them available, the data are converted into long-term archivable formats, i. e., files in SPSS and/or .xls format are converted into .csv format, files that are available in R are saved identically in the AIP of the study, if necessary with the corresponding R packages. Any accompanying documentation (text) in PDF/A is converted into .txt format and saved in the AIP of the study both as PDF/A and .txt files. The same applies to the procedure for new data versions.

After the data preparation, the data to be provided to users (=DIP) and the accompanying materials to be issued (all in long-term available formats) are equally stored in the AIP.

For each digital object in the archival package, a checksum is created to ensure data integrity.

For each study and version, the associated administrative (e. g.: DOI, citation proposal, data depositors, access regulations, rights) as well as descriptive (e. g.: study period, survey period, selection procedure) metadata (in .xml and .csv format) are stored in the AIP, because the metadata are also preserved. For each study as well as for a new version of the data package, the metadata is included in the archival package as a corresponding .xml file.

After data preparation, the archival package is filled with further objects: in addition to the provided datasets including the syntaxes and the accompanying materials, these are central documents such as checklists, evaluations, contracts, the correspondence with the data depositors for the preparation of the data, an access concept as well as relevant documentation - in each case in long-term available formats.

Thus, an archival package always includes:
- Accompanying materials
-- Accompanying materials supplied by the data depositors (only: declarations of consent/letters of approval)
*as PDF/A
*as .txt
-- Accompanying materials provided
*as PDF/A
*as .txt
- datasets
-- provided dataset(s)
*as .csv
*as SPSS (currently .sav)
*if applicable as R (r.data)
*if applicable as Stata
-- Original dataset(s)
*as .csv
*as SPSS (currently .sav)
- Metadata
*as .xml
*as .csv
- Syntax/s of the provided dataset(s)
- Central documents
*as one PDF/A per document
- Checksum file

The person responsible (data librarian) who would like to enter an AIP into the CMS of the HU for long-term archiving fills out a form. After that, an e-mail is sent to the IT department of the FDZ at the IQB, which issues a response. The IT department manually triggers the transfer of the AIP to the CMS for long-term archiving. After archiving in the CMS, the content is deleted from the direct access of the FDZ, but there is now a so-called inventory list that lists - including hashtags - which files in the CMS have gone into long-term archiving. The IT of the FDZ at the IQB maintains a list of all archiving jobs, as well as an overview of all files that have been archived.

Migration and preservation measures

An archival package (AIP) contains the original data of the data depositor(s) (SIP), the data which is provided to data user(s) (DIP), and the data in long-term archived formats. The data provided to data user(s) is delivered as .sav file(s). We are aware that SPSS is a proprietary software, but it is the one that is predominantly used in the scientific community. But this problem is also the reason why the FDZ at IQB is switching to R and is making increased efforts to adapt/change the processes accordingly.

It is only possible to speak of the long-term availability of digital data at all if the digital data (in this case archival packages) can be permanently accessed, are permanently readable, and are permanently preserved.

The preservation strategy depends on the significant properties, i. e., the properties of an object that must be preserved at all costs. Migration is chosen as the preservation strategy at the FDZ at IQB.

Media migration

The archival packages are regularly backed up by the CMS as part of its regular data backup routine, so the CMS ensures data backup (bitstream preservation). That means that the FDZ at IQB does not need to migrate the data files by itself (i. e., no data drive migration). The CMS performs refreshment and replication types. These describe the replacement of single data drives (refreshing) or a change in the storage methods used (replication). No changes to data or storage infrastructure take place.

Format migration

The FDZ at IQB converts the data provided to data user(s) (=.sav files) into long-term archived formats (.csv, .pdf/A, .txt). This is called a transformation - a migration process that also changes the content data of the archival package. So the long-term archived formats used by the FDZ at IQB are not dependent on the version of the origin creation software (currently SPSS).

In case there are (major) software version jumps, the corresponding digital data are up-dated to the new, latest version.

In the case that the format of the DIPs available until then (so far mainly SPSS) is no longer used, the data is converted into an alternative, different format. This procedure is time-consuming and is only carried out if it can be assumed, by following and observing the technical/technological

developments, that the long-term available digital documents will no longer be usable in the future due to their obsolete format.

Once a year, a check is made for any migration that may become necessary.

In the event of migration, this must be followed by quality assurance, i. e., random checks are carried out to ensure that the digital objects can still be read and interpreted.

Checksums

A likely scenario for data loss is human error. Therefore, a mechanism is needed to verify that all data is still unchanged. For this reason, checksums are created for the data in the archival package (=AIP). The data librarian checks the AIPs before they are transferred to the long-term archiving of the CMS. The long-term archiving of the CMS ensures that the data stored there remain readable (=bitstream).

When transferred to the long-term archiving of the CMS, a checksum file is automatically created per object/file (.sha256) via the corresponding AIP.

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(69) see https://www.iqb.hu-berlin.de/fdz/Grundlagen/Langzeitverfuegb_1.pdf

(70) see https://www.loc.gov/preservation/digital/formats/fdd/fdd000468.shtml

1. https://www.loc.gov/preservation/digital/formats/fdd/fdd000468.shtml

2. https://www.iqb.hu-berlin.de/fdz/Grundlagen/Langzeitverfuegb_1.pdf

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:

Every single digital resource published by the FDZ at IQB is subject to quality control. Published documents relating to data and their provision by the FDZ at IQB are provided with a citation and CC license.

Academic staff members of the FDZ at IQB hold university degrees in library and information sciences, educational science, and psychology. Staff members take part in internal and external training on data management, metadata, and other relevant fields. Furthermore, academic staff members take up doctoral studies as well as postdoctoral qualifications (e. g., habilitation) in the field of empirical educational research working with datasets available at the FDZ at IQB. This facilitates a deeper understanding of the content of the datasets as well as of the statistical methods necessary for analyzing them. Scientifically working with datasets leads to better user support by the staff at FDZ at IQB.

Communication with data depositor:

To ensure data quality, the FDZ at IQB has defined minimum requirements that submitted data has to meet. Data depositors have to deliver all materials and information which are necessary for secondary analysis by other data users, these are at least:

Information:

• title of the study

• primary researcher(s)

• study description

• sample

• region

• publications or references to publications based on the respective data

• time method (i. e., information on survey design: longitudinal, cross-sectional, time series) (71)

• research design (i. e., research design details: observational design, (quasi-) experimental design, case study) (72)

• information about (used) instruments (e. g. questionnaire(s), educational measurements, and tests)

Materials:

• the data itself (prepared/edited)

• codebooks /scale documentation/manuals including detailed descriptions of the scales (i. e., reliabilities, descriptive statistics) used in the studies

• information on study sample (i. e., sampling procedures, application of sampling weights); ideally: reports (technical report, final project report, if applicable)

The FDZ at IQB checks if data documentation is sufficient for researchers not involved in data collection to analyze the datasets. The FDZ at IQB assists data depositors with the documentation of datasets. Data depositors are encouraged to provide further documentation material (e. g., handbook of scales, technical report, study design, and survey instruments). Furthermore, the FDZ at IQB checks if reported results can be replicated with the submitted data and if the data corresponds with technical reports and scale documentation. Finally, the FDZ at IQB applies measures of data cleaning (e. g., correct typos, add variable labels, value labels, and missing categories) to increase data quality. All proposed changes in the data are discussed with the data depositors to balance data protection issues while preserving a maximum of information from the original data.

Checking whether data meet the requirements for anonymization and data cleaning and examining the consistency of data and documentation forms the basis on which FDZ at IQB staff create a document containing all suggested changes/modifications/adjustments to be sent to the data depositor (four-eye-principle) (73). In addition, if applicable, the FDZ at IQB checks non-disclosure notices made by the data depositors. On this basis, a decision is made whether the dataset will be accepted and made available for secondary analysis or rejected. The decision is documented in the protocols of the meetings held regularly by FDZ at IQB staff. All work steps are documented in a database.

After all checks described in R8 and above have been completed, the data depositor is contacted by email to resolve any issues that arose. If the documentation (metadata, accompanying material) is insufficient or there are questions about the consistency of data, depositors are asked for further documentation and information that has to be supplied to make the data reusable. The documentation contains a list of modifications that the FDZ at IQB recommends to assure sufficient anonymization. In some cases, data depositors supply a new dataset, in others, the FDZ at IQB is entrusted with fixing the data according to the depositor's feedback. Moreover, a concept of access is attuned to the depositor which governs which material will be supplied to third parties in which manner (openly on the website, together with data by default upon successful application for data access, only on demand, or never).

That means, the accompanying material can be viewed by potential data users on the FDZ at IQB's website, i. e., the DOI landing page, if those who share the data have consented. Otherwise, these materials are delivered on demand. Thus, a broad range of information for assessing data quality is available and findable by end users.

Quality of metadata is ensured by a two-step process: Firstly, metadata is supplied by data depositors via an online form (74) which ensures adherence to the metadata scheme, and controlled vocabularies, and thus facilitates comparability between data. The FDZ at IQB's metadata scheme can be seen on GitHub (75). The used metadata scheme is compliant with the da|ra and DataCite metadata schemes. In the second step, the data and metadata are checked by experienced staff who can assess the quality and completeness of data and documentation. Metadata then are enriched by the FDZ at IQB's staff who – for example – add keywords and categorize measured constructs. Adherence to the metadata scheme and relevant thesauri is ensured by a local database application.

To receive feedback from expert users, the FDZ at IQB conducts regular surveys of data depositors and data users. The FDZ at IQB participates in the Forum4MICA (76), a commenting forum for the designated community to comment and/or rate data and metadata, as well as engage with data centres on issues around data usage and understanding.

Furthermore, the FDZ at IQB also works with "R", a programming language and open source software environment for statistical computing and graphics. The R language is widely used among statisticians and data miners for developing statistical software and data analysis. The FDZ at IQB deals with development in this field to optimize its data preparation.

Quality of datasets stored at the FDZ at IQB is assured via automated and manual (but standardized) routines. For this purpose, the FDZ at IQB develops and maintains several R packages which automatically perform checks on the data. Automated checks include: variable name conventions (detection of "." in variable names), detection of special signs in the data or labels, comparing missing tags with value labels, detecting superfluous value labels or missing value labels, completeness of documentation and identification of de-anonymization potential. If possible, these checks include automated data cleaning and preparation steps (renaming of variables, substitution of special signs, addition of missing tags, and removing superfluous value labels). These automated checks and data cleaning procedures are followed by manual checks for data plausibility and accurate labeling as well as manual data cleaning and recoding. Furthermore, automated routines for codebook generation are used for studies without preexisting codebooks. The R packages used for automated checks and automated and manual data cleaning are all open source and publicly available (77).

Publication lists

The FDZ at IQB records all publications on the data named by the data depositor and regularly searches recent publications on/with the data. In addition, the FDZ at IQB receives copies of publications that have been produced with the data from the data users. In this way, the FDZ at IQB tries to ensure that. as far as possible. complete publication lists are kept on the studies and the work with the data. The Persistent Identifiers (=PIDs), if available, are also always included. Publications with PIDs are also listed for the corresponding study in daIra.

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(71) see https://mdr.iqb.hu-berlin.de/#/catalog/56cc4164-6731-7d54-c97f-ad9bd24bf1b7

(72) see https://mdr.iqb.hu-berlin.de/#/catalog/89724b81-2aab-d0dc-29ca-87f29b1c9e01

(73) see https://www.iqb.hu-berlin.de/fdz/Datenuebergabe/Vorlage_AbkStudi.pdf (This document is available in German, the English version is for internal use only: see attachment no. 8: 8_Rueckmeldedokument_Datengebende_englisch.pdf)

(74) see https://www.forschungsdaten-bildung.de/daten-uebermitteln

(75) see https://github.com/iqb-berlin/mdc-researchdata

(76) see https://www.konsortswd.de/konsortswd/das-konsortium/services/mica

(77.1) see eatGADS: https://cran.r-project.org/package=eatGADS

(77.2) see eatFDZ: https://github.com/beckerbenj/eatFDZ

(77.3) see eatCodebook: https://github.com/beckerbenj/eatCodebook

1. https://forum.lifbi.de/c/iqb/18

2. https://mdr.iqb.hu-berlin.de/#/catalog/56cc4164-6731-7d54-c97f-ad9bd24bf1b7

3. https://mdr.iqb.hu-berlin.de/#/catalog/89724b81-2aab-d0dc-29ca-87f29b1c9e01

4. https://www.iqb.hu-berlin.de/fdz/Datenuebergabe/Vorlage_AbkStudi.pdf

5. https://www.forschungsdaten-bildung.de/datenpublikation

6. https://github.com/iqb-berlin/mdc-researchdata

7. https://cran.r-project.org/package=eatGADS

8. https://github.com/beckerbenj/eatFDZ

9. https://github.com/beckerbenj/eatCodebook

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:

The FDZ at IQB works along defined workflows—from data selection (according to the FDZ at IQB's collection policy) and ingest (incl. check and validation) through contracting and data preparation (incl. fine check, deep inspection, metadata enrichment, and communication with data depositor) to documentation and data availability (incl. publication and release).

Following the functional model of the Open Archival Information System (OAIS) the FDZ at IQB is the archive/repository, or connector, between the data depositor and the data user. Data depositors who hand their data (=submission information package; SIP) over to the FDZ at IQB are advised by FDZ staff; that the conversion of these so-called SIPs into so-called archival information packages (AIP) takes place at the FDZ at IQB. AIPs are then submitted to the data preparation processes described above (see section R10), and converted into research data (=dissemination information package; DIP), which can be used by the data user upon application.

Ample documentation is available, covering every single work step. (78). There are templates for ingest checks, appraisal processes, and data publishing procedures so it is guaranteed that different staff members arrive at substantially the same outcome.

Amongst others, the above-mentioned archiving workflows pertain to:

• selection of data (= Does the data lie within the FDZ at IQB's scope [i. e., data and studies concerned with academic competencies and educational achievement, see collection policy (79)]? If not: rejection of data and assistance with finding suitable data centres [e. g., research data centres that are organised at VerbundFDB or German Data Forum])

• ingest of data (=data appraisal and reuse criteria)

• contracting (incl. citation, DOI proposal)

• detailed data checking (=comparison of codebook and dataset; checking data for de-anonymization potential)
• metadata enrichment (=categorizing measured constructs)
• consultation and communication with data depositor (=creating 1., a document with all suggested changes/modifications/adjustments [steps of data preparation form], and 2., a concept of access)
• data preparation (= writing and implementing syntax; i. e., the syntax for anonymization and data cleaning)
• data publication
• backup of data

For further information see also sections R8, and R10.

All work steps are documented in in-house-developed database applications such as FDZ-StDB (=FDZ study database) and FAMe =FDZ database for the management of applications for data use) that are available to authorized staff only. The FDZ at IQB's metadata management system supports experienced employees in curating research data, i. e., in metadata enrichment and the categorizing of measured constructs.

Data and documentation are archived in well-defined, standardized file formats (see sections R08, and R09). Syntax and setup files documenting the changes between different versions are kept in addition. Existing internal documentation is available to all staff members.

To ensure consistency across archival copies, checksums are created for all incoming research data as well as for data given to data users. All checksums are checked once per year as a default. If necessary, additional checks are carried out ad hoc. All transformations made to data are documented. That means, the FDZ at IQB preserves and documents the data received from the data depositors as well as the data preparation form for the data depositor to explain which steps were made to the data during the data preparation at the FDZ at IQB (80).

All datasets (Scientific Use Files [SUFs], Campus Files [CFs], and remote-access datasets) are based on data templates and are generally not altered for data users.

Datasets are made available to interested researchers in different formats depending on the confidentiality of the datasets as well as the location of the researchers. Applications for data access are submitted online. Staff at the FDZ at IQB first checks applications to ensure they meet the formal criteria for approval. If the formal criteria are met, the applicant will be sent a Data Use Agreement (81), which must be returned signed and in duplicate to the FDZ at the IQB before access to data can be granted (see sections R02, and R04).

The workflow for preparing and sending different formats of the datasets to interested researchers (data users) is documented in the database FAMe.

Regular meetings of the FDZ at IQB staff take place to optimize, harmonize and standardize procedures.

Regarding the change management of workflows, the FDZ at IQB has set up a task force that is in charge of implementing new workflows and documenting them in a guide for all staff members. This task force holds regular meetings to identify aspects of workflows that can be improved and redesigned. Furthermore, the task force organises internal workshops as needed to explain new workflows and train staff in following them.

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(78) see http://iqbstaff.pbworks.com/w/page/150924531/FDZ_Start (The guideline is only available for staff (requires registration) and in German, for internal use only, and may be forwarded on request.)
(79) see https://www.iqb.hu-berlin.de/fdz/Grundlagen/CollectionPolicy.pdf
(80) see https://www.iqb.hu-berlin.de/fdz/Datenuebergabe/Vorlage_AbkStudi.pdf (This document is available in German, the English version is for internal use only: see attachment no. 8: 8_Rueckmeldedokument_Datengebende_englisch.pdf)
(81) see https://www.iqb.hu-berlin.de/fdz/Muster_FDZDatenn_1.pdf

1. http://iqbstaff.pbworks.com/w/page/150924531/FDZ_Start
2. https://www.iqb.hu-berlin.de/fdz/Grundlagen/CollectionPolicy.pdf
3. https://www.iqb.hu-berlin.de/fdz/Datenuebergabe/Vorlage_AbkStudi.pdf
4. https://www.iqb.hu-berlin.de/fdz/Muster_FDZDatenn_1.pdf

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:

To increase the visibility of the data, the FDZ at IQB generates metadata (incl. DOI and citation proposal) that describes the research data in more detail and distributes these metadata, so they can also be fed into databases and found easily. The used metadata scheme (82) is compliant with the da|ra and DataCite metadata schemes.

Every data package receives a DOI for permanent, persistent identification, citability, and indexing by other services (such as VerbundFDB, da|ra, GESIS data search, Google Dataset Search, the Web of Science Data Citation Index, DataCite, Crossref, German Data Forum). Furthermore, the FDZ at IQB itself can be found in various repositories: re3data.org, and DFG RIsources.

The FDZ at IQB provides information about available studies in form of metadata via its website, through da|ra (83), VerbundFDB, reports, and regular newsletters.

The FDZ at IQB is a member of the German Data Forum as well as a partner of VerbundFDB, which both offer search engines on their websites through which the data can be found.

To further publish the data, the FDZ at IQB informs data depositors about the possibility a) to make their authorship known (for example by registering with ORCID (84)) and b) to disseminate the data proof (=citation proposal)—for example via their project website(s), in publication list(s), or at Research Gate (85). This will ensure that research results are widely spread.

The FDZ at IQB's newsletter (86) and its Twitter account (@IQB_media) regularly inform about new data publications.

Research data with DOI and citation proposal are shown on the FDZ at IQB's website (88). When searching for suitable data for their research projects (data) users can find there a first overview of the studies available on the FDZ at IQB (using the simple search or filters). The search mask available is the central access point to studies that are held by the FDZ at IQB. It allows searching for constructs across individual studies. Constructs can be understood here as umbrella terms that divide certain properties, behaviors, item words, etc. into classes of similar meaning. Thus, constructs serve to summarize the contents of the studies in broader categories. This is convenient for a quicker overview of the study's contents. Furthermore, constructs are suitable for comparing the contents of different studies and for searching across studies.

Metadata is also shown on the portal website of the VerbundFDB (89) and can be searched. Via da|ra, the FDZ at IQB facilitates machine harvesting of the metadata. (90)

In any publication derived wholly or in part from the data and/or materials supplied, data users agree always to name the FDZ at IQB and to quote the respective dataset(s), indicating the DOI(s) and the suggested citation(s).

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(82) see https://github.com/iqb-berlin/mdc-researchdata, https://mdr.iqb.hu-berlin.de/#/catalog/c09f72c7-36cc-1580-b32f-605401c3c830
(83) see https://www.da-ra.de/
(84) see https://orcid.org
(85) see https://www.researchgate.net/
(86) see https://www.iqb.hu-berlin.de/fdz/news/anmeldung/
(87) see https://twitter.com/IQB_media/
(88) see https://www.iqb.hu-berlin.de/fdz/studies/
(89) see https://www.forschungsdaten-bildung.de/studienliste.php/
(90) see https://www.iqb.hu-berlin.de/fdz/Datenzugang/

1. https://github.com/iqb-berlin/mdc-researchdata

2. https://mdr.iqb.hu-berlin.de/#/catalog/c09f72c7-36cc-1580-b32f-605401c3c830

3. https://www.da-ra.de/

4. https://orcid.org

5. https://www.researchgate.net/

6. https://www.iqb.hu-berlin.de/fdz/news/anmeldung/

7. https://www.iqb.hu-berlin.de/fdz/studies/

8. https://www.forschungsdaten-bildung.de/studienliste.php/

9. https://www.iqb.hu-berlin.de/fdz/Datenzugang/

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:

Required metadata
All datasets provided by the FDZ at IQB are aimed at researchers conducting secondary analyses.
The central prerequisite for the reuse of data is the documentation provided. Therefore, besides the data itself, additional information in the form of metadata (see sections R08, and R10 for details on the metadata) and accompanying material is necessary (e. g.: questionnaires, educational measurements, tests, codebooks, method reports, etc.). Thus, data depositors have to deliver at least the following materials to the FDZ at IQB:

• study description
• (used) instruments (e. g., questionnaire(s), educational measurements, and tests)
• codebook
• reports
• publications or references to publications based on the respective data.

Understandability
After submission of the data, experienced staff checks whether the data and documentation and accompanying material are complete so that the data are comprehensible and secondary analysis and reuse are possible.
Accompanying material can be found on the FDZ at IQB's website.
Academic staff members of the FDZ at IQB take up doctoral studies as well as postdoctoral qualifications (e. g., habilitation) in the field of empirical educational research working with datasets available at the FDZ at IQB. This facilitates a deeper understanding of the content of the datasets as well as of the statistical methods necessary for analyzing them. Therefore, if needed, the FDZ at IQB supports data depositors wherever possible in preparing the necessary documentation. For further information about qualified staff, please see section R05.
The FDZ at IQB is in contact with the community and data users. The FDZ at IQB offers advice for data users. On the FAQ page of the FDZ at IQB's website members of the Community can find answers to general questions on the application for data access, data usage, and data submission to the FDZ at IQB as well as notes on general and methodological issues concerning the datasets archived by the FDZ at IQB. (91) The FDZ at IQB fulfills one of the mandatory roles of OAIS, as it regularly updates and improves study metadata according to the identified needs of users.
Formats
Data is mostly archived in formats (SPSS and/or Stata) that are widely used by the designated community and which are continuously updated (e. g., for new SPSS versions) (see R08). If required, the FDZ at IQB converts in other formats. It also does so for long term preservation (see R09).

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(91) see https://www.iqb.hu-berlin.de/fdz/faq/

1. https://www.iqb.hu-berlin.de/fdz/faq/

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:

Integrity
Each data transfer (i. e., to data users and from data depositors) is encrypted. Data at the FDZ at IQB is stored on a secured network drive with permissions assigned so that they cannot be accessed by unauthorized persons. All files on the network drives are automatically backed up daily. In addition, manual backup copies of each dataset are regularly made and equally stored on a separate secured drive with permissions assigned as a safeguard against loss or destruction of data. This backup drive is stored in a safe. Additional preservation measures are taken for AIPs in cooperation with the CMS, these are described in section R09.

The integrity of the original data and the data given to data users is monitored by checksums using the secure hash algorithm (sha256) (see R09).
All checksums are checked regularly once per year. If necessary, additional checks are carried out ad hoc.

The IQB and therefore also the FDZ at IQB is embedded in the infrastructure of the Humboldt-Universität zu Berlin. That means, the Humboldt-Universität zu Berlin and the IQB have concluded a cooperation agreement, from which it follows that the Humboldt-Universität's Computer and Media Service (CMS) will work within the framework of a service agreement for the IQB and thus also for the FDZ at IQB, please see attached list. (92)

The department CMS administers the servers – including those used by the IQB and the IQB's FDZ – and takes care of backups, media monitoring, and refreshing.

The security and data recovery plans for all the services and servers operated by the CMS are based on the "IT-Grundschutz-Katalog" (catalog of technical, organisational, personnel, and infrastructural safeguards to guarantee an appropriate security level for all types of information of an organisation) of the Bundesamt für Sicherheit in der Informationstechnik (Federal Office for Information Security, BSI) (93).

The drives of the FDZ at IQB are included in the backup strategy (94) of the CMS. The backup service of the CMS is realized by the software product Spectrum Protect from IBM, whose former name Tivoli Storage Manager (TSM) continues to be used in the documentation and description of the software. TSM is a software system that enables automated, policy-based backup and archiving strategies for data on servers (Windows, Mac, Unix, Linux) to be centrally deployed in a network. Conveniently, users can initiate regular backups manually and automate them. Furthermore, TSM supports longer-term archiving of files or file complexes according to a management class, thus freeing up space on local machines, as well as the possibility of saving files in an extended file system (HSM - Hierarchical Storage Management). In contrast to the backup, there are no versions during archiving and the file remains on the server, regardless of whether it still exists on the client's side or not. Archiving is recommended when users want to delete files but do not want to "throw them away", when taking a "snapshot" of individual files or directories, or when data needs to be stored longer for legal reasons. TSM is a client-server application. For more security information, please see section R15.

There are data recovery provisions in place. If necessary, a formal application is made to the CMS and the required state is restored within an hour.

CMS ensures the technical monitoring of storage media and installs the necessary systems. In case of problems with storage media, these are reported via a server monitoring software (information via mail to administrators) and caught by the redundancy of the storage. If storage media are considered too risky, they are disposed of and replaced.

All CMS staff are qualified, instructed, and authorized. Only staff with administrator rights has access to storage media.

To ensure data integrity, FDZ staff regularly back up all data stored in the FDZ at IQB monthly.

A risk analysis carried out at the FDZ at IQB has shown that the maximum technical security level is implemented and that the FDZ at IQB has a uniform high-security level. It works at the state-of-the-art. These factors also contribute to the high confidentiality level maintained at the FDZ at IQB.

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(92) see attachment no. 7 on the topic Services of CMS used by IQB: 7_Services_CMS_used_by_IQB.pdf (This document is available for internal use only.)
(93) see
https://www.bsi.bund.de/DE/Themen/Unternehmen-und-Organisationen/Standards-und-Zertifizierung/IT-Grundschutz/IT-Grundschutz-Kompendium/it-grundschutz-k
(in German); https://www.bsi.bund.de/EN/Topics/ITGrundschutz/itgrundschutz_node.html/ (in English)
(94) see https://www.cms.hu-berlin.de/de/dl/systemservice/fileservice/tsm/tsm?set_language=de/

1. https://www.cms.hu-berlin.de/de/dl/systemservice/fileservice/tsm/tsm?set_language=de/
2. https://www.bsi.bund.de/DE/Themen/Unternehmen-und-Organisationen/Standards-und-Zertifizierung/IT-Grundschutz/IT-Grundschutz-Kompendium/it-grundschut

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:

Technical infrastructure
The Computer and Media Service (CMS) operates the central network infrastructure of the Humboldt-Universität zu Berlin as well as the connection to the world wide web. This is put into effect through the junction to the German National Research and Education Network, DFN, the communications network for Science and research in Germany as well as the Berlin scientific network BRAIN (95). The bandwidth to the internet is at the moment 20 Gbps. The BRAIN connections are 2x 100 Gbps. The backbone net of the Humboldt-Universität zu Berlin is based on 100-Gigabit-Ethernet technology (96).
The IQB does not operate its own servers but accesses the servers (97) operated by the CMS via desktop PCs or PC laptops. The PCs are supported by qualified IQB staff (hardware, system software).
To ensure the best available performance of these systems, a four-year plan is set up to project all necessary purchases of desktop hardware and system software.
Standard software for data processing is available on all desktop PCs: STATA, SPSS, R.
Community-supported software is in use only for communication between project participants.
Installations on all systems are documented to improve technical assistance and to restore broken systems when necessary. No data recovery has been necessary so far.
Metadata management system
The FDZ at IQB operates a study management system (so-called FDZ-StDB) suitable for documenting all processes of ingest, archival storage, and data access. The FDZ-StDB is an in-house-developed database that supports experienced employees in curating research data. This is done by checklists, metadata enrichment, categorizing of measured constructs, and information about data access. The metadata management system is accessible to authorized staff only. Regular backups are made.

The metadata scheme is based on reference standards, it is compliant with da|ra and DataCite metadata schemes, thesauri, and other controlled vocabularies (based on DDI (98)) from the designated community and can be viewed online on the MDR (99).

The metadata management system at FDZ is based on the metadata management system at IQB, developed and maintained since 2005. Beyond the specific requirements of the FDZ, the metadata management system is at the heart of several self-developed applications and databases at the IQB that mostly relate to the management of a large pool of test items and test booklets (since the main focus of the IQB are school achievement studies in primary and secondary school). Therefore, the systems' performance, reliability, and sustainability are highly prioritized and constantly monitored by the IQB IT staff. Since 2019, the system has been based on XML catalogs via a DOI referencing system, hosted at GitHub with strict version control procedures. This architecture ensures that metadata references as part of data objects can always be resolved. In 2023, the XML based catalogues will be replaced by standard metadata vocabularies based on the W3C specification SKOS.
All programming code (vb.net, angular/typescript) is published under a MIT license on GitHub (100). Beginning in 2020, the IQB is adopting modern software engineering principles like continuous integration.
For preservation, we use the OAIS model as a reference.

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(95) see https://www.brain.de/home/view/

(96.1) see https://blogs.hu-berlin.de/cms/category/cms-jahresbroschuere-2021-22/

(96.2) see https://blogs.hu-berlin.de/cms/2022/06/30/hu-netzkarte-5/

(96.3) see https://blogs.hu-berlin.de/cms/2022/06/30/jahresbericht-cms-in-zahlen/

(97) No further information available.

(98) see https://ddialliance.org/

(99.1) see https://github.com/iqb-berlin

(99.2) see https://doi.org/10.5159/IQB_MDR_FDZ_v1

(100) see https://mdr.iqb.hu-berlin.de/#/catalogs

1. https://www.brain.de/home/view/

2. https://blogs.hu-berlin.de/cms/category/cms-jahresbroschuere-2021-22/

3. https://blogs.hu-berlin.de/cms/2022/06/30/hu-netzkarte-5/

4. https://blogs.hu-berlin.de/cms/2022/06/30/jahresbericht-cms-in-zahlen/

5. https://ddialliance.org/

6. https://github.com/iqb-berlin

7. https://doi.org/10.5159/IQB_MDR_FDZ_v1

8. https://mdr.iqb.hu-berlin.de/#/catalogs

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:

Security
The security policy is in place to ensure that valuable digital data remains available (availability) and does not become corrupted (integrity) or fall into the wrong hands (confidentiality).
In the case of storage services, the CMS is responsible for IQB services, its servers, and the underlying infrastructure (SAN, Backup, Network) (101).
The storage area network of the Humboldt-Universität zu Berlin is redundant on all levels (102). The CMS service SAN provides failsafe, freely configurable hard drive capacity for HU servers administered by local managers. Technical security is ensured through simple redundancy and the distribution of servers and storage systems to several HU buildings. Secure, locked rooms with uninterruptable power supply and air conditioning are provided at the respective locations for this purpose. Every server uses two FC-HBAs to connect to the SAN and the data is written to two mirrored (RAID1) storage devices (RAID5). These storage devices reside in different buildings of Humboldt-Universität zu Berlin. With that configuration, two HBA or more than one hard drive in the two RAID5 storage devices have to fail simultaneously for potential loss of data. Thus the loss of data from hardware malfunction is very unlikely. Data loss from incorrect handling from users or even attacks from inside or outside the Humboldt network can be repaired with the backup system, which keeps deleted files for at least 60 days.
The CMS server rooms and the whole computer infrastructure are all equipped with uninterruptible power supplies, redundant air conditioning, and controlled access.

All of the servers reside behind the centrally-managed firewall of the Humboldt-Universität zu Berlin (103). The network of the Humboldt-Universität zu Berlin itself is redundantly connected to the German Research Network (DFN) (104).

All of the backup data is mirrored every night on two large tape storage libraries in two separate buildings of the Humboldt-Universität zu Berlin with about 30km distance to each other. Every data loss or change in the last 60 days can be repaired from the backup service. (105)

Community-supported software is in use only for communication between project participants.

Disaster Plan

The Computer and Media Service (CMS) of the Humboldt-Universität zu Berlin administers the server and takes care of backups, media monitoring, and refreshing. To protect the data, the following backup and access control procedures are in place to guarantee the (physical) safety of the digital archive holdings:

• The computing centre and server rooms are secured against unauthorized access.
• Smoke and water detectors are in place.
• Temperatures in server rooms are monitored.
• Redundant data storage in different locations
• Full incremental and complete backups
• Diversity of storage media and frequent media refreshment

The Humboldt-Universität Storage Area Network (SAN) provides failsafe, freely configurable hard drive capacity for HU servers administered by local managers. Technical security is ensured through simple redundancy and the distribution of servers and storage systems to several HU buildings (6 separate locations in Berlin at Grimm-Zentrum in Mitte and at Erwin-Schrödinger-Zentrum in Adlershof). Secure, locked rooms with uninterruptable power supply and air conditioning are provided at the respective locations for this purpose. Also, in the case of technical failure, malicious action, or human error, CMS has mirrors of the drives at CMS. They store the last 2 weeks.

IT Security System

All CMS servers reside behind the centrally-managed firewall of the Humboldt-Universität zu Berlin (106).

Access to desktop PCs is via authentication and authorization. Authentication is done via user name and password on a specific device. Access to network resources (files, printers, components of the computer infrastructure) is only possible with prior authentication and authorization.

Sophisticated access rights and rules management limits access to resources on shared drives down to a very granular level. By policy, nothing is stored on desktop machines. Instead, employees access files on network drives directly and maintain their files there.

Access to (FDZ at) IQB premises is only possible via a keycard lock system; visitors must always be accompanied by an authorized person.

In addition, regular training courses are held for temporary staff to avoid possible risks concerning data handling, data protection and such like.

Business Continuity Plan

The risk analysis of the FDZ at IQB showed that a failure of the FDZ at IQB activities of up to 2 weeks is to be assessed uncritically. The services are guaranteed. With IQB, it is prepared that other premises within IQB could be used by the employees if FDZ at IQB rooms should become unusable. In addition, there is also the option of a home office with VPN access.

Real estate is protected by a security guard (24h). Standard anti-burglary devices are used to secure the premises.

Dissemination of data

Each data transfer is encrypted.

Data packages are delivered via the secure HU file exchange portal (107).

Conditions of data use (108) include that users may store the data received from the FDZ at IQB only on password-protected storage media or in the form of a password-protected ZIP file. Data may only be brought to countries that have an appropriate level of data protection. Data users have to comply with relevant provisions under privacy law, including the General Data Protection Regulation (GDPR), the German Federal Data Protection Act (BDSG), as well as any applicable privacy laws at the state level.

After completion of the research project and/or expiration of the Data Use Agreement, all materials provided must be destroyed.

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(101) see https://www.cms.hu-berlin.de/en/dl-en/storage-services?set_language=en/
(102) see https://www.cms.hu-berlin.de/de/dl/systemservice/fileservice/san/standardseite/
(103) see https://www.cms.hu-berlin.de/de/dl/netze/firewall/
(104) see https://www.dfn.de/en/
(105) see https://www.cms.hu-berlin.de/de/dl/systemservice/fileservice/tsm/
(106) see https://www.cms.hu-berlin.de/de/dl/netze/firewall/
(107) see https://www3.hu-berlin.de/dateiaustausch/ (in German)
(108) see https://www.iqb.hu-berlin.de/fdz/Muster_FDZDatenn_1.pdf, § 2 (2-5)

1. https://www3.hu-berlin.de/dateiaustausch/
2. https://www.iqb.hu-berlin.de/fdz/Muster_FDZDatenn_1.pdf
3. https://www.cms.hu-berlin.de/en/dl-en/storage-services?set_language=en/
4. https://www.cms.hu-berlin.de/de/dl/systemservice/fileservice/san/standardseite/
5. https://www.cms.hu-berlin.de/de/dl/netze/firewall/
6. https://www.dfn.de/en/
7. https://www.cms.hu-berlin.de/de/dl/systemservice/fileservice/tsm/

8. https://www.cms.hu-berlin.de/de/dl/netze/firewall/

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:

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

Response:

A pdf contains the documents that are only made available for the internal review process.
A DOI for the final self-assessment document would be very nice.
_____
13.6.2023 concerning the review:
Dear Reviewers, dear Board,
thank you very much for your feedback.
We have added to R3-R6 according to your comments.
R3 Here we have described in more detail which data could not be transferred in case of a cessation.
R4 Double verification means 4-eyes-prinicples.
R5 There was only one typing error ("6").
R6 Here we have added how to handle the results of surveys.
R17 Links have been added accordingly in the evidence links.
We hope to have answered all your questions to your satisfaction.

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:

Board comment: A DOI for the assessment is being worked on and should be available by end of 2023 at the latest.