



Assessment Information

[CoreTrustSeal Requirements 2020–2022](#)

Repository: Finnish Social Science Data Archive
Website: www.fsd.tuni.fi
Certification Date: 06 November 2020

This repository is owned by: **Tampere University**



Finnish Social Science Data Archive

Notes Before Completing the Application

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

True

Reviewer Entry

Reviewer 1

Comments:

Reviewer 2

Comments:

CORE TRUSTWORTHY DATA REPOSITORIES REQUIREMENTS

Background & General Guidance

Glossary of Terms

BACKGROUND INFORMATION

Context

R0. Please provide context for your repository.

Repository Type. Select all relevant types from:

Domain or subject-based repository, National repository system; including governmental, Archive

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

Brief Description of Repository

The Finnish Social Science Data Archive (FSD) [1] is a national service resource for research and teaching. FSD promotes data sharing and curates and disseminates digital research data for research, teaching and studying purposes. FSD serves both national and international users.

FSD is an expert in the curation and preservation of digital research data collected to study society, people and culture. Social sciences are the core field of FSD, but FSD also acquires, where applicable, data in humanities, health science and fields of study related to social sciences. FSD archives and disseminates both quantitative and qualitative datasets. As of February 2020, there are more than 1,500 datasets available on FSD's Aila Data Service [2], approximately 85% of which are quantitative and 15% qualitative.

FSD is an independent institute at Tampere University [3] whose core fields of research are society, health and technology. FSD is Finland's national service provider for CESSDA ERIC, the Consortium of European Social Science Data Archives.

[1] FSD website: <https://www.fsd.tuni.fi/en/> (Accessed 5 May 2020)

[2] Aila Data Service: https://services.fsd.uta.fi/catalogue/index?lang=en&study_language=en (Accessed 5 May 2020)

[3] Tampere University: <https://www.tuni.fi/en/about-us> (Accessed 5 May 2020)

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

Brief Description of the Repository's Designated Community.

FSD's primary Designated Community is the social sciences research community. Our secondary Designated Community are researchers in the fields of humanities, health science, pedagogy and other fields related to social sciences. FSD disseminates digital research data for research, teaching and studying purposes for both national and international users, and the primary user groups of the data archived at FSD are 1) researchers, 2) university lecturers, and 3) students at higher education institutions.

The knowledge base of our Designated Community is expected to include knowledge of research data, basic software used in conducting research, and social science research methods (either qualitative or quantitative as FSD's data holdings include both types). FSD offers a wide range of contextual documentation to ensure the contents of datasets can be understood by everyone within the Designated Community.

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

Level of Curation Performed. Select all relevant types from:

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

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

Comments

Reviewer Entry

Reviewer 1

Comments:

Reviewer 2

Comments:

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

CSC – IT Center for Science Ltd: Finland has a national digital preservation service that is funded by the Ministry of Education and Culture and maintained by CSC. Therefore, FSD has signed a service agreement [1] with CSC regarding long-term storage of bit-level data. CSC provides the digital preservation solution in accordance with the service agreement between the Ministry of Education and Culture and CSC [2]. The national preservation services for digital cultural heritage resources were developed in the National Digital Library (KDK) project which ended in 2017. FSD participated in the development work of the KDK project. The digital cultural heritage initiative [3] continues the work that was started in the KDK project. In practice, FSD transfers bit-level data backups to CSC that secures the long-term bit-level storage. FSD has the overall responsibility of the acquisition policy, data curation, planning of preservation and data management. CSC is ISO/IEC 27001 certified, indicating a culture of security and best practices in information security management systems.

Tampere University: FSD is an independent institute of Tampere University. Servers hosting FSD's data and services are physically located in a data centre maintained by the IT administration of Tampere University [4]. FSD premises are also located on a campus of Tampere University. There is no service level agreement since we are part of the same organisation.

[1] CSC digital preservation service agreement (in Finnish):

<http://digitalpreservation.fi/files/sopimukset/KP-PAS-palvelusopimus.pdf> (Accessed 5 May 2020)

[2] Agreement between the Ministry of Education and Culture and CSC on the delivery of service packages for higher education institutions in 2019 (in Finnish): https://www.csc.fi/documents/10180/152161/OKM%E2%80%93KTLO_sopimus_2019/70be392a-480e-46dc-b127-1de5622ea64d (Accessed 29 September 2020)

[3] Digital Cultural Heritage Initiative: <https://www.digime.fi/en/our-digital-cultural-heritage/> (Accessed 5 May 2020)

[4] FSD's Archives Formation Plan, Chapter 5. Information systems and data security: <https://www.fsd.tuni.fi/en/data-archives-formation-plan/operational-guidelines/#information-systems-and-data-security> (Accessed 5 May 2020)

Reviewer Entry

Reviewer 1

Comments:

Accept

Reviewer 2

Comments:

Accept

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

Significant changes in FSD's operations since the last CTS certification in 2017 include improvements to FSD's technical infrastructure as well as additional funding for developing services.

In 2018, FSD implemented a data deposit tool which data depositors can use to easily transfer their data to FSD using a

secure connection instead of email attachments or physical storage media.

In 2019, FSD's host organisation, the University of Tampere, merged with Tampere University of Technology, forming the new Tampere University [1]. The merger caused changes to FSD's technical infrastructure, most notably decommissioning FSD's own server room and transferring the FSD servers to a data centre maintained by the ICT Services of Tampere University. Due to the ongoing work caused by these changes, we have indicated a compliance level of '3 – The repository is in the implementation phase' for requirements R9 "Documented storage procedures" and R15 "Technical infrastructure".

After the previous CTS certification, FSD has also received additional funding from the Academy of Finland [2] for the years 2019–2023 for developing national services; FSD was awarded funding of two million euros for the project "Crossing Boundaries with Tools and Services" (C-BoTS) [3].

[1] Tampere University. About us:

<https://www.tuni.fi/en/about-us#paragraph-anchor--05ce7f3c-ca9a-4f73-b212-4081d6aef490> (Accessed 5 May 2020)

[2] Academy of Finland: <https://www.aka.fi/en/> (Accessed 5 May 2020)

[3] FSD website. Crossing Boundaries with Tools and Services (C-BoTS): FSD's national data infrastructure 2024:

<https://www.fsd.tuni.fi/en/data-archive/projects/c-bots/> (Accessed 5 May 2020)

Reviewer Entry

Reviewer 1

Comments:

Accept

Reviewer 2

Comments:

Accept

Other Relevant Information.

FSD has a national role as a service resource for scientific research and teaching. Its operations are funded by the Finnish Ministry of Education and Culture and Tampere University, along with project-based funding mainly from the Academy of Finland. As of March 2020, FSD has 33 employees constituting approximately 26 FTEs. Fifteen employees hold regular contracts.

FSD's data holdings comprise more than 1,500 datasets, and over 70 new datasets have been archived annually from 2016 to 2019. Approximately 80 percent of datasets have been disseminated for reuse at least once. Aila Data Service, through which datasets can be downloaded, has over 2,600 registered users as of February 2020. Users have downloaded datasets more than 14,000 times in total, the annual number of downloads ranging from 2,159 to 2,905 (2015–2019). FSD's descriptive metadata are machine-harvestable and available in multiple international data catalogues (e.g. CESSDA Data Catalogue [1]). FSD is indexed in the Re3data Registry of Research Data Repositories [2].

FSD is Finland's national service provider for CESSDA ERIC, the Consortium of European Social Science Data Archives [3]. FSD participates in several CESSDA working groups and in a variety of CESSDA-funded projects. FSD also partners with several other national and international organisations in the field to promote and enhance open science and the reuse of scientific data [4]. These organisations include, among others, IASSIST, ICPSR, and IFDO. The national and international projects that FSD collaborates in are listed on the FSD website [5].

[1] CESSDA Data Catalogue: <https://datacatalogue.CESSDA.eu/> (Accessed 5 May 2020)

[2] Re3data. Finnish Social Science Data Archive: <http://doi.org/10.17616/R3D89P> (Accessed 5 May 2020)

[3] CESSDA website. Finland: <https://www.CESSDA.eu/About/Consortium/CESSDA-Countries/CESSDA-Members/Finland> (Accessed 5 May 2020)

[4] FSD website. Partners: <https://www.fsd.tuni.fi/en/data-archive/partners/> (Accessed 5 May 2020)

[5] FSD website. Projects: <https://www.fsd.tuni.fi/en/data-archive/projects/> (Accessed 5 May 2020)

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

ORGANIZATIONAL INFRASTRUCTURE

1. Mission/Scope

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

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

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

Reviewer 2

Comments:

4 – The guideline has been fully implemented in the repository

Response:

The tasks and mission of the Finnish Social Science Data Archive are approved on Finland's national Strategy and Roadmap for Research Infrastructures 2014–2020: "The Finnish Social Science Data Archive (FSD) is a national resource centre for research and teaching. It archives and disseminates Finnish and international electronic research data for research, teaching and study purposes, and provides information services on data-related issues." [1]. The mission is enforced by FSD's strategic plans revised every four years. The latest strategic plan covers the years 2017–2020 (available only in Finnish) [2].

FSD's archiving mission also includes data preservation, and this role is explicitly approved by FSD's host organisation, Tampere University. It is stated in the guidelines of the President of Tampere University regarding independent institutes: "FSD is a national resource centre that preserves and provides access to research data and digital cultural heritage for learning, teaching and research purposes." [3] The University's open science action plan states: "The Finnish Social Science Data Archive (FSD) supports the responsible sharing of research data and takes care of the long-term preservation of the data it stores" [4].

FSD's policies are in line with its mission. The most important document that outlines the operations of FSD is the Archives Formation Plan [5]. This document is the highest-ranking directive concerning FSD's operations and services. It is supplemented by an internal manual, which is a wiki where all revisions are saved. The internal manual is only accessible by personnel within the FSD local area network, but the Archives Formation Plan includes a summary of the workflows described in the internal manual related to the depositing, processing and dissemination of data [6].

[1] Finland's Strategy and Roadmap for Research Infrastructures 2014–2020:

https://www.aka.fi/globalassets/awanhat/documents/firi/tutkimusinfrastruktuurien_strategia_ja_tiekartta_2014_en.pdf
(Accessed 5 May 2020)

[2] FSD strategy for 2017–2020 (in Finnish): <https://www.fsd.tuni.fi/fi/tietoarkisto/asiakirjat/strategia1720.pdf> (Accessed 5 May 2020)

[3] Tampere University Intranet. Independent Institutes (internal document shared with the reviewer)

[4] Tampere University action plan on open science:

<https://www.tuni.fi/sites/default/files/2019-02/tau-action-plan-on-open-science.pdf> (Accessed 5 May 2020)

[5] Archives Formation Plan:

<https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/> (Accessed 5 May 2020)

[6] Archives Formation Plan, Chapter 3. FSD's work process: <https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/operational-guidelines/#work-process> (Accessed 5 May 2020)

Reviewer Entry

Reviewer 1

Comments:

Accept

Reviewer 2

Comments:

Accept

2. Licenses

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

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:

4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:

4 – The guideline has been fully implemented in the repository

Response:

FSD has the necessary licenses and agreements in place to provide access to the data in its holdings. All data users agree to 'General Terms and Conditions for Data Use' [1] and 'Terms and Conditions for the Use of the Aila Data Service' [2]. (Aila Data Service [3] is FSD's online data service portal.)

These licences ensure that the terms of accessing and using the data are sufficiently clear to users. FSD's User Services also monitor data use on the administrative platform of Aila. Right of access to individual datasets depends on the access conditions agreed upon by the depositor and FSD in the Deposit Agreement [4]. FSD User Services review access applications to ensure that the intended use mentioned in the application is in line with the access conditions set for the data.

In the case of noncompliance, FSD reserves the right to close the account of any user who breaches the terms of access and use. FSD also has the right to notify the user's organisation and research funders of the breach. Users agree to these terms in section 1 of the 'General Terms and Conditions for Data Use' [1].

[1] General Terms and Conditions for Data Use: <https://services.fsd.uta.fi/docs/terms-of-use?lang=en> (Accessed 5 May 2020)

[2] Terms and Conditions for the Use of the Aila Data Service: <https://services.fsd.uta.fi/docs/eula?lang=en> (Accessed 5 May 2020)

[3] Aila Data Service: <https://services.fsd.uta.fi/index?lang=en> (Accessed 5 May 2020)

[4] Deposit Agreement: https://www.fsd.tuni.fi/files/deposition_agreement.pdf (Accessed 5 May 2020)

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

3. Continuity of access

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

Compliance Level:

3 – The repository is in the implementation phase

Reviewer Entry

Reviewer 1

Comments:
3 – The repository is in the implementation phase

Reviewer 2

Comments:
3 – The repository is in the implementation phase

Response:

FSD ensures continuity of access and preservation both at the moment and in the future. FSD constantly improves its services to meet the requirements of long-term access to and availability of data. FSD follows the latest developments and technological progress to stay informed of the best practices for long-term preservation.

FSD provides long-term preservation for all archived data in its collections. The document types and file types and their preservation periods are listed in Appendix 1 of the Archives Formation Plan [1]. Data in Archival Information Packages (AIP) and Dissemination Information Packages (DIP) are permanently stored.

The Archives Formation Plan [2] also contains information about our preservation plans, ingest criteria, archival process, information system and data protection practices, and a continuity plan [3]. The Archives Formation Plan is reviewed once a year to ensure it is up to date. FSD's Preservation Planning Team decides on any changes to the contents of the Plan. The team consists of the senior staff members from all operational modules of FSD and it convenes 3–4 times a year.

The base funding that FSD receives is sufficient to maintain core operations and activities (data archiving and dissemination, information service). In the unlikely event that funding and the continuity of operations are at risk, FSD has a continuity plan [3] to map out required functions for the controlled transferring of the data to another institution. FSD's curation workflows already produce self-standing AIPs and DIPs with sufficient metadata to ensure understandability for the long term.

[1] Archives Formation Plan, Appendix 1. Documents and document series generated by the FSD: <https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/documents-and-series/> (Accessed 5 May 2020)

[2] Archives Formation Plan: <https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/documents-and-series/> (Accessed 5 May 2020)

[3] Archives Formation Plan, Chapter 7. Continuity plan: <https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/operational-guidelines/#continuity-plan> (Accessed 5 May 2020)

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
For the future: I encourage the FSD to appoint a task group now (instead of once you lose funding) to map out required functions and workflows for the controlled transfer of data to another institution. A concrete plan is much better than a plan to do more planning.

4. Confidentiality/Ethics

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

norms.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:

4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:

4 – The guideline has been fully implemented in the repository

Response:

FSD complies with applicable disciplinary norms and legislation as well as best practices regarding data management. FSD also provides guidance to researchers regarding these in the 'Data Management Guidelines' [1], which is an online handbook providing concrete guidance to researchers on the management of digital research data during the whole lifecycle of the data.

Chapter 1 of the Archives Formation Plan [2] contains information on the legislation that is taken into account in data archiving (focusing especially on the General Data Protection Regulation of the European Union (GDPR) as well as the national Finnish legislative framework). FSD ensures knowledge of and compliance with national and international laws by participating in national and international cooperation, projects and training. FSD also cooperates with the Finnish National Board on Research Integrity (TENK). In 2009, TENK published the first national guidelines on the ethical principles of research in the humanities and social and behavioural sciences and proposals for ethical review in Finland. TENK revised and updated the guidelines in 2019 [3]. Both times the working group formed by TENK was chaired by FSD's Development Manager.

FSD personnel are regularly trained on matters of privacy and data protection to ensure a high standard of confidentiality. Access to deposited data files is restricted only to personnel that have tasks involving data processing and handling. Data with disclosure risk are handled appropriately, and well-formulated plans standardise the assessment of disclosure risk. Data managers prepare a privacy protection plan for each dataset on a case-by-case basis [4]. Since 2016, FSD has also produced an annual "data balance sheet" (in Finnish only) [5] containing the basic principles guiding FSD's data archiving and dissemination activities, technical and organisational protective measures employed by data managers, as well as central statistics regarding archiving and reuse. FSD's data protection practices and workflows with regard to anonymisation and handling personal data are summarised below and described in more detail in Chapter 3 of the Archives Formation Plan [6].

The archived data (AIPs and DIPs) are anonymised, with the exception of datasets subject to Article 85 of the GDPR [7] and provisions based on it in Section 27 of the Finnish Data protection Act [8] (“processing of personal data for journalistic purposes or the purposes of academic, artistic or literary expression”). These include data collected from newspapers and periodicals, data where the research publications based on it contain personal data (for instance, expert and artist interviews), and data under copyright. However, any unnecessary personal data are removed from interview and textual data that are archived with participant names, but not from data collected from newspapers and periodicals. Data that are archived with identifiers are exceptional at FSD, approximately 3–4% of all archived datasets.

Prior to archiving, depositors and FSD sign an agreement on personal data processing for assessing the suitability of the data for archiving [9]. The agreement ensures the statutory requirements for the deposit as well as both parties’ ability to demonstrate accountability in compliance with the GDPR. After the last CTS certification, FSD has also implemented a data deposit tool which allows depositors to transfer their data files to FSD using a secured connection instead of email attachments or physical storage media [10]. Original data files containing sensitive or identifiable information are deleted at the beginning of data processing, and data variables containing direct identifiers are deleted immediately after there is no need for using them.

If anonymisation would prevent sensible use of the dataset, the data are of high scientific value with personal data and data are not subject to Article 85 in GDPR, archiving of the data has to adhere to the Data Protection Act. Identifiers included in the data have to be necessary and proportionate to the aim of public interest pursued and to the rights of the data subject in accordance with Section 4, paragraph 4 of the Data Protection Act [8]. In addition, the research participants have to have been informed about archiving at FSD (with personal data included) in the privacy notice of the study. FSD requires the researcher to provide rationale for the necessity and proportionality of archiving personal data. Data minimisation must always be adhered to (GDPR Article 89(1)).

FSD’s General Terms and Conditions for Data Use [11] require that data users follow the ethical guidelines [3] drawn up by the National Advisory Board on Research Integrity, and users agree not to compromise the confidentiality and privacy of individuals or bodies connected to the data when using the data or publishing results obtained from the data. There is always a minor risk that even anonymised data may be identifiable to a re-user who knows the target group beforehand. In these rare situations, users agree to comply with additional dataset-specific terms and conditions for access in addition to the General Terms and Conditions for Data Use. The General Terms and Conditions for Data Use stipulate that FSD reserves the right to close the account of any user who breaches the terms of access and use, and to notify the user’s organisation and research funders of the breach.

In Finland, research ethics in medical studies is evaluated by ethics committees of hospital districts on the basis of the Medical Research Act (388/1999) [12]. The ethics of non-medical research is assessed by universities’ own research ethics committees, which comply with the guidelines set by the Finnish Advisory Board on Research. If a research project offering data to be archived has gone through an ethics review, FSD checks what the review states about data processing and preservation.

FSD does not ingest data that have unresolved rights issues or any intellectual property rights problems. In case the research data are copyright-protected by research subjects, depositors can use FSD's Data Management Guidelines to formulate appropriate agreements on the transfer of rights [13] to enable the archiving and re-use of such data. More information about the data acquisition and selection criteria of FSD is available in Chapter 2 of the Archives Formation Plan [14].

- [1] Data Management Guidelines: <https://www.fsd.tuni.fi/aineistonhallinta/en/> (Accessed 5 May 2020)
- [2] Archives Formation Plan, Chapter 1. Compliance with legislation: <https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/operational-guidelines/#compliance-with-legislation> (Accessed 5 May 2020)
- [3] The ethical principles of research with human participants and ethical review in the human sciences in Finland: https://www.tenk.fi/sites/tenk.fi/files/lhmistieteiden_eettisen_ennakkoarvioinnin_ohje_2019.pdf (Accessed 5 May 2020)
- [4] Data Management Guidelines: Anonymisation plan template: <https://www.fsd.tuni.fi/aineistonhallinta/en/documents/anf-template.pdf> (Accessed 5 May 2020)
- [5] Tietoarkiston tietotilinpäätös vuodelta 2018 ("FSD's data balance sheet 2018", in Finnish): <https://www.fsd.tuni.fi/fi/tietoarkisto/asiakirjat/tietoarkisto-tietotilinpaaatos-2018.pdf> (Accessed 5 May 2020)
- [6] Archives Formation Plan, Chapter 3. FSD's work process: <https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/operational-guidelines/#work-process> (Accessed 5 May 2020)
- [7] General Data Protection Regulation of the European Union (GDPR): <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0679> (Accessed 5 May 2020)
- [8] Data Protection Act (unofficial translation into English): <https://www.finlex.fi/en/laki/kaannokset/2018/en20181050.pdf> (Accessed 5 May 2020)
- [9] Agreement on personal data processing for assessing the suitability of research data for archiving https://www.fsd.tuni.fi/files/personal_data_processing_agreement.pdf (Accessed 5 May 2020)
- [10] Depositing data through Aila: <https://services.fsd.uta.fi/help/depositing?lang=en> (Accessed 5 May 2020)
- [11] General Terms and Conditions for Data Use: <https://services.fsd.uta.fi/docs/terms-of-use?lang=en> (Accessed 5 May 2020)
- [12] Medical Research Act (unofficial translation into English): <http://www.finlex.fi/fi/laki/kaannokset/1999/en19990488.pdf> (Accessed 5 May 2020)
- [13] Data Management Guidelines. Agreement with external parties concerning the transfer of copyright and ownership rights: <https://www.fsd.tuni.fi/aineistonhallinta/en/copyright-and-agreements.html#agreement-concerning-the-transfer-of-rights> (Accessed 5 May 2020)
- [14] Archives Formation Plan, Chapter 2. Data acquisition and selection criteria: <https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/operational-guidelines/#data-acquisition-and-selection-criteria> (Accessed 5 May 2020)

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

5. Organizational infrastructure

R5. The repository has adequate funding and sufficient numbers of qualified staff managed through a clear system of governance to effectively carry out the mission.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

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

Reviewer 2

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

Response:

The Ministry of Education and Culture [1] founded FSD in 1999. Appropriate to its Designated Community, FSD operates as an independent institute at Tampere University [2] whose core fields of research and education are society and health, along with technology [3]. As a unit of Tampere University, FSD follows the administrative procedures of the University [4].

FSD's base funding comes from the Ministry of Education and Culture and Tampere University. This base funding covers FSD's basic functions like the preservation of data, salaries for regular staff, administrative costs, resources for information technology and participation in relevant seminars.

In addition to the base funding, FSD undertakes development activities with project-based funding. Financing periods for project-based funding vary from one year to five years.

FSD is led by the Director, assisted by FSD's Management Team (Deputy Director, Module Managers and PA to the Director). Administratively, FSD consists of four modules: 1) Administration and Communications, 2) User Services and Data Ingest, 3) Projects and Development and 4) Technical Services. FSD staff [5] have wide expertise in archiving,

information technology and academic research. The staff come from many different types of backgrounds, such as sociology, social policy, economics, statistics, philology, political science, computer science, information technology, communication studies and administrative science. FSD has both long-standing and newly started members of staff, which is a significant advantage in sustaining and developing the activities of the organisation. As of March 2020, FSD has 33 employees constituting approximately 26 FTEs. Sixteen employees hold regular contracts, which is sufficient for core tasks.

The staff have constant opportunities to improve their expertise by participating in high-quality training and courses for personnel organised externally or by Tampere University as well as relevant international conferences and seminars in the field, such as IASSIST and EDDI. FSD's role as a national service provider for CESSDA (the Consortium of European Social Science Data Archives) [6] also offers opportunities for FSD personnel to improve their professional skills. FSD has an active role in both national and international associations and we cooperate actively with other research infrastructures. Examples include disseminating the Finnish data of the European Social Survey (ESS) [7] and the International Social Survey Programme (ISSP) [8] to users, and opening metadata via Finna [9]. FSD is also a member of the Inter-university Consortium for Political and Social Research (ICPSR) [10] and the DDI Alliance [11] (see more about national and international memberships in R6 "Expert guidance"). All these activities enhance the expertise of FSD staff and improve the entire infrastructure as well.

[1] Ministry of Education and Culture: <http://minedu.fi/en/frontpage> (Accessed 5 May 2020)

[2] Tampere University: <http://www.tuni.fi/en> (Accessed 5 May 2020)

[3] Research strategy of the Tampere university community:

<https://www.tuni.fi/en/about-us/key-information#expander-trigger--c75df146-3562-4e1c-bf7d-c9e2411304d2> (Accessed 5 May 2020)

[4] Tampere University Intranet. Organisational structure (internal document shared with the reviewer)

[5] FSD website. Staff: <https://www.fsd.tuni.fi/en/contact/#staff> (Accessed 5 May 2020)

[6] Consortium of European Social Science Data Archives (CESSDA): <https://cessda.eu/>

[7] FSD website. European Social Survey (ESS) (in Finnish):

<https://www.fsd.tuni.fi/fi/aineistot/kansainvalisia-aineistosarjoja/european-social-survey/> (Accessed 5 May 2020)

[8] FSD website. International Social Survey Programme (ISSP) (in Finnish):

<https://www.fsd.tuni.fi/fi/aineistot/kansainvalisia-aineistosarjoja/international-social-survey-programme/> (Accessed 5 May 2020)

[9] Finna: <https://www.finna.fi/OrganisationInfo/Home?id=fsd#86492> (Accessed 5 May 2020)

[10] Inter-university Consortium for Political and Social Research (ICPSR): <https://www.icpsr.umich.edu> (Accessed 5 May 2020)

[11] DDI Alliance: <http://ddialliance.org/> (Accessed 5 May 2020)

Reviewer Entry

Reviewer 1

Comments:

Accept

Reviewer 2

Comments:
Accept

6. Expert guidance

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

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

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

Reviewer 2

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

Response:

FSD has constant dialogue with national and international actors in the fields of data archiving and research. FSD staff members regularly participate in various working groups and projects to improve FSD's operations but also to share know-how with partners [1]. FSD has various international and national memberships [2], which are important for communicating with experts for advice. FSD is a national service provider for the Consortium of European Social Science Data Archives (CESSDA ERIC) and also cooperates with the International Federation of Data Organizations (IFDO), the Inter-university Consortium for Political and Social Research (ICPSR), the DDI Alliance. As part of the European Open Science Cloud (EOSC) initiative, FSD participates in the Social Sciences and Humanities Open Cloud (SSHOC) [3], EOSC-Nordic [4] and TRIPLE [5] projects.

FSD has a National Advisory Board [6], which is an external advisory committee guiding FSD's operations. The Advisory Board serves a four-year term and consists of 15 members from Finnish universities and other stakeholders, such as the Academy of Finland, Statistics Finland and the National Archives of Finland. The Advisory Board combines wide expertise in the areas of social science, digital preservation and funding.

FSD actively surveys potential challenges on the horizon regarding the Designated Community. In 2015, FSD conducted

a survey [7] to chart researcher views of and attitudes toward data archiving and sharing in the fields of humanities and health science [8]. The survey revealed that much remains to be done in promoting the principles of data archiving and reuse within the social sciences, humanities and health sciences. FSD continues its work to promote open access to digital research data, and it seems that FSD has been successful in this objective: in 2017, a general user feedback survey measured the Designated Community's satisfaction with FSD's services, and 84 percent of respondents were very satisfied or somewhat satisfied with the service they had received from FSD [9].

FSD's Designated Community have the possibility to send feedback by e-mail to FSD User Services and Technical Support. FSD User Services can also be contacted by phone during office hours, and the office can also be reached via Facebook and Twitter. Members of staff whose tasks include user service are trained in responding to feedback, and all questions and feedback from users are stored in a CRM (Customer Relationship Management) database included in FSD's operational database Tiipii. This further assures good user service quality.

In addition to feedback from users, FSD follows the user statistics of its website and Aila Data Service [10]. FSD also reaches out to the Designated Community through the news page on the FSD website [11], FSD's email newsletter, webinars, and social media channels. Furthermore, FSD regularly participates in scientific seminars and other relevant events in order to reach out to the Designated Community.

[1] FSD website. Projects and working groups: <https://www.fsd.tuni.fi/en/data-archive/projects/> (Accessed 5 May 2020)

[2] FSD website. Partners: <https://www.fsd.tuni.fi/en/data-archive/partners/> (Accessed 5 May 2020)

[3] Social Sciences and Humanities Open Cloud (SSHOC) website: <https://sshopencloud.eu/> (Accessed 5 May 2020)

[4] EOSC-Nordic website: <https://www.eosc-nordic.eu/> (Accessed 5 May 2020)

[5] Transforming Research through Innovative Practices for Linked interdisciplinary Exploration (TRIPLE):
<https://cordis.europa.eu/project/id/863420> (Accessed 5 May 2020)

[6] FSD website. FSD Advisory Board: <https://www.fsd.tuni.fi/en/data-archive/administration/#fsd-advisory-board>
(Accessed 5 May 2020)

[7] Open Access and Research Data: Researcher Survey 2015:
https://services.fsd.uta.fi/catalogue/FSD3123?study_language=en&lang=en (Accessed 5 May 2020)

[8] Research report (in Finnish): Open Access and Research Data: Researcher Survey 2015:
https://www.fsd.tuni.fi/fi/tietoarkisto/julkaisut/julkaisusarja/fsdjs12_tutkimusaineistot-kysely.pdf (Accessed 5 May 2020)

[9] Henri Ala-Lahti, Eliisa Haanpää & Hannele Keckman-Koivuniemi (2018). Data Archive – Services Supporting the Scientific Community. Report on user survey 2017 [Report in English p. 18]:
https://www.fsd.tuni.fi/fi/tietoarkisto/julkaisut/julkaisusarja/fsdjs13_asiakaskysely.pdf (Accessed 5 May 2020)

[10] Aila Data Service: https://services.fsd.uta.fi/catalogue/index?study_language=en&lang=en (Accessed 5 May 2020)

[11] FSD website. News: <https://www.fsd.tuni.fi/en/news/> (Accessed 5 May 2020)

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

DIGITAL OBJECT MANAGEMENT

7. Data integrity and authenticity

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

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

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

Reviewer 2

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

Response:

FSD's digital object management workflows follow the OAIS Reference Model [1]. Data managers process SIPs into AIPs and DIPs in accordance with detailed instructions in FSD's internal manual. An overview of this process is provided in Chapter 3 of the Archives Formation Plan [2]. Types of data and metadata files created are described in Appendix 1, Tables 5-9 [3].

All changes made by FSD to the SIP to create the AIP and DIP are documented manually, and complete information about each data and metadata file as well as change logs and additional administrative metadata are stored in FSD's operational database (Tiipii). In addition, detailed documentation in the form of SPSS syntax exists on all changes to data values during the curation of a quantitative dataset; types of changes made to qualitative data are documented in the anonymisation plan of the dataset.

Access to deposited data files is restricted only to personnel that have tasks involving data processing and handling. Checksum utilities confirm the integrity of data. If the checksums do not match, files are investigated for inconsistencies, mitigating the risk of inadvertent or unauthorised changes to the data.

These procedures have been sufficient so far, but advanced versioning of both data and metadata will be included in a new version of FSD's operational database Tiipii, which is expected to be taken into use in late 2020. The new Tiipii will also include separate PIDs for each data version.

The internal manual contains FSD's PID and versioning policy as well as step-by-step instructions for versioning. FSD's PID policy is in line with the CESSDA ERIC Persistent Identifier Policy [4]. Data are given a version number, and changes made to create a new version are logged in the operational database Tiipii. By default, access for users is provided only to the most recent version of the data on Aila Data Service. For earlier versions, users must contact the staff. Version numbers and PIDs are included in recommended bibliographic citations provided for the data [5].

Metadata are always linked to data with the ID number provided for the study by FSD. FSD's data are documented in compliance with the Data Documentation Initiative (DDI) Codebook 2.0 specification [6]. DDI is an international standard for "describing the data produced by surveys and other observational methods in the social, behavioral, economic, and health sciences" [7].

Data managers collaborate with the data depositors during the archiving process. During data processing, data managers also run frequencies and cross-tabulations in SPSS to check the data for discrepancies and ask the depositor for clarifications if needed. The depositor has to have contact details that can be connected to an existing institution or organisation, and FSD's deposit tool [8] requires authentication using HAKA identity federation sign-on for Finnish universities.

[1] The Main Processes of the Finnish Social Science Data Archive and the OAIS Model (internal document shared with the reviewer)

[2] Archives Formation Plan, Chapter 3. FSD's work process: <https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/operational-guidelines/#work-process> (Accessed 5 May 2020)

[3] Archives Formation Plan, Appendix 1. Documents and document series generated by FSD: <https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/documents-and-series/> (Accessed 5 May 2020)

[4] CESSDA ERIC Persistent Identifier Policy: <https://www.CESSDA.eu/content/download/3914/35432> (Accessed 5 May 2020)/[file/CESSDA_ERIC_PID_Policy_2017.pdf](https://www.CESSDA.eu/content/download/3914/35432/file/CESSDA_ERIC_PID_Policy_2017.pdf) (Accessed 5 May 2020)

[5] FSD website. Citing archival data: <https://www.fsd.tuni.fi/en/data/downloading-and-using-data/citing-data/> (Accessed 5 May 2020)

[6] DDI Codebook: <https://ddialliance.org/Specification/DDI-Codebook/> (Accessed 5 May 2020)

[7] DDI Alliance: <https://ddialliance.org/> (Accessed 5 May 2020)

[8] Depositing data through Aila: <https://services.fsd.uta.fi/help/depositing?lang=en> (Accessed 5 May 2020)

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

8. Appraisal

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

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

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

Reviewer 2

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

Response:

Chapter 2 of the Archives Formation Plan defines the criteria for data acquisition [1]. The criteria concern the quality and technical state of the data as well as legislative compliance. FSD does not archive data falling outside of these criteria, and potential depositors wanting to archive these types of data will be directed to a repository more suitable for their archiving needs.

After the previous CTS certification, FSD has implemented a data deposit tool [2] that allows depositors to fill in metadata information. Many of the metadata fields in the tool use controlled vocabularies, which facilitates the creation of consistent metadata. Metadata quality is controlled manually: data managers review and process the deposited data and metadata in cooperation with the depositor. The process is described in Chapter 3 of the Archives Formation Plan [3].

FSD has listed the recommended file formats for depositors in respect of data types and long-term preservation, although most file formats can be converted for preservation at FSD. The list is included in Appendix 6 of the Archives Formation Plan [4]. If the data are in an unsuitable format and cannot be converted at FSD or if the data do not meet FSD's criteria for data acquisition and selection, the depositor is suggested a more suitable repository.

In its internal manual, FSD has the necessary policies and documented procedures in place for removal of items from its collection. Removal is rare and will only be done in exceptional cases, i.e. in the case of depositor withdrawal from the Deposit Agreement (the agreement [5] includes a clause stating that agreeing parties have the right to resign from the agreement). The data are deleted from FSD's holdings, but the dataset ID number is not given to another dataset, nor the associated PIDs (see R13 "Data discovery and identification" for more information on FSD's PIDs). Information on the deleted dataset associated with the ID number remains in FSD's operational database management system Tiipii in order to ensure adequate documentation on the deletion.

[1] Archives Formation Plan, Chapter 2. Data acquisition and selection criteria: <https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/operational-guidelines/#data-acquisition-and-selection-criteria> (Accessed 5 May 2020)

[2] Depositing data through Aila: <https://services.fsd.uta.fi/help/depositing?lang=en> (Accessed 5 May 2020)

[3] Archives Formation Plan, Chapter 3. FSD's work process: <https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/operational-guidelines/#work-process> (Accessed 5 May 2020)

[4] Archives Formation Plan, Appendix 6. Digital File Formats Used at the Finnish Social Science Data Archive for Different Types of Data:

<https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/file-formats/> (Accessed 5 May 2020)

[5] Deposit Agreement: https://www.fsd.tuni.fi/files/deposition_agreement.pdf (Accessed 5 May 2020)

Reviewer Entry

Reviewer 1

Comments:
Accept.

It is interesting that the Deposit Agreement gives both parties the right to resign from the agreement. For future renewals, the implications of such rights for the data and the data users should be stated.

Reviewer 2

Comments:
Accept

9. Documented storage procedures

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

Compliance Level:

3 – The repository is in the implementation phase

Reviewer Entry

Reviewer 1

Comments:

3 – The repository is in the implementation phase

Reviewer 2

Comments:

3 – The repository is in the implementation phase

Response:

FSD guarantees secure archival storage of data. These processes are described in more detail in Chapter 5 of the Archives Formation Plan [1]. After the previous CTS certification, FSD has made improvements in its storage procedures. These changes have been implemented fully, but complete documentation is expected to be finished in 2021. Due to the ongoing work, we have indicated compliance level 3 for this requirement.

FSD runs checksums to ensure the integrity of the data in the repository, monitors data formats used for data storage to identify potential preservation issues, and carries out manual checks of archived data files at random on a regular basis.

Data are stored on the servers of Tampere University ICT Services (ICTS). ICTS provides and maintains the physical computing environment and services common to all university actors. ICTS also monitors storage media for deterioration and tests back-up copies. FSD's insourcing relationship with ICTS is explained in more detail in R15 "Technical infrastructure".

FSD has outsourced long-term preservation of bit-level data in accordance with the specifications of a national digital preservation service [2] maintained by CSC – IT Center for Science Ltd [3]. As agreed upon in the service agreement [4], CSC secures the bit-level storage of data and FSD has the overall responsibility of acquisition, curation, migration, planning of preservation and data management. The service agreement ensures that data remain usable for the long term and FSD is able to take care of its statutory and other obligations relating to preservation. See further information in "Insource/Outsource partners" in R0.

[1] Archives Formation Plan, Chapter 5. Information systems and data security: <https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/operational-guidelines/#information-systems-and-data-security> (Accessed 5 May 2020)

[2] National digital preservation service specifications: <https://digitalpreservation.fi/en/specifications> (Accessed 5 May 2020)

[3] CSC – IT Center for Science Ltd: <https://www.csc.fi/> (Accessed 5 May 2020)

[4] CSC digital preservation service agreement (in Finnish):

<http://digitalpreservation.fi/files/sopimukset/KP-PAS-palvelusopimus.pdf> (Accessed 5 May 2020)

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

10. Preservation plan

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

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

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

Reviewer 2

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

Response:

As stated in R1 “Mission/Scope”, FSD’s mission includes responsibility of data preservation. FSD’s preservation policy, ingest criteria, archival process, information systems, and data protection practices are described in detail in the Archives Formation Plan [1].

Any changes to the preservation strategy and to the contents of the Archives Formation Plan are made by FSD’s Preservation Planning Team which convenes 3–4 times a year. The team consists of FSD’s Director and senior staff members from all operational modules. The team participates in the development of common practices in archiving and preservation with national and international institutions and organisations.

All data are preserved for the long term, and the curation process includes producing detailed metadata in Finnish and English. To ensure the usability and understandability of the data in the long term, FSD also 1) checks variable frequencies, variable and value labels, and missing values (quantitative data) and 2) organizes, processes and converts

data files using a utility program [2] (qualitative data). The data are also anonymised as needed in accordance with the legislative framework concerning data protection (see R4 “Confidentiality/Ethics”).

FSD’s custody and responsibility over data preservation is also clear to depositors: in the Deposit Agreement [3], depositors agree that “FSD preserves the data and maintains its long-term usability in accordance with existing archiving, data protection and data security norms, and long-term preservation requirements.” Depositors also agree that FSD has the right “to archive and disseminate the data for further use” as well as “to publish and disseminate descriptions of the data and bibliographic information in publicly available Finnish and international data portals and catalogues.”

The data formats that FSD uses [4] for storing the data are chosen with long-term preservation in mind, avoiding proprietary, closed or rarely used file formats. We keep track of developments in software and digital preservation, and of the format choices made in other data repositories. As stated in Chapter 5 of the Archives Formation Plan [5], the data archived by FSD are also transferred to a national digital preservation service (see further information in “Insource/Outsource partners” in R0). The service is intended specifically for the long-term bit-level preservation of data and requires harmonising file formats and complementing the preservation package with technical metadata and provenance data. The file formats that FSD uses for data are aligned with the specifications of the digital preservation service [6].

[1] Archives Formation Plan:

<https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/> (Accessed 5 May 2020)

[2] New open source application to assist in processing qualitative data: <https://www.cessda.eu/News-Events/News/CESS-DA/New-open-source-application-to-assist-in-processing-qualitative-data> (Accessed 5 May 2020)

[3] Deposit Agreement: https://www.fsd.tuni.fi/files/deposition_agreement.pdf (Accessed 5 May 2020)

[4] Archives Formation Plan, Appendix 6. Digital File Formats Used at the Finnish Social Science Data Archive for Different Types of Data:

<https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/file-formats/> (Accessed 5 May 2020)

[5] Archives Formation Plan, Chapter 5. Information systems and data security: <https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/operational-guidelines/#information-systems-and-data-security> (Accessed 5 May 2020)

[6] National digital preservation service specifications: <https://digitalpreservation.fi/en/specifications> (Accessed 5 May 2020)

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:

11. Data quality

R11. The repository has appropriate expertise to address technical data and metadata quality and ensures that sufficient information is available for end users to make quality-related evaluations.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:

4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:

4 – The guideline has been fully implemented in the repository

Response:

The aim of data processing is to ensure that 1) the data are accessible in the long term, both in terms of technical format and content, and that 2) the research subjects' privacy is protected. This is achieved by having sufficient expertise in choosing appropriate technical formats, creating detailed metadata and anonymising the data. The principles of data processing are the same for different data types, but quantitative data and qualitative data are processed in different ways. The processes are described in Chapter 3 of the Archives Formation Plan [1].

FSD produces DDI Codebook [2] metadata in XML format for each deposited dataset. The metadata is produced in cooperation with the depositor, which ensures completeness and understandability of the metadata. Any quality issues with the data files are documented (e.g. in the DDI Codebook element <dataAppr> – “Other Forms of Data Appraisal” [3]) so that prospective data users can evaluate data quality. The produced metadata are always public and openly available (with CC-BY license), including variable and value labels and simple frequencies, regardless of the access conditions of the actual data files. An application developed in-house is used to validate metadata adherence to the Data Documentation Initiative (DDI) schema, which ensures consistent and, in all cases machine-readable, metadata. FSD's metadata records [4] are openly available for everyone and harvestable for data catalogues. Users are required to attribute and cite the metadata appropriately.

The depositor transfers the data to FSD using a deposit tool on Aila Data Service [5]. The tool allows depositors / data

producers to fill in descriptive metadata, including information related to the quality of the data in technical terms and in terms of content. Data managers check and verify each dataset before and during processing. If a data manager notices any other quality issues, inconsistencies or errors in the data, the depositor is contacted for further information regarding metadata and data or for a new version of the dataset. If the issue cannot be resolved, this is also documented publicly in the descriptive metadata. Our consistent data curation processes ensure high technical quality of all data files disseminated for reuse. In monthly meetings, data managers choose one dataset, either recently published or currently under curation, for closer group inspection, which ensures sharing of expertise and common practices in curation.

Citations to publications and other material related to a dataset (e.g. research reports describing data collection in more detail) are included in the metadata. The metadata provided by FSD also include either 1) variable and value labels as well as simple frequencies (quantitative data) or 2) interview questions (qualitative data), which further enables quality-related evaluations about a dataset. The Designated Community are encouraged to interact with FSD and to send feedback or comments relating to datasets, metadata or our User Services. Data quality issues reported by users are reviewed, and, if necessary, a new data version is created or, if the quality issue cannot be resolved, a description will be included in the public metadata.

[1] Archives Formation Plan, Chapter 3. FSD's work process: <https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/operational-guidelines/#work-process> (Accessed 5 May 2020)

[2] DDI Codebook: <https://ddialliance.org/Specification/DDI-Codebook/2.1/> (Accessed 5 May 2020)

[3] DDI Alliance. DDI Codebook XML Schema: <https://ddialliance.org/sites/default/files/version2-1-all.html#2.3.3.3> (Accessed 29 September 2020)

[4] FSD website. Metadata records in machine-readable formats: <https://www.fsd.tuni.fi/en/data/misc/ddi-records/> (Accessed 5 May 2020)

[5] Aila Data Service. Depositing data through Aila: <https://services.fsd.uta.fi/help/depositing?lang=en> (Accessed 29 September 2020)

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

12. Workflows

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

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:

4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:

4 – The guideline has been fully implemented in the repository

Response:

FSD maintains well-managed documentation on archiving workflows, ensuring that processes will not be affected by employee turnover or other such factors. The documentation is accessible by FSD staff in an internal manual which is updated concurrently with any changes to the procedures. FSD's archiving workflows follow the OAIS Reference Model [1].

A summary of the relevant workflows is provided in Chapter 3 of the Archives Formation Plan [2] along with general principles concerning anonymisation, data privacy and data formats. In addition to these, FSD's internal manual [3] contains process descriptions as well as step-by-step directions for ingest, processing data, creating metadata and validating files, and publishing data. If any two data managers processed the same data in accordance with the manual, the resulting data and metadata files would be substantially similar. If ad-hoc decisions are needed to deal with special cases, they are made by the Information Services Manager and documented in the metadata and/or the operational database. FSD's operational database (Tiipii) also contains additional information about the workflow (status of data; person processing the data and metadata; version revisions; revision dates etc.).

[1] The Main Processes of the Finnish Social Science Data Archive and the OAIS Model (internal document shared with the reviewer)

[2] Archives Formation Plan, Chapter 3. FSD's work process: <https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/operational-guidelines/#work-process> (Accessed 5 May 2020)

[3] Overview of FSD's internal manual (internal document shared with the reviewer)

Reviewer Entry

Reviewer 1

Comments:

Accept

Reviewer 2

Comments:

Accept

13. Data discovery and identification

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

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:

4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:

4 – The guideline has been fully implemented in the repository

Response:

In providing its data services, FSD strives to make data discoverable and identifiable. FSD provides a recommended citation format for each dataset, and data users commit to citing the data and its original creators in all publications and presentations derived from the data [1].

The search interface on FSD's Aila Data Service [2] allows discovering datasets and data descriptions, individual variables, or publications based on archived data. Aila Data Service is listed in the European Open Science Cloud (EOSC) Marketplace [3]. FSD is also included in Web of Science's Data Citation Index [4].

In addition to Aila Data Service, metadata produced at FSD are also available in the CESSDA Data Catalogue [5] as well as the national research data search services Etsin [6] and Finna [7]. Moreover, basic metadata in JSON-LD format are embedded in all data descriptions. Anyone can harvest FSD's metadata records in DDI Codebook, OAI Dublin Core and EAD formats through FSD's OAI-PMH metadata servers [8]. FSD metadata records are licensed under a Creative Commons Attribution 4.0 International (CC BY 4.0) license.

All data archived at FSD have persistent identifiers (PID). FSD's PIDs are URNs. FSD manages its own URN NBN sub-namespace provided by the National Library of Finland [9]. A recommended citation with the URN identifier is included in the study descriptions of archived data. The user can copy and use the recommended citation or amend it to be compatible with the citation requirements of the publication. Guidance on data citation practices is provided on the FSD website [10].

- [1] Aila Data Service. General Terms and Conditions for Data Use: <https://services.fsd.uta.fi/docs/terms-of-use?lang=en> (Accessed 5 May 2020)
- [2] Aila Data Service. Advanced Search:
https://services.fsd.uta.fi/catalogue/search/advanced?lang=en&query_lang=en&query_document=study (Accessed 5 May 2020)
- [3] Aila Data Service in EOSC Marketplace: <https://marketplace.eosc-portal.eu/services/data-service-portal-aila> (Accessed 5 May 2020)
- [4] Web of Science Data Sitation Index. Master Data Repository List:
<https://clarivate.com/webofsciencegroup/master-data-repository-list/> (Accessed 5 May 2020)
- [5] FSD metadata in CESSDA Data Catalogue:
[https://datacatalogue.CESSDA.eu/?publisher.publisher\[0\]=Finnish%20Social%20Science%20Data%20Archive](https://datacatalogue.CESSDA.eu/?publisher.publisher[0]=Finnish%20Social%20Science%20Data%20Archive) (Accessed 5 May 2020)
- [6] FSD metadata in Etsin: https://etsin.fairdata.fi/datasets/?keys=Finnish%20Social%20Science%20Data%20Archive%20Metadata%20portal&terms=data_catalog.en&p=1&sort=best (Accessed 5 May 2020)
- [7] FSD on Finna: <https://finna.fi/OrganisationInfo/Home?id=fsd&lng=en-gb#86492> (Accessed 5 May 2020)
- [8] FSD website. Metadata records in machine-readable formats: <https://www.fsd.tuni.fi/en/data/misc/ddi-records/> (Accessed 5 May 2020)
- [9] National Library of Finland: Expert Services of Data Description:
<https://www.kansalliskirjasto.fi/en/service-package/expert-services-of-data-description/> (Accessed 5 May 2020)
- [10] FSD website. Citing archival data: <https://www.fsd.tuni.fi/en/data/downloading-and-using-data/citing-data/> (Accessed 5 May 2020)

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

14. Data reuse

R14. The repository enables reuse of the data over time, ensuring that appropriate metadata are available to support the understanding and use of the data.

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:

4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:

4 – The guideline has been fully implemented in the repository

Response:

FSD has over twenty years of experience in preserving and disseminating data for reuse, and the long-term reusability of FSD's data holdings is ensured by several means. FSD produces extensive metadata records using the DDI Codebook standard [1] and standards developed in the National Digital Library project [2]. Producing consistent descriptive metadata is enabled, for example, by using the DDI's Controlled Vocabularies [3]. Descriptive metadata is always included in the Dissemination Information Package delivered to the user. The FSD website provides technical information about the metadata records [4].

Changes in technology and in the methodologies and norms employed by the Designated Community are accounted for by FSD's Preservation Planning Team and the FSD Advisory Board, who follow these types of changes closely and consider possible accommodation measures (see R6 "Expert guidance" for more information on the FSD Advisory Board and R10 "Preservation plan" for more information on FSD's Preservation Planning Team).

Data are disseminated in formats that the Designated Community typically uses. The data formats that FSD uses [5] are chosen with long-term preservation and usability in mind, avoiding proprietary, closed or rarely used file formats. FSD provides instructions for opening .por files in R [6], which is an open-source piece of software compared to the proprietary SPSS. After the previous CTS certification, FSD has also started to disseminate data in .csv format, following feedback from the Designated Community.

[1] Archives Formation Plan, Appendix 1, table 7. Documents and document series generated by FSD: <https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/documents-and-series/#ME> (Accessed 5 May 2020)

[2] National Digital Library of Finland – Standard Portfolio: https://www.digime.fi/wp-content/uploads/2019/03/NDL_standardportfolio_v1.1-en.pdf (Accessed 5 May 2020)

[3] DDI Controlled Vocabularies: <https://ddialliance.org/controlled-vocabularies> (Accessed 5 May 2020)

[4] FSD website. FSD metadata records in machine readable formats: <https://www.fsd.tuni.fi/en/data/misc/ddi-records/> (Accessed 5 May 2020)

[5] Archives Formation Plan, Appendix 6. Digital File Formats Used at the Finnish Social Science Data Archive for Different Types of Data:

<https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/file-formats/>
(Accessed 5 May 2020)

[6] FSD website. Opening SPSS Portable files in R: <https://www.fsd.tuni.fi/en/data/misc/spss-portable-r/> (Accessed 5 May 2020)

Reviewer Entry

Reviewer 1

Comments:
Accept

Reviewer 2

Comments:
Accept

TECHNOLOGY

15. Technical infrastructure

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

Compliance Level:

3 – The repository is in the implementation phase

Reviewer Entry

Reviewer 1

Comments:
3 – The repository is in the implementation phase

Reviewer 2

Comments:
3 – The repository is in the implementation phase

Response:

FSD's technical infrastructure is well-shaped, actively monitored and constantly developed. After the previous CTS certification, FSD servers have been transferred to a data centre hosted by Tampere University. The new server environment has brought significant improvements to the reliability of services in the case of short-term disasters such as problems with power supply, network connection or physical devices [1]. The new server environment has been fully implemented, but documentation is currently being updated and is expected to be finished in 2021. An overview is provided in Chapter 5 of the Archives Formation Plan [2]. Due to the ongoing work, we have indicated compliance level 3 for this requirement.

The standards of the OAIS (Open Archival Information System, ISO 14721) are used as a reference in FSD's operations [3]. FSD has evaluated the compliance of its operations and processes with OAIS and TDR certification references [4]. FSD has been awarded the Data Seal of Approval in 2014 and the CoreTrustSeal in 2017. Regarding digital preservation, FSD complies with the standards developed in the National Digital Library project [5] in addition to the OAIS.

Responsibilities regarding technical infrastructure are divided between FSD and Tampere University ICT Services (ICTS, see "Insource/Outsource Partners" in R0). Overall, ICTS provides and maintains the physical computing environment and services common to all university actors while FSD caters for virtual machines and services that are unique to FSD's operations in the context of Tampere University. FSD follows the university level guidance given by ICTS. Division of labour has been agreed upon in meetings between FSD and ICTS. No formal SLA has been signed as FSD and ICTS are different parts of the same organisation; rather, university policies and biannual meetings drive the cooperation between FSD and ICTS. Both parties maintain software inventory and documentation, respective to the division of labour.

FSD has a separate, exclusive resource pool in Tampere University's computing cluster for research. The cluster is maintained by ICTS. FSD has access to the pool's resource management and creates and maintains the virtual machines in the pool. Cluster infrastructure and virtual machines are updated at fixed intervals. In case of a sudden need of a security update, a hot fix is installed outside of the fixed timetable.

FSD's workstation environment is provided and maintained by ICTS [6]. FSD's workstations are grouped into separate and exclusive-to-FSD maintenance pool, restricting access to FSD staff. Aside from this arrangement, ICTS follows its policies in maintenance and FSD does not receive any special service or provisions.

At FSD, checksums are computed and stored for files to ensure the integrity of the data in the repository. Data formats used for data storage are monitored to identify potential preservation issues. Manual checks of archived data files are carried out at random on a regular basis.

Data objects are stored on ICTS NAS systems. Storage is provided and maintained by the ICTS. Data is mirrored to a secondary NAS system in another ICTS data centre. Geographical distance between the centres is over five kilometres. The primary system is incrementally backed up to tape on a daily basis, and the secondary system on a weekly basis. Due to practical reasons, full backups are distributed to biweekly rotation.

FSD has outsourced long-term preservation of bit-level data in accordance with the specifications of a national digital

preservation service [7] maintained by CSC – IT Center for Science [8]. CSC is ISO/IEC 27001 certified, indicating a culture of security and best practices in information security management systems. Changes to archival information packages are pushed to the preservation service regularly. Each transaction is monitored by us and action is taken as needed. See “Insource/Outsource Partners” in R0 for more information about the outsourcing relationship between FSD and CSC.

[1] News release: New server environment improves reliability and conserves energy:

<https://www.fsd.tuni.fi/en/news/news-releases/019/> (Accessed 5 May 2020)

[2] Archives Formation Plan, Chapter 5. Information systems and data security: <https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/operational-guidelines/#information-systems-and-data-security> (Accessed 5 May 2020)

[3] The Main Processes of the Finnish Social Science Data Archive and the OAIS Model (internal document shared with the reviewer)

[4] IASSIST Quarterly: Improving the Quality of Digital Preservation Using Metrics: <https://doi.org/10.29173/iq780> (Accessed 29 September 2020)

[5] National Digital Library of Finland – Standard Portfolio:

https://www.digime.fi/wp-content/uploads/2019/03/NDL_standardportfolio_v1.1-en.pdf (Accessed 5 May 2020)

[6] Tampere University intranet. Computer environment (internal document shared with the reviewer)

[7] National digital preservation service specifications: <https://digitalpreservation.fi/en/specifications> (Accessed 5 May 2020)

[8] CSC – IT Center for Science Ltd: <https://www.csc.fi/home> (Accessed 5 May 2020)

Reviewer Entry

Reviewer 1

Comments:

Accept

Reviewer 2

Comments:

Accept

16. Security

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

Compliance Level:

4 – The guideline has been fully implemented in the repository

Reviewer Entry

Reviewer 1

Comments:

4 – The guideline has been fully implemented in the repository

Reviewer 2

Comments:

4 – The guideline has been fully implemented in the repository

Response:

FSD applies documented processes and procedures to safeguard the preservation of data. FSD's technical infrastructure is secure for data, tools produced in-house, services and users.

As a unit of Tampere University, FSD follows the risk management principles and practices of the University [1]. Possible risks are listed in FSD's internal annual action plan according to the instructions provided by Tampere University. Instructions for crisis situations and general safety and security are set out in the University's rescue plan [2].

Physical data security at FSD is achieved by several means. FSD's front doors are connected to an access control system, and the premises are guarded outside of business hours. The geographical distance between FSD premises and the Tampere University data centre where FSD's servers are located is over two kilometres, and the data centre is only accessible by certain employees of the University's ICT Services and authorised maintenance personnel.

Access to computer systems is also restricted. Computers are provided by Tampere University ICT Services, but they are only accessible using FSD-specific user credentials. Each user has unique access credentials. Administrative access to computer systems is given to the University's ICT Services. Access credentials are changed and systems are updated regularly in accordance with the IT policy of Tampere University. Separate, isolated network segments have been assigned for FSD's use.

Chapter 5 of the Archives Formation Plan [3] includes a strategy for multiple copies/backups and recovery plans as well as a description of the risks and actions taken to reduce risk and overcome problems. FSD's internal manual contains more detailed instructions for a number of unexpected events, for instance how the technical systems can be promptly restored and recovered in case of a disaster.

After the previous CTS certification, FSD has implemented a data deposit tool which allows users to deposit data securely using an HTTPS connection once the data have been assessed suitable for archiving [4]. Data files delivered to FSD are stored in a separate folder and scanned for viruses by FSD staff before they are moved to the data directory. Access to deposited data files is provided only to personnel that have tasks involving data processing and handling, and employees are required to sign a non-disclosure agreement. Authorisation is defined based on work roles, and access groups that reflect this partitioning have been created. Procedures for granting and revoking authorisation for an employee have been defined and documented in the internal manual.

To improve data security, FSD has outsourced long-term preservation of bit-level data to a national digital preservation service maintained by CSC [5], which is ISO/IEC 27001 certified [6]. See “Insource/Outsource Partners” for more information about the outsourcing relationship between FSD and CSC.

Registered users of the Aila Data Service are identified by using the HAKA authentication service [7] and are able to download data online. Users at non-Finnish universities and research institutions have to apply for a username from FSD User Services. Users applying for registration are required an institution e-mail address in order for FSD to identify users as belonging to the institution. Differentiating security levels for data access are not needed, since all data in FSD’s holdings are anonymised (with some exceptions, see R4 “Confidentiality/Ethics”).

[1] Tampere University intranet. Safety policy (internal document shared with the reviewer)

[2] Tampere University Rescue Plan, Virta building: <https://tuni.pelastussuunnitelma.fi/tuni-virta/> (Accessed 5 May 2020)

[3] Archives Formation Plan, Chapter 5. Information systems and data security: <https://www.fsd.tuni.fi/en/data-archive/documents/records-management-and-archives-formation-plan/operational-guidelines/#information-systems-and-data-security> (Accessed 5 May 2020)

[4] Depositing data through Aila: <https://services.fsd.uta.fi/help/depositing?lang=en> (Accessed 5 May 2020)

[5] CSC – IT Center for Science Ltd: <https://www.csc.fi/home> (Accessed 5 May 2020)

[6] CSC. Security: <https://www.csc.fi/en/-/iso-27001-varmistaa-toiminnan-luotettavuutta-ja-jatkuvuutta-csc-n-seitsemas-ser-tifioidun-tietoturvan-vuosi-kaynnistyi> (Accessed 5 May 2020)

[7] HAKA Identify Federation service: <https://www.csc.fi/haka-kayttajatunnistusjarjestelma> (Accessed 5 May 2020)

Reviewer Entry

Reviewer 1

Comments:

Accept

Reviewer 2

Comments:

Accept

APPLICANT FEEDBACK

Comments/feedback

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

Response:

Reviewer Entry

Reviewer 1

Comments:

Reviewer 2

Comments: