



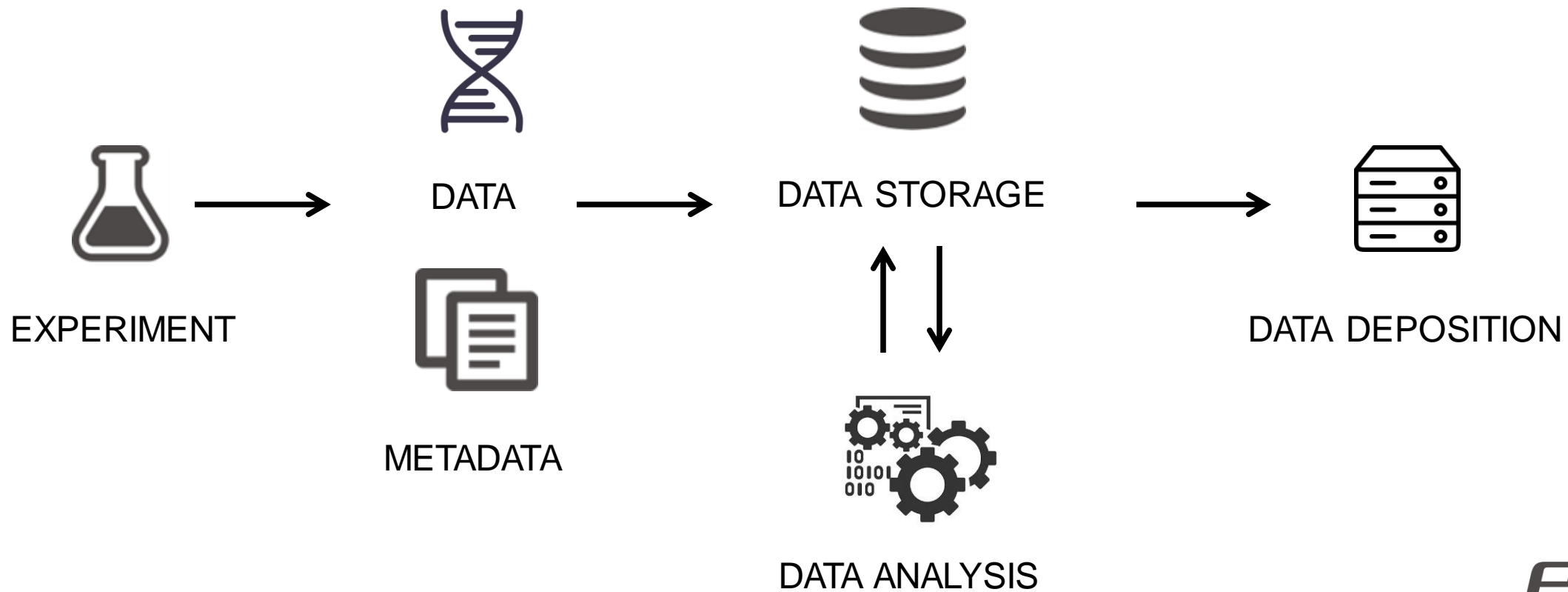
National storage infrastructures

NeLS/StoreBioInfo, NIRD, TSD

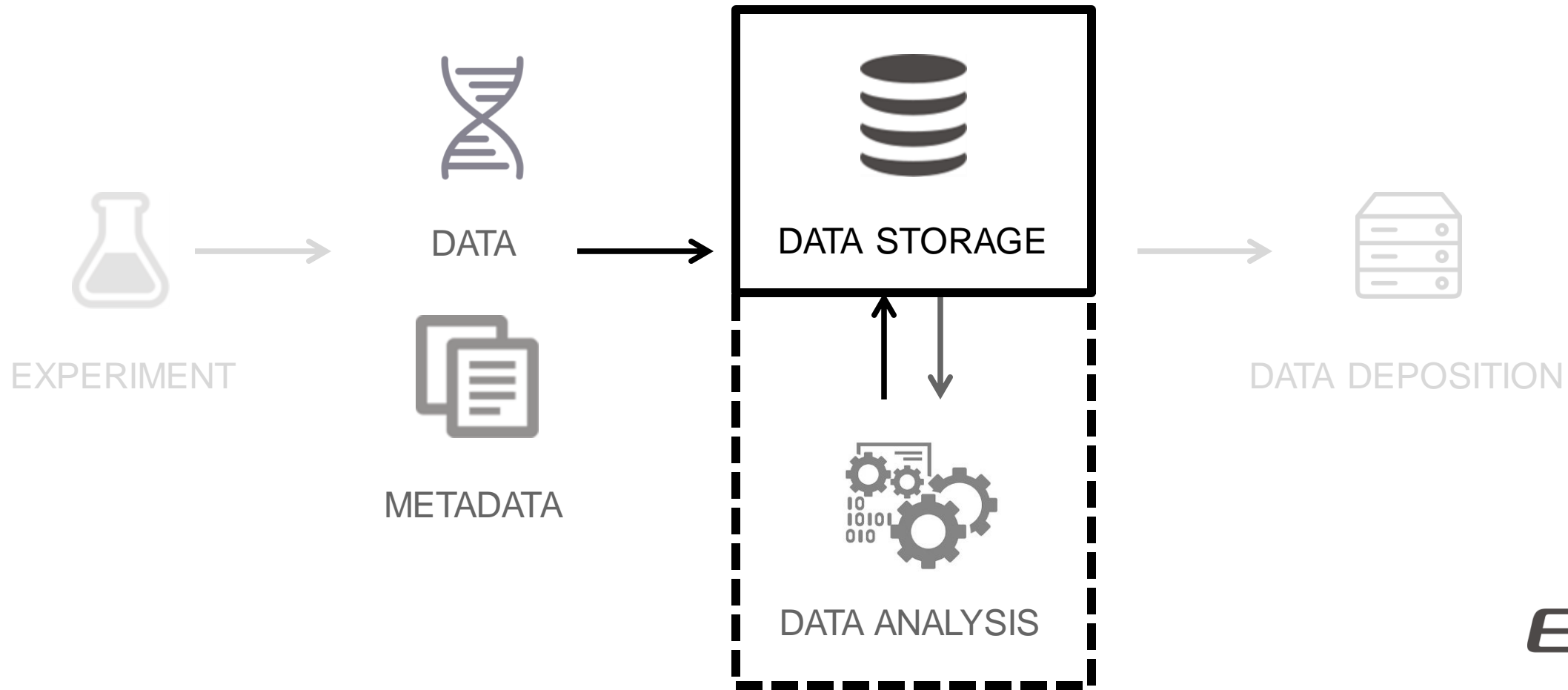


Erik Hjerde

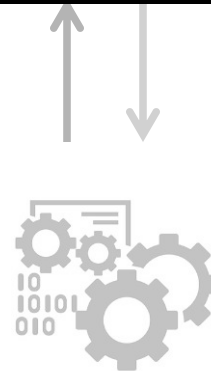
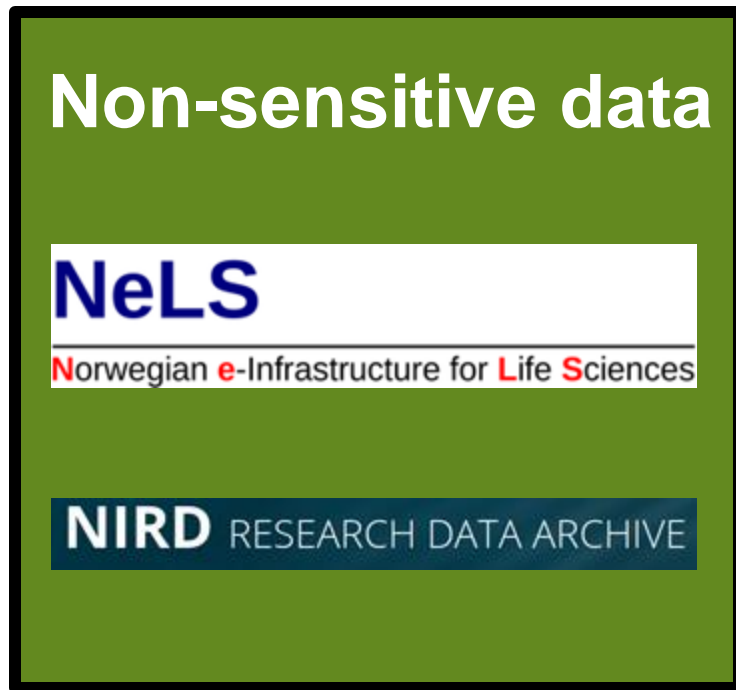
Data storage – from the researcher perspective



Data storage – from the researcher perspective



National storage infrastructures



DATA ANALYSIS



Data storage in NeLS and StoreBioInfo (SBI)

Norwegian e-infrastructure for Life Sciences - developed and operated by Elixir Norway

NeLS in general

Available to all Norwegian researchers

Enable collaborative projects

Multiple storage layers

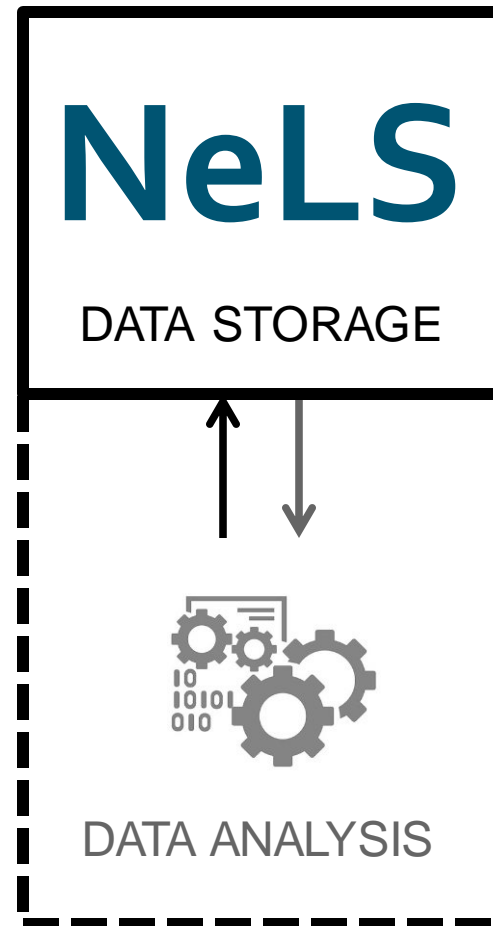
Integrated with compute

Multiple permission roles - shared data

Free of charge*

Support for data deposition

User support: Elixir Norway helpdesk



Type of data

Non-sensitive data

Support multiple data types

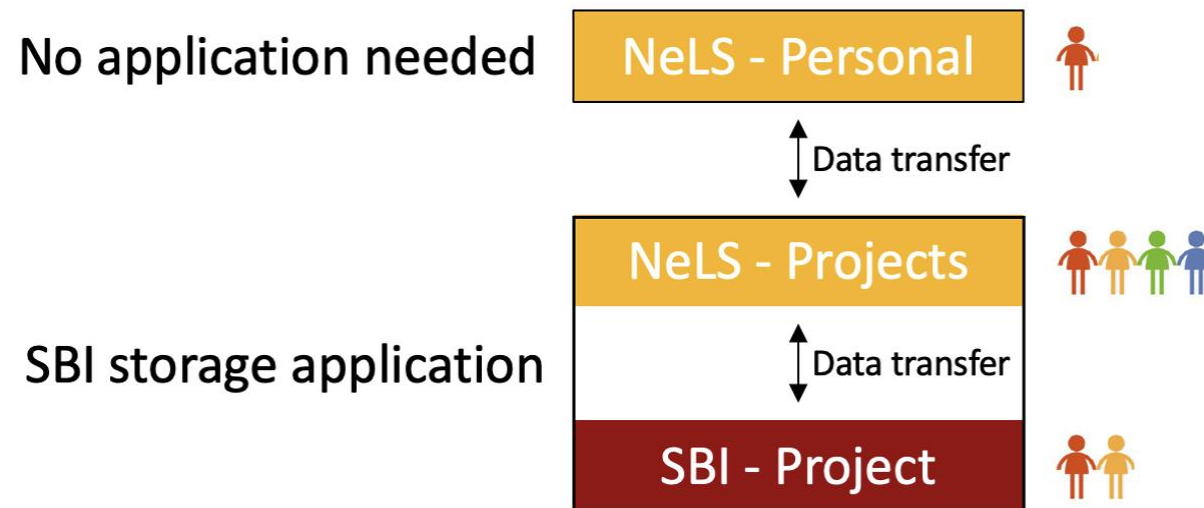
SEEK integration for metadata

Data storage in NeLS/SBI – How to get access

Storage application needed for projects where data is shared by many users

Access via FEIDE user or NeLS idp can be made for non-FEIDE users

Free storage < 10 TB



Apply for storage: contact@bioinfo.no

Wiki for usage: <https://nels-docs.readthedocs.io/en/latest/>

Access data storage in NeLS

The NeLS portal can be accessed via a web browser at <https://nels.bioinfo.no/> or via a file transfer tool (e.g. Filezilla) or the command line SCP

The image displays three overlapping screenshots of the NeLS portal interface, illustrating its various components and data storage access options.

Top Screenshot (Dashboard): Shows the NeLS Disk Usage graph, which tracks storage usage over time from September 2016 to May 2017. The usage is consistently high, around 93.1 GB. Below the graph is the Account Information section, which includes the user's full name (Erik Hjerde), email (erik.hjerde@uit.no), and affiliation (University of Tromsø).

Middle Screenshot (My Data): Displays the user's personal data, including a list of files and folders. The files listed are Bko3323, ELDXIR2-WP4, Mail, metagenome, and Test2014. The interface also shows options to copy, cut, paste, delete, or clear the selection.

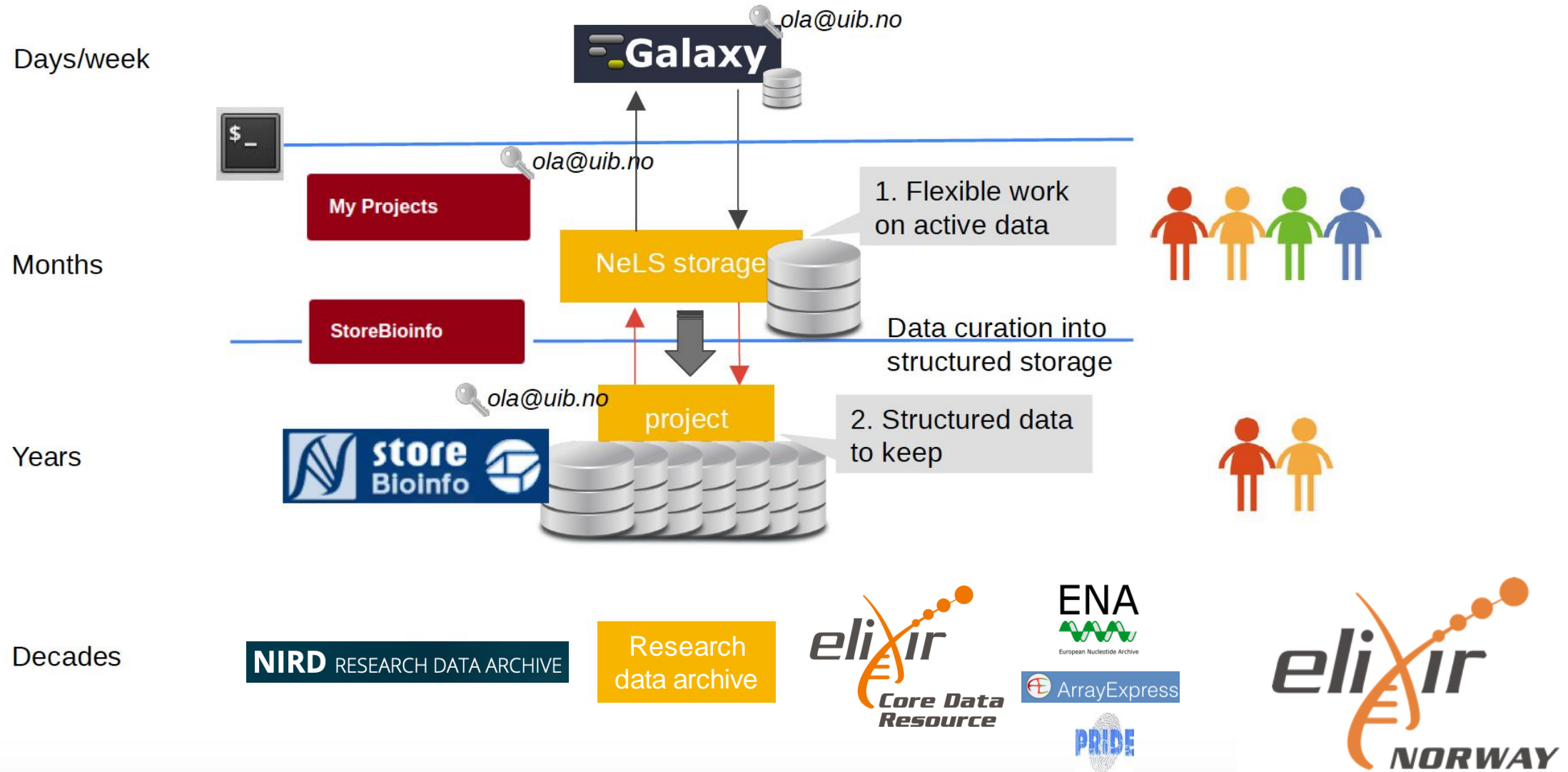
Bottom Screenshot (Projects): Shows a list of projects, including Elixir_NO-Documents, Uio-Test-Project, Uio_Halvorsen_RNAseq_Mouse_Spleen_T_cells_2018, Elixir_workshops, UB-Petersen_neuro_ma_regulation_disorder_2017, maseq-test-data, and ELDXIR2-WP4. Each project entry includes the project name, role in project, and creation date. The interface also shows a table of data operations, including a list of files and folders, and a table of data operations.

Data Operations Table:

Project Name	Role in Project	Creation Date
Elixir_NO-Documents	Member	November 28, 2014
Uio-Test-Project	Member	March 19, 2015
Uio_Halvorsen_RNAseq_Mouse_Spleen_T_cells_2018	Power User	February 22, 2018
Elixir_workshops	Member	April 15, 2016
UB-Petersen_neuro_ma_regulation_disorder_2017	Power User	May 11, 2017
maseq-test-data	Power User	September 11, 2017
ELDXIR2-WP4	Power User	November 8, 2017

Footer: The bottom of the interface displays the copyright notice: © 2019, Norwegian e-Infrastructure for Life Sciences. All right reserved.

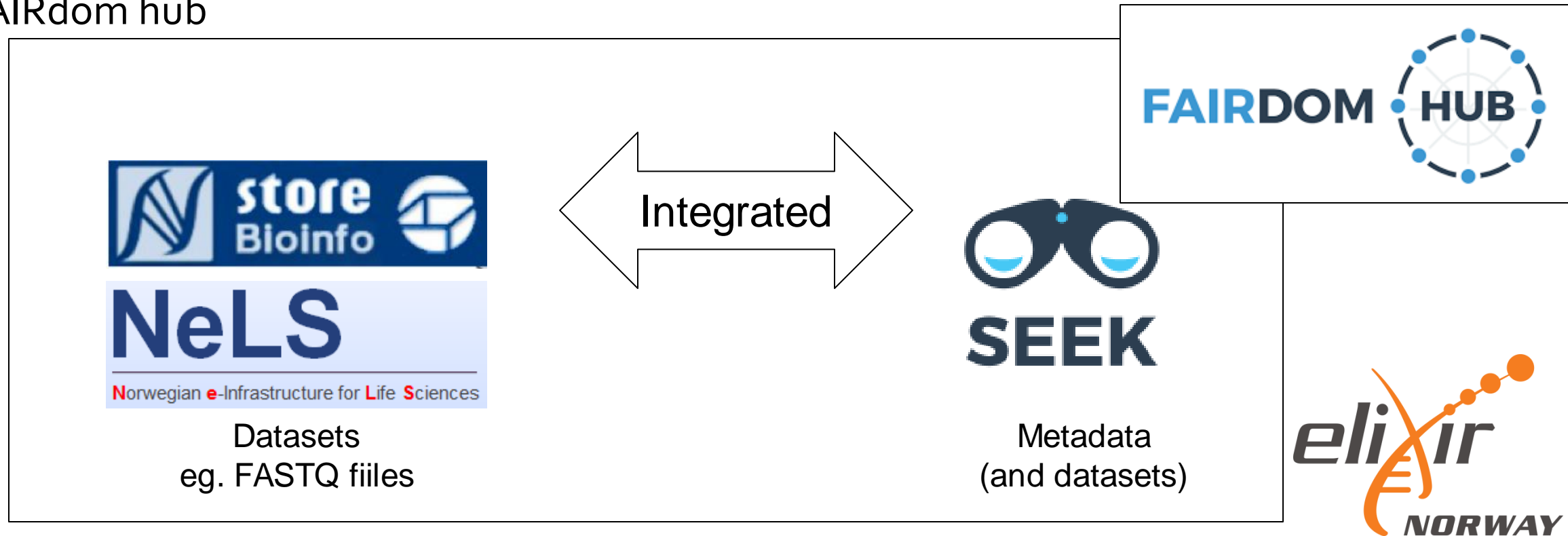
NeLS architecture



SEEK - sharing heterogeneous scientific research datasets, models or simulations, processes and research outcomes

The SEEK platform is a web-based tool for organising and storing data, and for exploring and annotating data

Norwegian users can link datasets stored in NeLS to a SEEK project using FAIRdom hub



Data storage in NIRD

National e-Infrastructure for Research Data - owned and operated by UNINETT Sigma2

NIRD in general

Available to all users with account

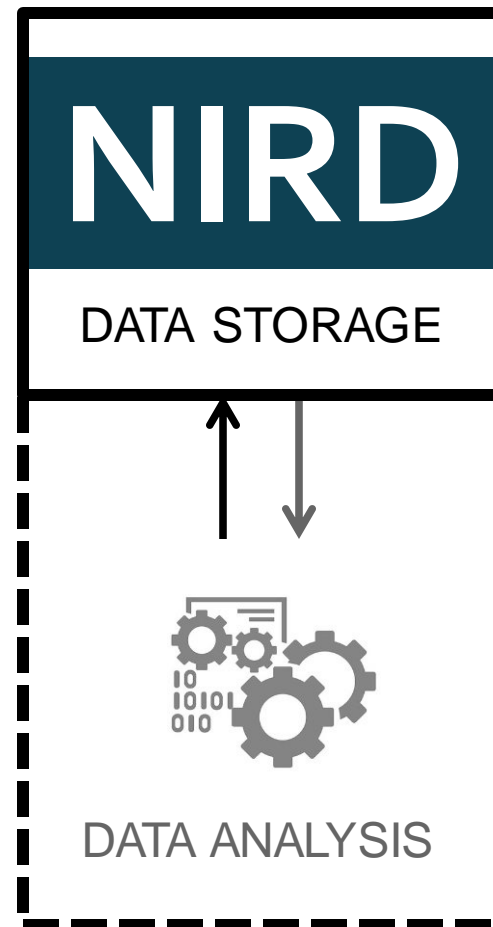
Enable collaborative projects

Integrated with compute

Multiple permission roles - shared data

Free of charge*

User support: Metacenter support



Type of data

Non-sensitive data

Support multiple data types

All type of scientific data*

Data storage in NIRD – How to get access

Apply for a UNINETT SIGMA2 user

Apply for a storage quota

Free storage < 10 TB

Apply for user account: <https://www.metacenter.no/user/application/>

Apply for storage: <https://www.sigma2.no/apply-e-infrastructure-resources>

Wiki for usage: <https://documentation.sigma2.no/index.html>

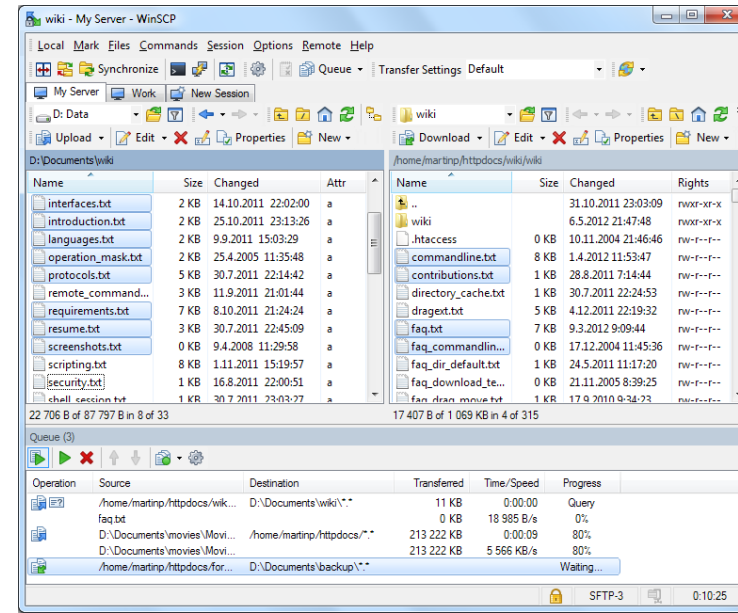
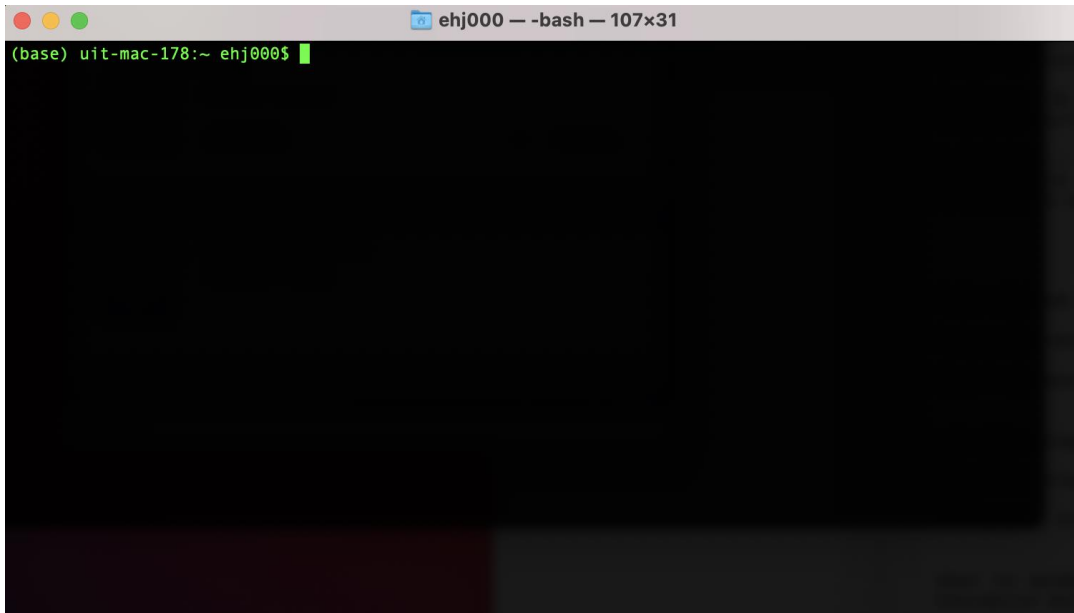
The process explained

- 1 Submit user application
- 2 Signature by project management
- 3 Review by Sigma2
- 4 Set a password and log in

Access data storage in NIRD

The NIRD storage can be accessed via the command line using SSH

Data import/export via command line tools such as SCP or SFTP or other file transfer tools (e.g. WinSCP)



Sensitive data storage



Data storage in TSD

National service for sensitive data - developed and operated by UiO

TSD in general

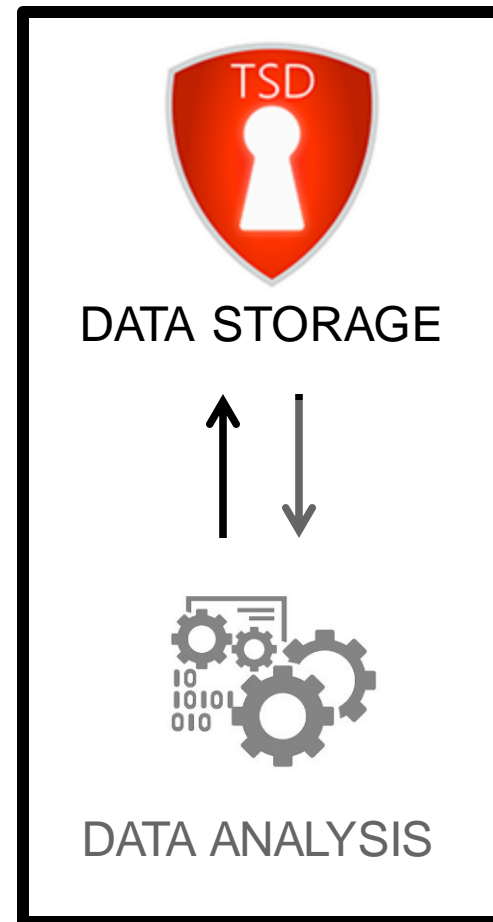
Available to all users with account

Enable collaborative projects

Integrated with compute

Multiple permission roles - shared data

User support: Tech and admin support



Type of data

Sensitive data

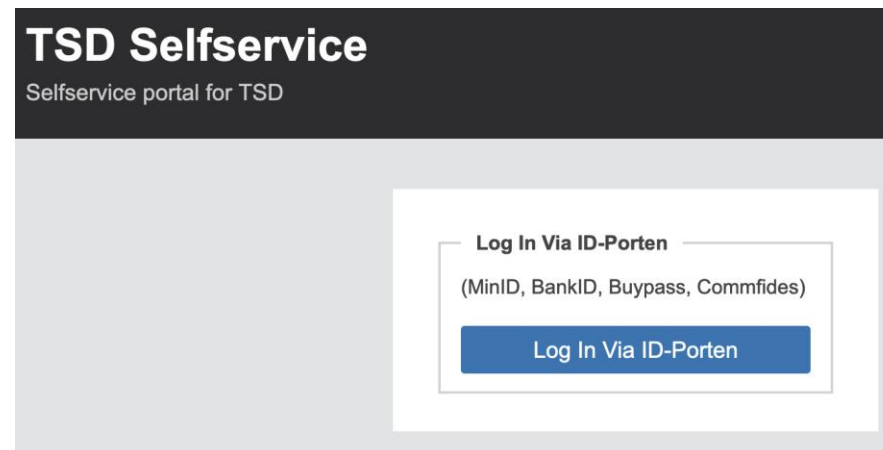
Support multiple data types

Data storage in TSD – How to get access

Apply for a project – need to document ethical approval (e.g. from REC)

Generate a TSD user – require 2-factor authentication

Payment models for storage



Generate user account: <https://selfservice.tsd.usit.no/>

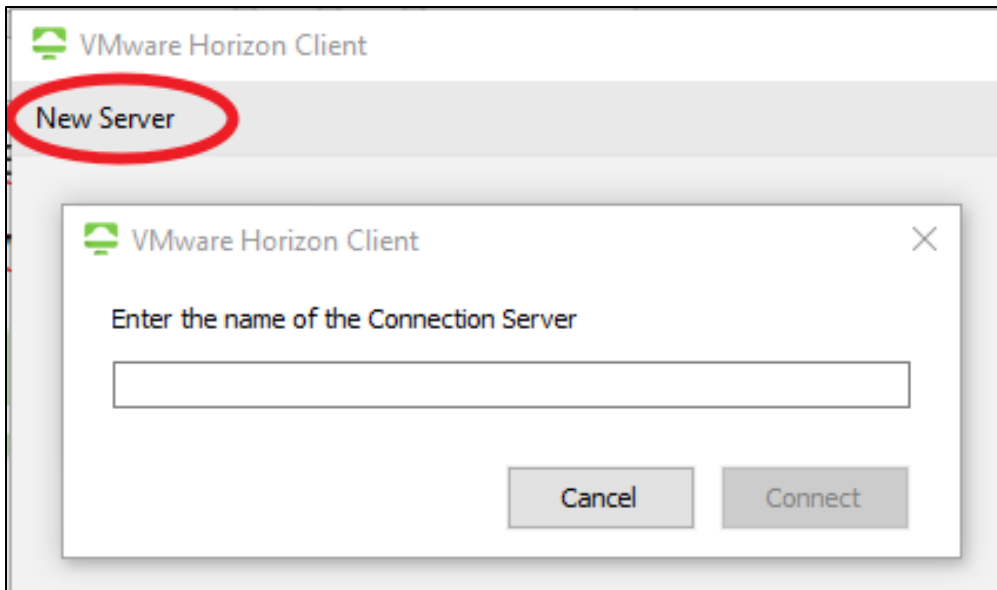
Apply for project: <https://www.uio.no/tjenester/it/forskning/sensitiv/hjelp/start/registrer.html>

Wiki for usage: <https://www.uio.no/tjenester/it/forskning/sensitiv/hjelp/start/index.html>

Access to data storage in TSD

The TSD storage can be accessed via VMware Horizon + 2-factor authentication

Import/export data via the web file upload service



TSD Data Portal

Welcome to the TSD Data Portal

To use this service you should already hold a valid TSD user account.



Import Files



Export Files

Where should I store and share my life science data?

	Sensitive data	Direct transfer from data producer	Web portal access	Command line access	Shared projects	Integration for metadata	Support for data deposition	Free of charge
NeLS/SBI	✗	✓	✓	✓	✓	✓	✓	✓
NIRD	✗	✗	✗	✓	✓	✗	✗	✓
TSD	✓	✗	✗	✓	✓	✗	✗	✗

Example - Data flow/handle using ELIXIR Norway

