



## **Implementation of the CoreTrustSeal**

The CoreTrustSeal board hereby confirms that the Trusted Digital repository NSD's Research Data Archive complies with the guidelines version 2017-2019 set by the CoreTrustSeal Board.

The afore-mentioned repository has therefore acquired the CoreTrustSeal of 2016 on March 19, 2018.

The Trusted Digital repository is allowed to place an image of the CoreTrustSeal logo corresponding to the guidelines version date on their website. This image must link to this file which is hosted on the CoreTrustSeal website.

Yours sincerely,

The CoreTrustSeal Board

## Assessment Information

Guidelines Version:	2017-2019   November 10, 2016
Guidelines Information Booklet:	<a href="#">CTS Requirements 2017-2019</a>
All Guidelines Documentation:	<a href="#">Documentation</a>
Repository:	NSD's Research Data Archive
Seal Acquiry Date:	Mar. 19, 2018
For the latest version of the awarded CoreTrustSeal for this repository:	<a href="https://www.coretrustseal.org/why-certification/certified-repositories/">https://www.coretrustseal.org/why-certification/certified-repositories/</a>
Previously Acquired Seals:	Seal date: January 15, 2015 Guidelines version: 2014-2017   July 19, 2013
This repository is owned by:	<b>NSD - Norwegian Centre for Research Data</b>  Norway  T +47-55 58 21 17 F +47-55 58 96 50 E nsd@nsd.no W <a href="http://www.nsd.uib.no/">http://www.nsd.uib.no/</a>

# Assessment

## 0. Context

### Applicant Entry

*Self-assessment statement:*

**(1) Repository type: National repository system**

NSD - Norwegian Centre for Research Data has a long history working to promote and support open access to research data and data sharing within the social sciences both as a national infrastructure and as part of the European and worldwide network for social science data archives. NSD was established in 1971 as part of the Research Council of Norway. On 1 January 2003, NSD became a limited liability company owned by the Norwegian Ministry of Education and Research. NSD's principal mission is to facilitate access to data for empirical research by providing a variety of freely accessible databases and support services under terms and conditions that ensure equal treatment of researchers in Norway and abroad and without incurring major legal, financial or practical costs. NSD is the largest national research data archive and distributor of data to researchers and students. As a national research infrastructure NSD is also hosting a national service for privacy issues providing guidance and support to researchers, research projects, research institutions and research funders concerning data privacy and research ethics. More information: <http://www.nsd.uib.no/nsd/english/index.html>

As a national research infrastructure and research data archive NSD has a unique role in terms of its assignment by and mandate from the Research Council of Norway to ensure that a copy of the research data generated in projects with funding from the Research Council is archived at NSD for various scientific re-use purposes. This in compliance with the archiving requirements which is incorporated in the researchers' contract with the Research Council and its policy for open access and data sharing. More information: [http://www.nsd.uib.no/nsd/news/research\\_data\\_must\\_be\\_shared.html](http://www.nsd.uib.no/nsd/news/research_data_must_be_shared.html)

In its capacity as a national research infrastructure, NSD is supporting open access to publicly funded data and is function as a central point of access to numerous national and international data collections, thus enabling Norwegian research and international scientific cooperation. NSD archive both quantitative and qualitative digital research data.

**(2) Repository's Designated Community:**

The research community is the target group for all of NSD's services. Broadly defined, this sector encompasses the following groups:

- Researchers and students
- Research institutions
- Finance providers
- National authorities

NSD's academic centre of gravity still lies in Norwegian social science research. A number of major projects, particularly in the field of facilitating register data, have offered insight into the potential of NSD's competence to several fields of research. Such fields are utilising the services to an ever-increasing extent, and this has expanded NSD's academic base. NSD currently operates in accordance with its multi- and interdisciplinary mandate.

### *(3) Level of Curation Performed: D. Data-level curation*

NSD follows the broad guidance given in the OAIS reference model across the archival process. NSD identifies the Submission Information Packages (SIPs), and data managers follow the NSD standard about the content of the Archival Information Packages (AIPs). The Dissemination Information Packages (DIPs) are both manually and automatically constructed from the AIP. NSD uses the DDI metadata standard for documenting data.

In order to ease the reuse of the data, NSD documents all data sets in Nesstar Publisher down to the variable level: questions are registered (as a basis for search systems) and references to any publications are added. The documentation is based on the archiving forms, questionnaires and any reports/summaries received from the data owner. The documented data set is then stored as a new documentation version.

When a data set is changed, e.g. in connection with documentation, the data set is stored as a new file. All changes are logged in NSD's version control system. Here, a distinction is made between different variants of a data set (changes of data) and different versions (changes in documentation). The original data set, as it was deposited by the researcher/producer, will therefore always be available, even if new versions or variants are created.

Metadata of archived data are published on NSD's website for discovery, browsing, reading and downloading. When applicable, both data and metadata are made online available.

More information about NSD's archiving procedures:  
[http://www.nsd.uib.no/nsddata/arkivering/en/009\\_archiving\\_procedures.html](http://www.nsd.uib.no/nsddata/arkivering/en/009_archiving_procedures.html)

#### ***(4) Outsource Partners***

NSD does not outsource any of the DSA guidelines.

### **Reviewer Entry**

*Accept or send back to applicant for modification:*

Accept

*Comments:*

It may be helpful to add to the Designated Community the domain specific scope ("the social sciences, humanities and medicine and the health sciences" like listed in the Strategic Plan).

## 1. Mission/Scope

### *Minimum Required Statement of Compliance:*

0. N/A: Not Applicable.

## Applicant Entry

### *Statement of Compliance:*

4. Implemented: This guideline has been fully implemented for the needs of our repository.

### *Self-assessment statement:*

From 1 January 2003 NSD has been organised as a limited company owned by the Ministry of Education and Research. The Norwegian Ministry of Education and Research's ownership contributes to a long-term and safe basis for the archive.

NSD's Mission Statement is released under the Norwegian State Ownership Report (Published by the Norwegian Ministry of Trade, Industry and Fisheries). It states that the company objective is: "NSD – Norsk senter for forskningsdata

AS (NSD) was established as a national infrastructure for research in 1971 and has been organised as a limited company since 2003. NSD's objective is to manage data and provide services to the research sector. (...) On 1 March 2016 NSD changed its name from Norsk samfunnsvitenskapelig datatjeneste AS (Norwegian Social Science Data Services) to NSD – Norsk senter for forskningsdata AS (Norwegian Centre for Research Data). The reason is that NSD's services are far more wide-reaching than previously and now cover more disciplines than the social sciences alone. (...) NSD shall ensure that data are disseminated and services provided to the research sector. Archiving and facilitating reuse of data is thus a key part of NSD's business as a whole. It is therefore important for NSD that its services are relevant to the research community and that activities are in line with Norwegian and European research policy. This involves a commitment to research infrastructure where open sharing of research data is the goal, which has always been an important prerequisite for NSD's work and organisation. NSD works in a long-term perspective to improve opportunities and working conditions for people involved in empirical research, who are largely dependent on access to data. This is done by collecting, processing, adapting, archiving and maintaining data and disseminating them to research communities while ensuring that the data are available in a form that enables them to be used in research without major legal, financial or practical costs. NSD also provides researchers with services and advice regarding data collection, research design, data analysis, methodology, privacy and research ethics. (The State Ownership Report 2015, page 96)

The State Ownership Report 2015:

<https://www.regjeringen.no/contentassets/b7e367d388ba41dd839f34d64c0e4cc1/the-state-ownership-report-2015.pdf>

Similar statements can be found in the Annual Report of NSD:

“NSD is a national archive for research data, and is one of the largest of its kind in the world. Its main objective is to simplify access to good, relevant data for research purposes. This is obtained by collecting, processing, facilitating, archiving, maintaining and disseminating data to research communities, and ensuring that data are available in a form that is suitable for research without major legal, economic or practical costs for users. NSD also offers services and advice on data gathering, research design, data analysis, methodology, privacy protection and research ethics.” (NSD Annual Report 2015, page 5)

NSD Annual Reports: <http://www.nsd.uib.no/nsd/english/annualreport.html>

About NSD, from web pages: <http://www.nsd.uib.no/nsd/english/index.html>

## **Reviewer Entry**

*Accept or send back to applicant for modification:*

Accept

*Comments:*

## 2. Licenses

*Minimum Required Statement of Compliance:*

0. N/A: Not Applicable.

### Applicant Entry

*Statement of Compliance:*

4. Implemented: This guideline has been fully implemented for the needs of our repository.

*Self-assessment statement:*

Data that NSD archives are controlled by a licence agreement with the data producer. NSD is however currently in a process of updating its deposit form in order to clarify the responsibility for the data, including safe storage, data availability, etc.

NSD assumes the responsibility from the data producers and thus has the responsibility for preservation of the data. This responsibility includes guaranties regarding availability, integrity, consistency and protection of privacy with no time limit. This does not however prevent the data producers to keep their own copy of the data, including providing procedures for re-use.

Both the data depositor and the data user have to fulfil the relevant regulation(s) in order to deposit or receiving data from NSD. Before archiving the data depositor sign a deposit agreement ([http://www.nsd.uib.no/nsddata/arkivering/en/006\\_archiving\\_agreement.pdf](http://www.nsd.uib.no/nsddata/arkivering/en/006_archiving_agreement.pdf)) and/or a data processor agreement ([http://www.nsd.uib.no/nsddata/arkivering/en/008\\_data\\_processor\\_agreement\\_draft.pdf](http://www.nsd.uib.no/nsddata/arkivering/en/008_data_processor_agreement_draft.pdf)). The agreements contain questions about limitation of use.

NSD has different contracts with different data producers:

Datasets with disclosure risk (personal data) are bound by a data processor agreement that describes the character of the data and limitations of use.

1.



All data depositors funded by the Research Council of Norway fill out an agreement containing questions about limitation of use. If there are no limitations, the data will be made available for use through NSD's ordinary procedures of access.

2.

Data from research projects without funding from the Research Council of Norway: The contract is adjusted to each project.

3.

In Norway use of personal data is covered by different regulations (please see <http://www.datatilsynet.no/English/Regulations/>), i.e.:

- Personal Data Act
  
- Personal Data Regulations
  
- Personal Health Data Filing System Act

Before personal data can be archived at NSD the data provider must submit permissions from the data protection official (<http://www.nsd.uib.no/personvern/en/index.html>) or the Norwegian Data Protection Authority so that NSD can ensure that archiving of the data is according to the Personal Data Act.

Data with disclosure risk may be distributed if the data consumer meets all conditions for access. The procedures for accessing data are described on NSDs webpage under Access procedures ([http://www.nsd.uib.no/nsddata/utlaansrutiner\\_en.html](http://www.nsd.uib.no/nsddata/utlaansrutiner_en.html)). NSD always checks data to make sure that it is not indirectly identifiable through a combination of background variables. If so, an anonymous version is created, either by aggregating or deleting variables.

Further, all data consumers are bound by an agreement with NSD in order to access data (<http://www.nsd.uib.no/data/individ/publikasjoner/tilgangsbrev-engelsk.pdf>). The user commits to delete the data when analyses are finished or at the latest two years after the access. A copy of resulting reports or publications that are based on the data has to be sent to NSD. (NSD does not check/control/monitor reports and publications). The user also commits to mention producer and distributor in a foreword or footnote in the publication. If the user is a student his or her supervisor also has to sign a Supervisor's Declaration ([http://www.nsd.uib.no/nsddata/veiledererklaring\\_en.pdf](http://www.nsd.uib.no/nsddata/veiledererklaring_en.pdf)). If the user does not agree to these conditions he or she will not get access to the data. Users have to be affiliated with an institution which will be contacted if the terms are not respected. The Terms of Use and the Supervisor's Declaration are available online.

## **Reviewer Entry**

*Accept or send back to applicant for modification:*

Accept

*Comments:*

### 3. Continuity of access

*Minimum Required Statement of Compliance:*

0. N/A: Not Applicable.

#### Applicant Entry

*Statement of Compliance:*

3. In progress: We are in the implementation phase.

*Self-assessment statement:*

NSD receives an annual funding (appr. € 120,000.00) from the Research Council of Norway to cover NSD's expenses for archiving, building and maintaining data services for the purpose of making data available to research organizations for use in independent research, retrieval and receipt of data and metadata for the same purpose, as well as quality control, long-term storage and data and metadata security. Furthermore to develop and maintain services for receiving orders from data from research organizations for use in independent research, extracting, organizing and disclosing data and metadata according to the principle of open access, equal treatment and sharing of research data.

This funding is currently extended by six years from the year 2018. In 2018 NSD will be evaluated, and provided that the evaluation is good, the contract will be extended to 2028 through a 10-years agreement including an evaluation every five years.

NSD's data holdings are long time secured. In case NSD shall be closed down, data and metadata will be transferred to the National Archives of Norway. This arrangement is based in the Norwegian legislation and supported by an agreement on storage and access to research data from the government sector, including sensitive personal data between NSD and the Norwegian National Archives.

The Ministry of Education and Research's ownership and 100% control of NSD's shares means that the Ministry are fully responsible for all NSD's assets including the data archives in the case of termination. This contributes to additional security against data and metadata loss.

More information: NSD Strategic Plan 2016-2019 [http://www.nsd.uib.no/nsd/english/strategic\\_plan.pdf](http://www.nsd.uib.no/nsd/english/strategic_plan.pdf)

#### Reviewer Entry

*Accept or send back to applicant for modification:*

Accept

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*Comments:*

## 4. Confidentiality/Ethics

*Minimum Required Statement of Compliance:*

0. N/A: Not Applicable.

### Applicant Entry

*Statement of Compliance:*

4. Implemented: This guideline has been fully implemented for the needs of our repository.

*Self-assessment statement:*

Before archiving of personal data NSD will always have a data processing agreement with the data depositor. And before personal data can be archived at NSD the data provider must submit permissions from the data protection official or The Data Protection Authority so that NSD can ensure that archiving of the data is according to the law of privacy.

Data with a disclosure risk is processed and stored according to specific procedures described in “Archiving procedures” on NSD’s websites. Such data will be stored in a safe-deposit box, preferably the same day as they are received or stored temporarily in a locked filing cabinet. In some cases, NSD conducts the integration between identification register and dataset on behalf of the researcher. In these cases, the following rules apply:

1. The identifiers are kept isolated from the data.
2. Computers used for this purpose are off-line with strong virus protection.

Datasets with disclosure risk are bound by a data processor agreement that describes the character of the data and limitations of use. NSD’s conditions for use are stated in the letter that confirms access. This is also stated in the metadata on study level published online. Data with disclosure risk may be distributed if the data consumer meets all conditions for access. If the data consumer does not comply with our conditions, access is denied. Data consumers have to agree to and sign a Terms of Use in order to get access to data. Please see linked documentation.

The majority of data that NSD manages is anonymous data. Non-anonymous data will only be stored at NSD after fulfilling relevant formalities. NSD’s archival staff will check this before receiving data. NSD always checks data to make sure that it is not indirectly identifiable through a combination of background variables. If so, an anonymous version is created, either by aggregating or deleting variables.

Staff who manages data has a written set of internal instructions and routines (in Norwegian) that they adhere to and all data transformations are documented. These routines contain procedures that follow the archival life cycle of data. The instructions and routines are available for staff by login on an internal page. In this way all staff who manages data has access to the latest updated versions. The staff who manages data updates the internal instructions and routines when it is needed.

Staff who handles data hold relevant degrees in social science and humanities. The archival staff at NSD has relevant competence within privacy issues and other ethical questions. In addition our in-house Data Protection Official for Research unit will be consulted when necessary.

NSD's archiving procedures: [http://www.nsd.uib.no/nsddata/arkivering/en/009\\_archiving\\_procedures.html](http://www.nsd.uib.no/nsddata/arkivering/en/009_archiving_procedures.html)

NSD's procedures personal data: [http://www.nsd.uib.no/nsddata/arkivering/en/011\\_personal\\_data.html](http://www.nsd.uib.no/nsddata/arkivering/en/011_personal_data.html)

Data preparing guide: [http://www.nsd.uib.no/nsddata/arkivering/en/003\\_prepare\\_data.html](http://www.nsd.uib.no/nsddata/arkivering/en/003_prepare_data.html)

Control of anonymity: [http://www.nsd.uib.no/nsddata/arkivering/en/010\\_control\\_anonymity.html](http://www.nsd.uib.no/nsddata/arkivering/en/010_control_anonymity.html)

Security and maintenance: [http://www.nsd.uib.no/nsddata/arkivering/en/012\\_security\\_and\\_maintenance.html](http://www.nsd.uib.no/nsddata/arkivering/en/012_security_and_maintenance.html)

Data processor agreement: [http://www.nsd.uib.no/nsddata/arkivering/en/008\\_data\\_processor\\_agreement\\_draft.pdf](http://www.nsd.uib.no/nsddata/arkivering/en/008_data_processor_agreement_draft.pdf)

Access procedures: [http://www.nsd.uib.no/nsddata/utlaansrutiner\\_en.html](http://www.nsd.uib.no/nsddata/utlaansrutiner_en.html)

Pledge of secrecy: [http://www.nsd.uib.no/nsddata/laaneavtale\\_en.pdf](http://www.nsd.uib.no/nsddata/laaneavtale_en.pdf)

Data Protection Official website: <http://www.nsd.uib.no/personvern/en/index.html>

## **Reviewer Entry**

*Accept or send back to applicant for modification:*

Accept

*Comments:*

## 5. Organizational infrastructure

*Minimum Required Statement of Compliance:*

0. N/A: Not Applicable.

### Applicant Entry

*Statement of Compliance:*

4. Implemented: This guideline has been fully implemented for the needs of our repository.

*Self-assessment statement:*

NSD was founded in 1971 as a unit affiliated to the Research Council of Norway. In 2003 it was established as an independent limited company fully owned by the Ministry of Education and Research. The Norwegian Ministry of Education and Research's ownership contributes to a long-term and safe basis for the archive. "The purpose of state ownership of NSD is to guarantee that data are properly managed and services are provided to the research sector. The company collaborates with national and international organisations in developing such efforts in accordance with its statutes" (Report to the Norwegian Parliament (White Paper) no. 13 (2010–2011) (<http://www.regjeringen.no/nb/dep/nhd/dok/regpubl/stmeld/2010-2011/meld-st-13-2010-2011/6/4/15.html?id=637217>)).

NSD is governed by its Board of Directors. The Ministry of Education and Research appoints the Chair of the Board and four of the board members. Two of the board members are representing the employees.

NSD has a number of different sources of income. Its main grants are provided by the Research Council of Norway, government ministries, the university and college sector and the European Union. The Research Council of Norway finances most of our running expenses in connection with the repository via its basic grant which ensures long-term stability. Please see the Annual Report of NSD

(<http://www.nsd.uib.no/nsd/english/annualreport.html>) and The State Ownership Report 2015 for documentation

(<https://www.regjeringen.no/en/topics/business-and-industry/state-ownership/statens-eierberetning-2013/the-state-ownership-report/id239>).

NSD is also on the Norwegian Roadmap for Research Infrastructure 2016

([https://www.forskningsradet.no/prognett-infrastruktur/Norwegian\\_Roadmap\\_for\\_Research\\_Infrastructure/1253976312605](https://www.forskningsradet.no/prognett-infrastruktur/Norwegian_Roadmap_for_Research_Infrastructure/1253976312605)).

NSD and the project Norwegian Open Research Data Infrastructure (NORDi) is granted 26 million NOK from the Norwegian Research Council for a five year period (2016 – 2021) to develop a new infrastructure that will make it easier to locate, use and share research data, in addition to courses and support

(<http://www.nsd.uib.no/nordi/english.html>).

**CoreTrustSeal Board**

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NSD has approximately 85 FTE. Of these approximately 40 staff members are working with data curation and dissemination.

Staff who handles data hold relevant degrees in social science and humanities. The staff who handles data has a written set of internal instructions and routines that they adhere to and all data transformations are documented. The archival staff at NSD has relevant competence within privacy issues and other ethical questions. In addition our in-house Data Protection Official for Research unit will be consulted when necessary.

New staff members are trained by senior staff. Several times a year NDS arranges in house staff seminars as part of our internal training for all staff members. Staff members also attend external seminars, workshops and conferences to ensure professional development.

Through its involvement in international organisations and its binding collaboration in a large number of projects, NSD contributes to the development of Nordic, European and international infrastructure for the social sciences, humanities and health sciences.

The most central international organisations of which NSD is a member :

NSD is the Norwegian Service Provider for the Consortium for European Social Science Data Archives (CESSDA), [www.cessda.net](http://www.cessda.net)

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International Federation of Data Organizations for the Social Science (IFDO), [www.ifdo.org](http://www.ifdo.org)

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International Social Survey Programme (ISSP), [www.issp.org](http://www.issp.org)

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Inter-university Consortium for Political and Social Research (ICPSR), [www.icpsr.umich.edu](http://www.icpsr.umich.edu)

- 

Data Documentation Initiative (DDI Alliance), [www.ddialliance.org/](http://www.ddialliance.org/)

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NSD participates in a number of international joint projects that aim to simplify the development of, access to and use of research data across frontiers and languages:

CESSDA Strengthening and Widening (CESSDA SaW) is an infrastructure project whose participants include CESSDA and European archives both within and external to the CESSDA collaboration. The aim of the project is to strengthen and expand collaboration, raise the quality of the archives that already form part of CESSDA and enable archives that are not currently incorporated in CESSDA to fulfil CESSDA's membership requirements. The project is financed by the European Union (Horizon2020).

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Synergies for Europe's Research Infrastructures in the Social Sciences (SERISS) is an infrastructure project in which the European Social Survey (ESS), the Survey for Health, Ageing and Retirement in Europe (SHARE), CESSDA, Generations and Gender Programme (GGP), the European Values Survey (EVS) and the WageIndicator Survey participate. The aim of the project is to draw up common supranational solutions to challenges related to survey design, data collection and data management. The project is financed by the European Union (Horizon2020).

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CESSDA Metadata Harvesting Tool is funded by CESSDA, and forms part of CESSDA's work plan. NSD coordinates this project and is responsible for a significant part of its development efforts.

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CESSDA Metadata Management Project is funded by CESSDA, and forms part of CESSDA's work-plan. The aim of the project is to implement a standardised metadata design that can be used for all the data resources in the CESSDA Product and Service Catalogue.

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Making Nordic Health Data Visible, is a network project in which the Danish, Finnish, Swedish and Norwegian social science data archives participate. The aim of the project is to study the prerequisites for a common portal for Nordic health research data. The project is financed by NordForsk and is led by NSD.

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The International Social Survey Programme (ISSP) was established in 1984, and has 50 participating nations. The aim of the project is to carry out an annual cross national interview based survey of a central social science topic.

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The European Social Survey (ESS ERIC), is a comparative interview based survey of values, attitudes and socio-economic conditions across more than 30 European countries. NSD holds the data archive and disseminates data for the ESS.

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Current Research Information System (euroCRIS), is a forum for users of ICT in the fields of research information systems.

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NSD contribute to the CESSDA's cross national data harmonization activities by use of the multi-lingual thesaurus which makes it possible to search for data in different languages.

For evidence related to projects and relevant affiliations, please see the Annual Report of NSD and NSDs website "International projects and collaborations" (<http://www.nsd.uib.no/nsd/english/projects-and-collaborations.html>).

## Reviewer Entry

**CoreTrustSeal Board**

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*Accept or send back to applicant for modification:*

Accept

*Comments:*

## 6. Expert guidance

*Minimum Required Statement of Compliance:*

0. N/A: Not Applicable.

### Applicant Entry

*Statement of Compliance:*

4. Implemented: This guideline has been fully implemented for the needs of our repository.

*Self-assessment statement:*

NSD's Board of Directors possesses a wide range of professional expertise, as required by its mandate from the Ministry. Its members are expert users representing some of the largest universities and research institutions of Norway. A complete list of the board members may be found in the State Ownership Report and in the Annual Report of NSD. Please see the linked documentation.

[http://www.nsd.uib.no/om/doc/nsd\\_annual\\_report\\_2015.pdf](http://www.nsd.uib.no/om/doc/nsd_annual_report_2015.pdf),

<https://www.regjeringen.no/en/topics/business-and-industry/state-ownership/statens-eierberetning-2013/the-state-ownership-report/id239>

In 2017 NSD conducted a user satisfaction survey to collect direct and structured feedback from our users. We will continue to do so on a regular basis in the future to ensure systematic feedback from our users. We also receive more unstructured feedback through our daily dialogue with users in connection with our deposit and access services.

NSD NORDi has a user group representing different research institutions and research fields. The user group will meet on a regular basis throughout the project period and provide feedback on the products and services developed in the project. The project will also establish a test panel of researchers and administrators for usability testing. UK Data Archive (UKDA) and Inter-university Consortium for Political and Social Research (ICPSR) are partners in the project, which ensures advice and feedback of data science experts throughout the project.

(<http://www.nsd.uib.no/nordi/english.html>) (NSD NORDi User Group (in Norwegian): <http://www.nsd.uib.no/nordi/samarbeid-og-partnere.html>)

Our involvement in international organisations such as CESSDA and Data Documentation Initiative (DDI Alliance) also ensures that we keep updated on changes in the research data environment (<http://www.nsd.uib.no/nsd/english/projects-and-collaborations.html>).

### Reviewer Entry

*Accept or send back to applicant for modification:*

Accept

*Comments:*

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## 7. Data integrity and authenticity

*Minimum Required Statement of Compliance:*

0. N/A: Not Applicable.

### Applicant Entry

*Statement of Compliance:*

3. In progress: We are in the implementation phase.

*Self-assessment statement:*

NSD does not currently use checksums. But as part of the NORDi-project we are considering using MD5 (Message-Digest algorithm 5) both on upload of files through our deposit service, and on existing files that have already been ingested into our systems. We hope to implement this by the end of the year (2017).

In the meantime we uphold the integrity and authenticity of data by using strict routines for handling changes in datasets. All versions and editions of data are saved and all changes are documented; all changes to data and metadata are manually recorded in NSD's own administrative versions system. Relations between datasets are taken care of in the same administrative system and are updated for each published version. Routines are documented in "Information security and maintenance" ([http://www.nsd.uib.no/nsddata/arkivering/en/012\\_security\\_and\\_maintenance.html](http://www.nsd.uib.no/nsddata/arkivering/en/012_security_and_maintenance.html)).

NSD archives different versions of the same dataset as documented in "NSD's archival procedures" ([http://www.nsd.uib.no/nsddata/arkivering/en/009\\_archiving\\_procedures.html](http://www.nsd.uib.no/nsddata/arkivering/en/009_archiving_procedures.html)):

Dataset versions: Different versions are demarcated by differences in the dataset matrices, meaning that the datasets have a different number of units, variables and/or value categories.

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Documentation edition: A dataset version might have different documentation editions. These are differentiated by changes in the documentation of the dataset – as opposed to the data itself.

- 

NSD uses the DDI metadata standard for documenting data.

Once the data set has been stored and the documentation is completed, it is published on NSD's website. Data producers are made aware of changes made to the data. A link to the published version is sent to the data depositors so that they have the possibility to give feedback.

The newly established deposit service uses the Feide-log-in for identification of users. Feide (Norwegian acronym for Joint electronic identity) is the preferred and authoritative solution for secure identification in the education sector, chosen by the Ministry of Education and Research. Users that are not affiliated with, or connected to, the Feide solution must create a NSD account to gain access to the deposit service.

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Linked Documentation/documentation deadline (English summary if applicable):

Security and maintenance: [http://www.nsd.uib.no/nsddata/arkivering/en/012\\_security\\_and\\_maintenance.html](http://www.nsd.uib.no/nsddata/arkivering/en/012_security_and_maintenance.html)



NSD's archiving procedures: [http://www.nsd.uib.no/nsddata/arkivering/en/009\\_archiving\\_procedures.html](http://www.nsd.uib.no/nsddata/arkivering/en/009_archiving_procedures.html)

Deposit agreement: [http://www.nsd.uib.no/nsddata/arkivering/en/006\\_archiving\\_agreement.pdf](http://www.nsd.uib.no/nsddata/arkivering/en/006_archiving_agreement.pdf)

Data processor agreement: [http://www.nsd.uib.no/nsddata/arkivering/en/008\\_data\\_processor\\_agreement\\_draft.pdf](http://www.nsd.uib.no/nsddata/arkivering/en/008_data_processor_agreement_draft.pdf)

Deposit form: [http://www.nsd.uib.no/nsddata/arkivering/en/007\\_archiving\\_form.pdf](http://www.nsd.uib.no/nsddata/arkivering/en/007_archiving_form.pdf)

## **Reviewer Entry**

*Accept or send back to applicant for modification:*

Accept

*Comments:*

## 8. Appraisal

*Minimum Required Statement of Compliance:*

0. N/A: Not Applicable.

### Applicant Entry

*Statement of Compliance:*

3. In progress: We are in the implementation phase.

*Self-assessment statement:*

NSD does not have an official collection development policy, but the NSD Strategic Plan states that "...NSD's role as the national archive of research data for the social sciences, humanities and medicine and the health sciences will continue to be developed, strengthened and reaffirmed" ([http://www.nsd.uib.no/nsd/english/strategic\\_plan.pdf](http://www.nsd.uib.no/nsd/english/strategic_plan.pdf)).

In addition to the Strategy Plan the appraisal process is guided by the agreement with the Norwegian Research Council, which states that all data that receive funding within programs that deal with social science, humanities, medicine and health sciences, and environment and development research, must archive their data at NSD.

NSD provides a link to preferred formats ([http://www.nsd.uib.no/nsddata/arkivering/en/004\\_preferred\\_formats.html](http://www.nsd.uib.no/nsddata/arkivering/en/004_preferred_formats.html)). We prefer formats that are suitable for long-term preservation, are in widespread use in the Designated Community, and/or have an open, non-proprietary standard. NSD also accepts data that are in non-preferred formats; these data will, after agreement with the depositor, be bit-preserved (not curated).

During the deposit process, curatorial staff checks that the deposited files are suitable for ingest. NSD asks for more details on file formats and tools/methods by which these files were created only if the format is non-preferred and/or unknown.

We reject data that are not machine readable or does not comply with relevant regulations and ethical standards.

NSD accepts data either through the NSD self-deposit service or by accepting data that is sent to us directly (after

agreement) over the UNINETT Filesender system. UNINETT is a non-profit organisation owned by the Norwegian Ministry of Education and Research, and delivers internet and network services to Norwegian universities, colleges and research institutions. In both cases the user/depositor must provide their data with all relevant content information and information properties, either through an online form that is integrated into the online deposit service, or by filling out an archiving form (see [http://www.nsd.uib.no/nsddata/arkivering/en/007\\_archiving\\_form.pdf](http://www.nsd.uib.no/nsddata/arkivering/en/007_archiving_form.pdf)). Curatorial staff checks that deposited files are accompanied by appropriate levels of metadata and documentation. Data without appropriate contextual/metadata information is addressed at the ingest stage and the data producer is asked to supply the necessary information (usually by phone or e-mail).

The ingest process is documented in NSDs archiving procedures. (Please see [http://www.nsd.uib.no/nsddata/arkivering/en/009\\_archiving\\_procedures.html](http://www.nsd.uib.no/nsddata/arkivering/en/009_archiving_procedures.html).)

Once the data set has been checked, registered, responsibly stored and the documentation is completed, metadata and documentation is published on NSD's website. When possible, the data is also available for download. Data producers are made aware of changes made to the data. A link to the published version is sent to the data depositors so that they have the possibility to give feedback.

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Linked Documentation/documentation deadline (English summary if applicable):

NSD Strategic Plan: [http://www.nsd.uib.no/nsd/english/strategic\\_plan.pdf](http://www.nsd.uib.no/nsd/english/strategic_plan.pdf)

NSD archive deposit main website: <http://www.nsd.uib.no/nsddata/arkivering/en/index.html>

Data preparing guide: [http://www.nsd.uib.no/nsddata/arkivering/en/003\\_prepare\\_data.html](http://www.nsd.uib.no/nsddata/arkivering/en/003_prepare_data.html)

Preferred formats: [http://www.nsd.uib.no/nsddata/arkivering/en/004\\_preferred\\_formats.html](http://www.nsd.uib.no/nsddata/arkivering/en/004_preferred_formats.html)

NSD's archiving procedures: [http://www.nsd.uib.no/nsddata/arkivering/en/009\\_archiving\\_procedures.html](http://www.nsd.uib.no/nsddata/arkivering/en/009_archiving_procedures.html)

NSD's archiving from: [http://www.nsd.uib.no/nsddata/arkivering/en/007\\_archiving\\_form.pdf](http://www.nsd.uib.no/nsddata/arkivering/en/007_archiving_form.pdf)

## **Reviewer Entry**

*Accept or send back to applicant for modification:*

Accept

*Comments:*

## 9. Documented storage procedures

*Minimum Required Statement of Compliance:*

0. N/A: Not Applicable.

### Applicant Entry

*Statement of Compliance:*

3. In progress: We are in the implementation phase.

*Self-assessment statement:*

NSD follows the broad guidance given in the OAIS reference model across the archival process. NSD's preservation policy together with description of processes and procedure for the full data curation process, are described in the "Archival procedure" document on NSD's archive website.

NSD backs up the data processed in accordance with the requirements made of accessibility. NSD takes backup copies of other information needed to restore normal use (e.g. system data, db configurations, OS, support systems etc.) NSD keep backup copies off-site at our backup system provider.

The computer rooms are secured and restricted area. Only authorized personnel are allowed to enter. NSD's building as such is secured with a protective alarm system combined with a locked and controlled entrance.

Part of NSD's storage procedure is to store most of its data in Nesstar-files. This is a format that in foreseeable future can be handled since Nesstar is owned and controlled by NSD. Other material is controlled and updated at least every second year. NSD uses high quality media only. NSD aims to store data and metadata in a way that protects the data from unauthorized access, violation of the data's integrity and in other ways loss of data and documentation. The procedures are set up based on a risk and vulnerability analysis. Data are always kept in different storages/servers. Backups and non-anonymous data are stored outside NSD's premises. Non-anonymous data is always prepared on off-line computers. In case non-anonymous data has to be transferred online or on portable devices the files are encrypted.

NSD's archiving procedures: [http://www.nsd.uib.no/nsddata/arkivering/en/009\\_archiving\\_procedures.html](http://www.nsd.uib.no/nsddata/arkivering/en/009_archiving_procedures.html)

Security and maintenance: [http://www.nsd.uib.no/nsddata/arkivering/en/012\\_security\\_and\\_maintenance.html](http://www.nsd.uib.no/nsddata/arkivering/en/012_security_and_maintenance.html)

### Reviewer Entry

CoreTrustSeal Board

W [www.coretrustseal.org](http://www.coretrustseal.org)

E [info@coretrustseal.org](mailto:info@coretrustseal.org)

*Accept or send back to applicant for modification:*

Accept

*Comments:*

## 10. Preservation plan

*Minimum Required Statement of Compliance:*

0. N/A: Not Applicable.

### Applicant Entry

*Statement of Compliance:*

3. In progress: We are in the implementation phase.

*Self-assessment statement:*

NSD has a plan for long-term preservation. This takes into account obsolete file formats in the future. NSD's main strategy includes importing (where possible) data and creating metadata in Nesstar Publisher (DDI). Since Nesstar has the ability to export data and documentation to several other common file formats, long-term access however is secured regardless of the Nesstar software. NSD uses high quality media only. Data that cannot be saved in Nesstar are stored in the most forward compatible format available for the data type in question. Provenance of data and all changes to datasets are manually recorded in NSD's own administrative versions system. The material is controlled and updated at least every second year.

The majority of data that NSD manages is quantitative in nature, but an increasingly number of qualitative data is being deposited. Qualitative data sets can not be imported in Nesstar, but metadata are documented on study level (in Nesstar). The archival staff use Nvivo to check audio and video files. Qualitative data deposited at NSD such as transcriptions in MS word or rich text format, is controlled in the manner that the archival staff reads through the files. Otherwise, qualitative data follows the same eight steps as quantitative data listed in the "Archiving procedures", and the files are archived for long term preservation.

NSD is entitled to process data in accordance with established procedure for data protection and long-term storage. Terms and conditions regarding responsibilities, preservations and publishing are stated in the archiving agreement between NSD and the depositor. On NSDs website there's information accessible on both archiving procedures and and maintenance of archived data.

NSD stores data and metadata in a way that protects the data from unauthorized access, violation of the data's integrity and in other ways loss of data and documentation. The procedures are set up based on a risk and vulnerability analysis. Data are always kept in different storages/servers. Backups and non-anonymous data are stored outside NSD's premises. Non-anonymous data is always prepared on off-line computers. In case non-anonymous data has to be transferred online or on portable devices the files are encrypted.

Deposit agreement: [http://www.nsd.uib.no/nsddata/arkivering/en/006\\_archiving\\_agreement.pdf](http://www.nsd.uib.no/nsddata/arkivering/en/006_archiving_agreement.pdf)

NSD's archiving procedures: [http://www.nsd.uib.no/nsddata/arkivering/en/009\\_archiving\\_procedures.html](http://www.nsd.uib.no/nsddata/arkivering/en/009_archiving_procedures.html)

Security and maintenance: [http://www.nsd.uib.no/nsddata/arkivering/en/012\\_security\\_and\\_maintenance.html](http://www.nsd.uib.no/nsddata/arkivering/en/012_security_and_maintenance.html)

## **Reviewer Entry**

*Accept or send back to applicant for modification:*

Accept

*Comments:*



## 11. Data quality

*Minimum Required Statement of Compliance:*

0. N/A: Not Applicable.

### Applicant Entry

*Statement of Compliance:*

4. Implemented: This guideline has been fully implemented for the needs of our repository.

*Self-assessment statement:*

Advice and guidance for data producers/depositors on metadata and documentation are provided through a web form that also contains sections for information on the data to be deposited. Specific advice and guidance for data producers on metadata and documentation are available on NSDs website. Please see linked documentation. The guide is aimed at data producers/depositors, and intended to help them consider which data they will be producing, and ensuring that data intended for archiving is in suitable file formats and with the correct documentation.

All relevant information regarding the project, responsibility, data documentation and methodology (e.g. collection method, types of units, data collection period, type of study, data selection (net/gross), and data characteristics) is passed on to data consumers for independent assessment. Other relevant documentation could be information about anonymisation of the material, permissions, questionnaires, codebooks, reports and interview guides. The data producer chooses which documents to make available for lending, and which documents will merely be archived and used as a basis for NSD's documentation. For a full list of metadata elements, see DSA guideline 14.

The web form requests information on whether the researcher has permission to include non-anonymous data. It also asks for references to the responsible data producer and responsible organisations/institutions. NSD ask for citations based on the data in the web form, or during contact with the individual researchers upon data depositing.

When the data is documented and published on NSDs website, the data producers will receive a link to the published version of the material so that they have the possibility to comment on data and metadata.

Submitted data without appropriate contextual information is addressed at the ingest stage and the data producer is asked to supply the necessary information. The ingest process is documented in NSDs archiving procedures. Please see the linked documentation.

Deposit webform: [http://www.nsd.uib.no/nsddata/arkivering/en/007\\_archiving\\_form.pdf](http://www.nsd.uib.no/nsddata/arkivering/en/007_archiving_form.pdf)

Deposit agreement: [http://www.nsd.uib.no/nsddata/arkivering/en/006\\_archiving\\_agreement.pdf](http://www.nsd.uib.no/nsddata/arkivering/en/006_archiving_agreement.pdf)

NSD archive deposit main website: <http://www.nsd.uib.no/nsddata/arkivering/en/index.html>

NSD's archiving procedures: [http://www.nsd.uib.no/nsddata/arkivering/en/009\\_archiving\\_procedures.html](http://www.nsd.uib.no/nsddata/arkivering/en/009_archiving_procedures.html)

Data deposit guide: [http://www.nsd.uib.no/nsddata/arkivering/en/001\\_deposit\\_data.html](http://www.nsd.uib.no/nsddata/arkivering/en/001_deposit_data.html)

Data preparing guide: [http://www.nsd.uib.no/nsddata/arkivering/en/003\\_prepare\\_data.html%20](http://www.nsd.uib.no/nsddata/arkivering/en/003_prepare_data.html%20)

NSD' documentation guide: [http://www.nsd.uib.no/nsddata/arkivering/en/014\\_documentation\\_guide.pdf](http://www.nsd.uib.no/nsddata/arkivering/en/014_documentation_guide.pdf)

FAQ website: [http://www.nsd.uib.no/nsddata/arkivering/en/005\\_faq.html](http://www.nsd.uib.no/nsddata/arkivering/en/005_faq.html)

## **Reviewer Entry**

*Accept or send back to applicant for modification:*

Accept

*Comments:*

## 12. Workflows

*Minimum Required Statement of Compliance:*

0. N/A: Not Applicable.

### Applicant Entry

*Statement of Compliance:*

3. In progress: We are in the implementation phase.

*Self-assessment statement:*

NSD has policies and procedures that follow the archival life cycle of data. NSD's description of processes and procedure for the data curation process, are described in the "Archiving procedure". Please see linked documentation. The archival life cycle of data can be summed up in eight steps:

Technical control

1.

Control of anonymity

2.

Registration

3.

Storage

4.

Metadata/documentation

5.

Version control

6.

Publication

7.

Loans

8.

Terms and conditions regarding responsibilities, preservations and publishing are stated in the archiving agreement between NSD and the depositor. As mentioned in DSA guideline 2, both the data depositor and the data user have to fulfill relevant regulation(s) in order to deposit or receiving data from NSD. Data producers are made aware of changes made to the data.

The majority of data that NSD manages is anonymous data. Non-anonymous data will only be stored at NSD after fulfilling relevant formalities. NSD's archival staff will check this before receiving data. The archival staff at NSD has relevant competence within privacy issues and other ethical questions. In addition our in-house Data Protection Official for Research unit will be consulted when necessary. Non-anonymous data are always stored and handled on computers separated from NSD's network. In case non-anonymous data has to be transferred online or on portable devices the files are encrypted.

Staff who manages data has a written set of internal instructions and routines that they adhere to and all data transformations are documented. These instructions and routines of the workflow are available for staff by login on an internal page. In this way all staff who manages data has access to the latest updated instructions and routines.

The majority of data that NSD manages is quantitative in nature, but an increasingly number of qualitative data is being deposited. Qualitative data sets can not be imported in Nesstar, but metadata are documented on study level (in Nesstar). The archival staff use Nvivo to check audio and video files. Qualitative data deposited at NSD such as transcriptions in MS word or rich text format, is controlled in the manner that the archival staff reads through the files. Otherwise, qualitative data follows the same eight steps as quantitative data listed in the "Archiving procedures", and the files are archived for long term preservation.

NSD provides a list of preferred and recommended formats, but accepts most formats that are applied within the social science and humanities community. NSD asks for more details on file formats and tools/methods by which these files were created only if the format is non-preferred and/or unknown. For the list of preferred formats, please see the linked documentation.

NSD does not apply a specific selection process, but reject data that is not machine readable or does not comply with relevant regulations and ethical standards. Data ingested should also be prepared and made available for re-use by the research community.

NSD's archiving procedures: [http://www.nsd.uib.no/nsddata/arkivering/en/009\\_archiving\\_procedures.html](http://www.nsd.uib.no/nsddata/arkivering/en/009_archiving_procedures.html)

Control of anonymity: [http://www.nsd.uib.no/nsddata/arkivering/en/010\\_control\\_anonymity.html](http://www.nsd.uib.no/nsddata/arkivering/en/010_control_anonymity.html)

NSD's procedures personal data: [http://www.nsd.uib.no/nsddata/arkivering/en/011\\_personal\\_data.html](http://www.nsd.uib.no/nsddata/arkivering/en/011_personal_data.html)

Security and maintenance: [http://www.nsd.uib.no/nsddata/arkivering/en/012\\_security\\_and\\_maintenance.html](http://www.nsd.uib.no/nsddata/arkivering/en/012_security_and_maintenance.html)

Data preparing guide: [http://www.nsd.uib.no/nsddata/arkivering/en/003\\_prepare\\_data.html](http://www.nsd.uib.no/nsddata/arkivering/en/003_prepare_data.html)

Preferred formats: [http://www.nsd.uib.no/nsddata/arkivering/en/004\\_preferred\\_formats.html](http://www.nsd.uib.no/nsddata/arkivering/en/004_preferred_formats.html)

## **Reviewer Entry**

*Accept or send back to applicant for modification:*

Accept

*Comments:*

### 13. Data discovery and identification

*Minimum Required Statement of Compliance:*

0. N/A: Not Applicable.

#### Applicant Entry

*Statement of Compliance:*

4. Implemented: This guideline has been fully implemented for the needs of our repository.

*Self-assessment statement:*

NSD ensures that all data - quantitative and qualitative - are readable, can be processed, and identified uniquely. All data that are archived for dissemination are searchable via internet, and indexed for search in Google. NSD offers a robust search of its archived data collection.

NSD and the project Norwegian Open Research Data Infrastructure (NORDi) is granted 26 million NOK from the Norwegian Research Council for a five year period (2016 – 2021) to develop a new infrastructure that will make it easier to locate, use and share research data. As part of the project a data discovery platform is under development. The platform will provide a common portal interface for all of NSD's rich and heterogeneous data collections, as well as data stored in international collections from which NSD harvests discovery metadata. An important component to the platform is the ability to generate landing pages that display essential metadata and links to access the discovered data, and that also serve as endpoints for data citations. An early version of the data discovery platform is online.

All data are accessible in the Nesstar server:

- Metadata and codebooks can be downloaded, and some of the data are accessible for online analyses.
- Data requests can be done online

Nesstar supports the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH). OAI-PMH is a standard protocol designed to make it simpler for data providers to open up their repositories and for service providers to harvest metadata.

NSD offer both persistent identifiers and recommended data citations. Each dataset is assigned a DOI (digital object identifiers) which ensures that data can be accessed into the future. The DOI is assigned when data is ready to be published. If data is edited the new version will be assigned a DOI. The different versions will be connected through a change log in NSDs data discovery platform - which will allow users to browse and access different versions of data. The DOI-system supports an integrated citation service, through CrossRef, which enables the user to generate citation for datasets in different styles, such as apa and harvard3.

Security and maintenance: [http://www.nsd.uib.no/nsddata/arkivering/en/012\\_security\\_and\\_maintenance.html](http://www.nsd.uib.no/nsddata/arkivering/en/012_security_and_maintenance.html)

Order form: <http://www.nsd.uib.no/nsd/english/orderform.html>

NSD search website: <http://www.nsd.uib.no/solr/nsu>

NSDs new search website: <http://search.nsd.no/>

NSD nesstar server:  
<http://nsddata.nsd.uib.no/webview/index.jsp?submode=default&mode=documentation&top=yes&language=en>

## **Reviewer Entry**

*Accept or send back to applicant for modification:*

Accept

*Comments:*



## 14. Data reuse

*Minimum Required Statement of Compliance:*

0. N/A: Not Applicable.

### Applicant Entry

*Statement of Compliance:*

3. In progress: We are in the implementation phase.

*Self-assessment statement:*

NSD asks for all relevant information from the data producer when data are provided. A data deposit web form asks for information on the following metadata items (translated from Norwegian):

- Research Council of Norway project number (if funded by RCN)
  
- Project title
  
- Project manager
  
- Affiliated and responsible institution
  
- Research data (Yes/No)
  
- Names (of affiliated persons from institutions)
  
- Types of data generated
  
- Method of data collection

- Types of units
- Data collection period
- Type of study
- Net/gross selection of units
- Characteristics of units
- Anonymous data (Yes/No)
- Permission, non-anonymous data (Yes/No)
- Clauses (Yes/No)
- Clauses repealed / reason for clauses
- Other information

Curatorial staff checks that deposited files are accompanied by appropriate levels of metadata and documentation. Data without appropriate contextual/metadata information is addressed at the ingest stage and the data producer is asked to supply the necessary information (usually by phone or e-mail). This could be questionnaires, codebooks, interview guides, reports, publications and information about anonymisation of the material. NSD documents all

data sets on the basis of the documentation received. The data producer chooses which documents to make available for lending, and which documents will merely be archived and used as a basis for NSD's documentation.

NSD uses the Nesstar-tool to create metadata at both study and file level. Qualitative data sets can not be imported in Nesstar but metadata are documented on study level, and the files are archived for long time preservation in a preferred format. Nesstar is in compliance with the DDI codebook metadata standard. Nesstar also supports the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH). OAI-PMH is a standard protocol designed to make it simpler for data providers to open up their repositories and for service providers to harvest metadata. Nesstar is a software tool developed and owned by NSD.

NSD offers research data in the most common formats data users request. Data that can be archived and curated comprises anonymous machine-readable data and machine-readable data with personal identification. NSD provides a list of preferred and recommended formats, but accepts most formats that are applied within the social science and humanities community. NSD asks for more details on file formats and tools/methods by which these files were created only if the format is non-preferred and/or unknown. Part of NSD's storage procedure is to store most of its data in Nesstar-files. The material is controlled and updated at least every second year. See DSA guideline 9 for more information on NSD's storage procedures.

NSD archive, deposit main website: <http://www.nsd.uib.no/nsddata/arkivering/en/index.html>

Data preparing guide: [http://www.nsd.uib.no/nsddata/arkivering/en/003\\_prepare\\_data.html](http://www.nsd.uib.no/nsddata/arkivering/en/003_prepare_data.html)

Preferred formats: [http://www.nsd.uib.no/nsddata/arkivering/en/004\\_preferred\\_formats.html](http://www.nsd.uib.no/nsddata/arkivering/en/004_preferred_formats.html)

## **Reviewer Entry**

*Accept or send back to applicant for modification:*

Accept

*Comments:*

## 15. Technical infrastructure

### *Minimum Required Statement of Compliance:*

0. N/A: Not Applicable.

## Applicant Entry

### *Statement of Compliance:*

3. In progress: We are in the implementation phase.

### *Self-assessment statement:*

NSD follows the broad guidance given in the OAIS reference model across the archival process. NSD identifies the Submission Information Packages (SIPs), and data managers follow the NSD standard about the content of the Archival Information Packages (AIPs). The Dissemination Information Packages (DIPs) are both manually and automatically constructed on demand from the AIP.

Standards compliance is not a goal in itself for NSD but rather a means to an end. Standards are seen as patterns that can be leveraged to help NSD deliver relevant and reliable services in an increasingly diverse and dynamic environment.

Cost/benefit analyses of standards compliance are conducted continuously as new services are rolled out. NSD has a high number of services that interoperate with each other and with external (national or international) services. Typically a mix of various content/metadata standards (e.g. DDI, DCAT) and technical standards/patterns (e.g. OAuth, SFTP, REST, OGC-WMS) is required to achieve heterogeneous interoperability.

NSD currently uses Nesstar to prepare and publish data. Nesstar is a software system for data publishing and online analysis. The software consists of tools which enables data providers to disseminate their data on the Web. Nesstar Publisher is DDI compliant. Nesstar handles survey data and multidimensional tables as well as text resources. Users can search, browse and analyse the data online.

Nesstar is developed and owned by NSD.

NSD will through the five year project NORD-i build on the existing Norwegian research infrastructure to develop a comprehensive system of easy data deposit, open access and data sharing solutions aiming to enhance scientific transparency and trust across scientific domains. The project will establish a new state of the art e-infrastructure for research data, including user-friendly tools and web-interfaces for depositing, managing and gaining access to research data. The new e-infrastructure represents a major upgrade and to some extent a replacement of NSD's current solutions for archival storage, long-term preservation and dissemination of research data. The aim of the

project is to make the upgraded infrastructure more comprehensive, efficient and cost-effective and consequently more capable of meeting the needs of Norwegian researchers, research institutions and funders.

All of this should be developed in accordance with recommended best archival practices, such as the OAIS reference model as a conceptual framework for services. The work plan to establish NORD-i consists of 7 Work Packages, where the architecture is modelled after the Open Archives Information System Reference Model (OAIS), but adjusted to fit the present landscape in research and technology.

The goal for infrastructure development at NSD is to combine reliability and security with the ability to quickly respond to new demands. To achieve this, NSD continuously adopts recommended established and emerging patterns and solutions from the IT industry.

Such patterns include Heroku's 12 factors (12Factor.net), microservices and functional decomposition of services, continuous delivery and the use of lightweight containers (Docker) for deployment.

Standardized and centralized monitoring logging ensures that otherwise autonomous services and components can be monitored together in a cost-effective manner.

Software inventory at NSD is a mix of off-the-shelf solutions (e.g. operating systems, database systems, runtime environments, etc) and bespoke systems developed in-house. Software inventory is maintained for both types, and system documentation is available in manuals, wikis and for in-house solutions, in Gitlab repositories close to the source code itself.

Industry standard dependency resolution solutions are used, and supports keeping track of externally developed libraries and modules used in the service portfolio.

Thousands of open source libraries are integrated as part of software modules that constitute NSD's service portfolio. Traditional support is frequently not offered for such open source software, and sustainability, reliability and security have to be ensured through the mechanisms offered by the eco-system that open source software constitutes. Popular libraries typically have reached "critical mass" and have a sufficiently large user-base and resources to maintain them. More esoteric/specialized libraries are more vulnerable to becoming "orphaned" projects, and it is not uncommon that NSD staff engage with maintainers of less popular libraries and even produce fixes in the form of "pull requests" that get adopted into the official repository of the library.

NSD developers and managers continuously evaluate trade-offs between using potentially orphaned libraries/modules and other alternatives (switching to other options or build in-house)

<http://www.nesstar.com/support/help.html>

<http://www.nsd.uib.no/nordi/english.html>

## **Reviewer Entry**

*Accept or send back to applicant for modification:*

Accept

*Comments:*

See also comment X (Preservation Plan).

## 16. Security

*Minimum Required Statement of Compliance:*

0. N/A: Not Applicable.

### Applicant Entry

*Statement of Compliance:*

3. In progress: We are in the implementation phase.

*Self-assessment statement:*

NSD takes backup copies of the archived data and other information needed to restore normal use (e.g. system data, db configurations, OS, support systems etc.) every night. NSD keeps backup copies off-site at our backup system provider. Based on these backups NSD will be able to restore the data and essential services in the event of an outage. ([http://www.nsd.uib.no/nsddata/arkivering/en/012\\_security\\_and\\_maintenance.html](http://www.nsd.uib.no/nsddata/arkivering/en/012_security_and_maintenance.html))

In relation to alteration of procedures and arrangements regarding how we process personal data, risk analysis are carried out under the advice of our data protection officer.

NSD is in the process of updating and documenting our risk analysis, procedures and arrangements in place to provide swift recovery in the event of an outage, including documentation of our IT security system and disaster plans.

### Reviewer Entry

*Accept or send back to applicant for modification:*

Accept

*Comments:*

## **17. Comments/feedback**

*Minimum Required Statement of Compliance:*

0. N/A: Not Applicable.

### **Applicant Entry**

*Statement of Compliance:*

0. N/A: Not Applicable.

*Self-assessment statement:*

-

### **Reviewer Entry**

*Accept or send back to applicant for modification:*

Accept

*Comments:*