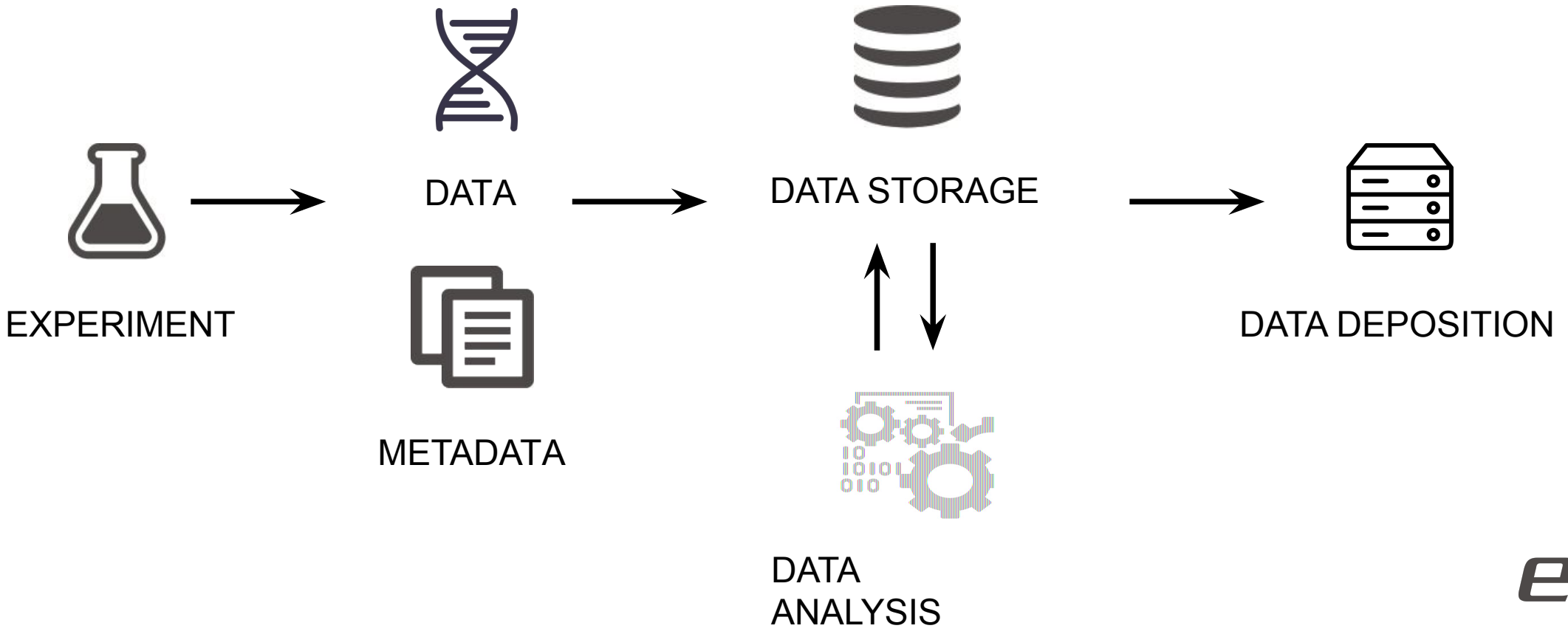
National storage infrastructures

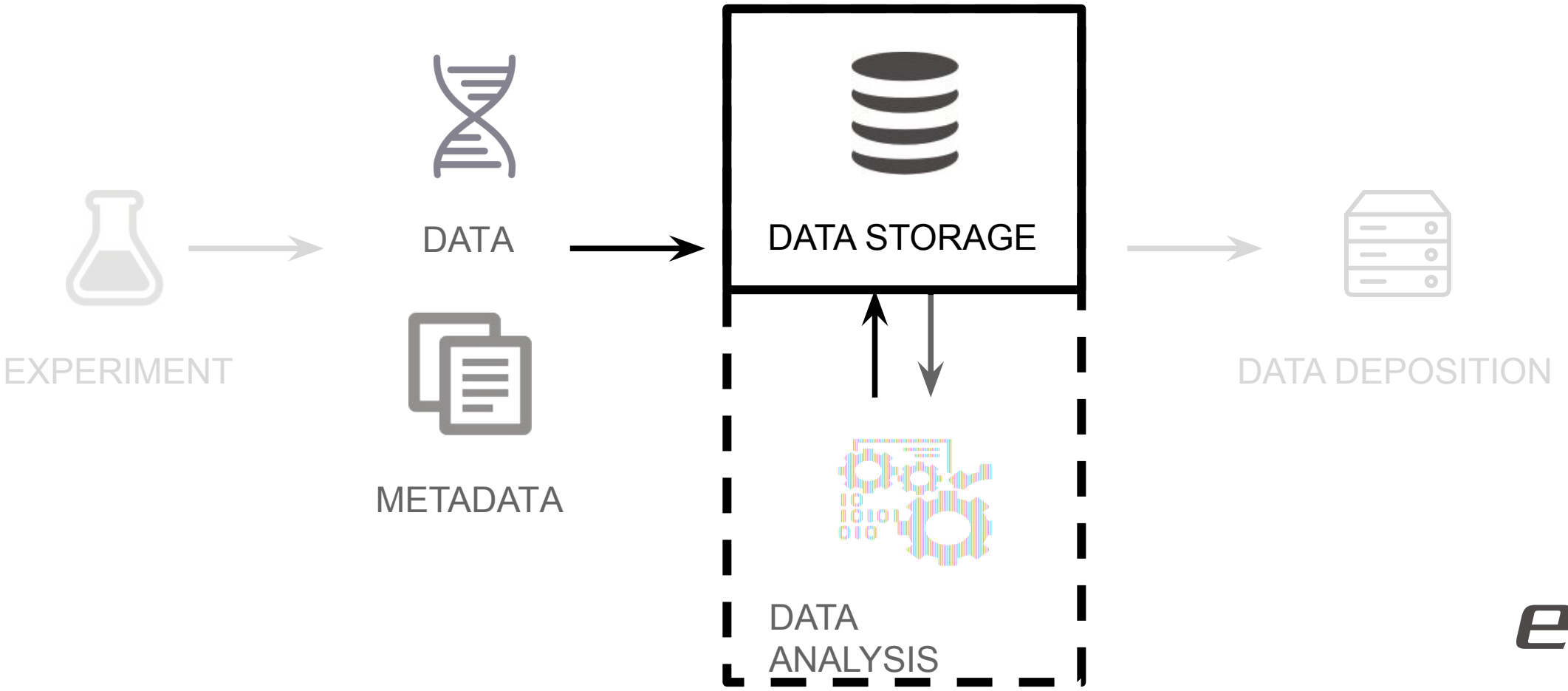
NeLS/StoreBioInfo, NIRD, TSD

David Dolan
Research Support Lead
ELIXIR Norway

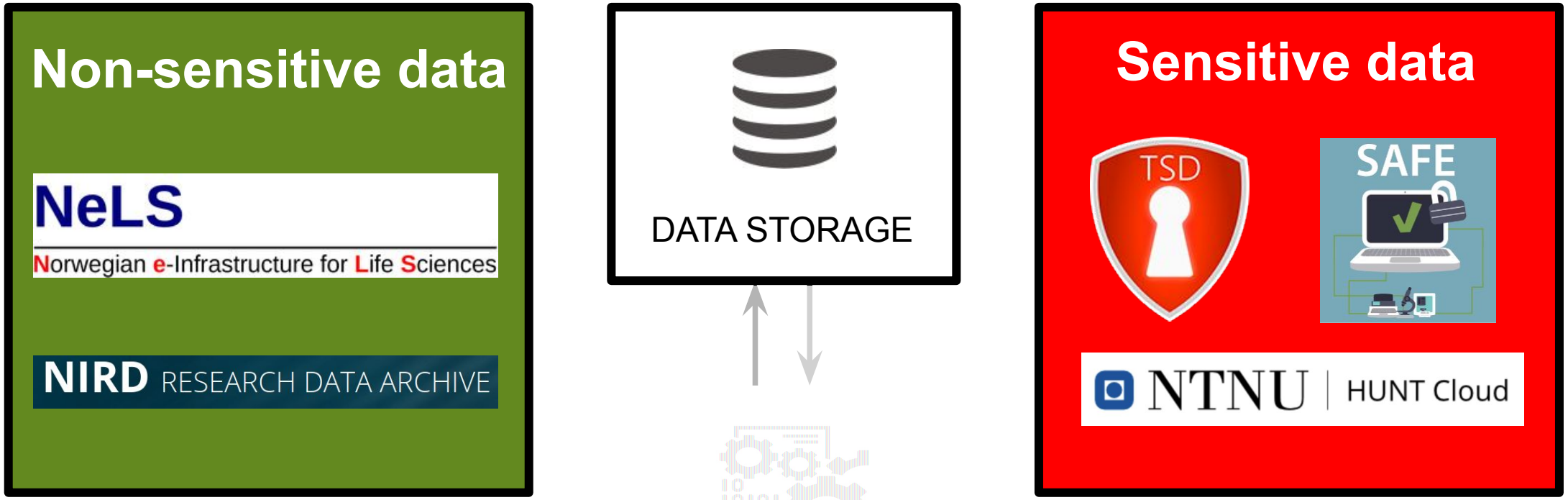
Data storage – from the researcher perspective



Data storage – from the researcher perspective



National storage infrastructures



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Data storage – General considerations

The ELIXIR Research Data Management kit

Data management

- Data life cycle
- Your role
- Your domain
- Your tasks
  - Compliance monitoring
  - Costs of data management
  - Data quality
  - Data storage
  - Data transfer
  - Documentation and metadata

Your tasks

Data storage

What features do you need in a storage solution when collecting data?

Description

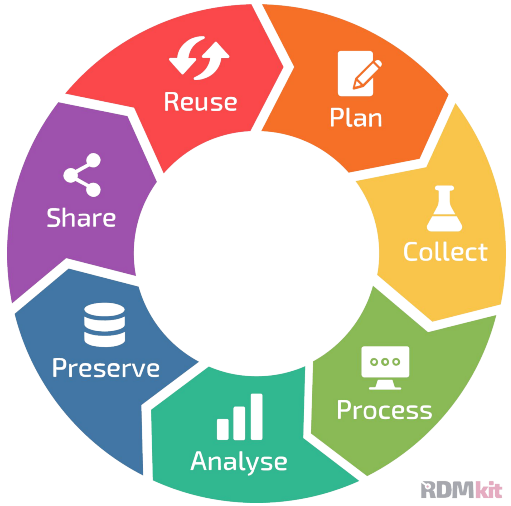
The need for Data storage arises early on in a research project, as space will be required to put your data when starting collection or generation. Therefore, it is a good practice to think about storage solutions during the data management planning phase, and request storage in advance and/or pay for it.

On this page

Tools and resources on this page

Tool or resource	Description	Related pages	Registry
Box	Cloud storage and file sharing service	Data transfer	Training
CERNBox	CERNBox cloud data storage, sharing and synchronization		
CS3	Cloud Storage Services for Synchronization and Sharing (CS3)		

RDMkit



Link to RDMkit: https://rdmkit.elixir-europe.org/

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Data storage – General considerations

The ELIXIR Research Data Management kit

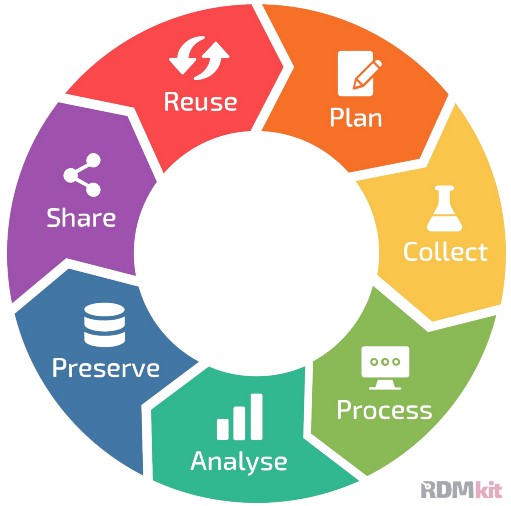
- Data life cycle +
- Your role +
- Your domain +
- Your problem -
  - Compliance monitoring
  - Data analysis
  - Data management plan
  - Data organisation
  - Data protection
  - Data publication
  - Data quality
  - Data storage
  - Data transfer
  - Identifiers
  - Licensing
  - Documentation and metadata
  - Sensitive data
- All tools and resources

- What features do you need in a storage solution when collecting data?
- How do you estimate computational resources for data processing and analysis?
- Where should you store the data after the end of the project?
- Relevant tools and resources

Relevant tools and resources

Tool or resource	Description	Tags	Registry
CERNBox	CERNBox cloud data storage, sharing and synchronization	storage	
CS3	Cloud Storage Services for Synchronization and Sharing (CS3)	storage	
DATAVERSE	Open source research data respository software.	storage, researcher, data manager, IT support	

RDMkit



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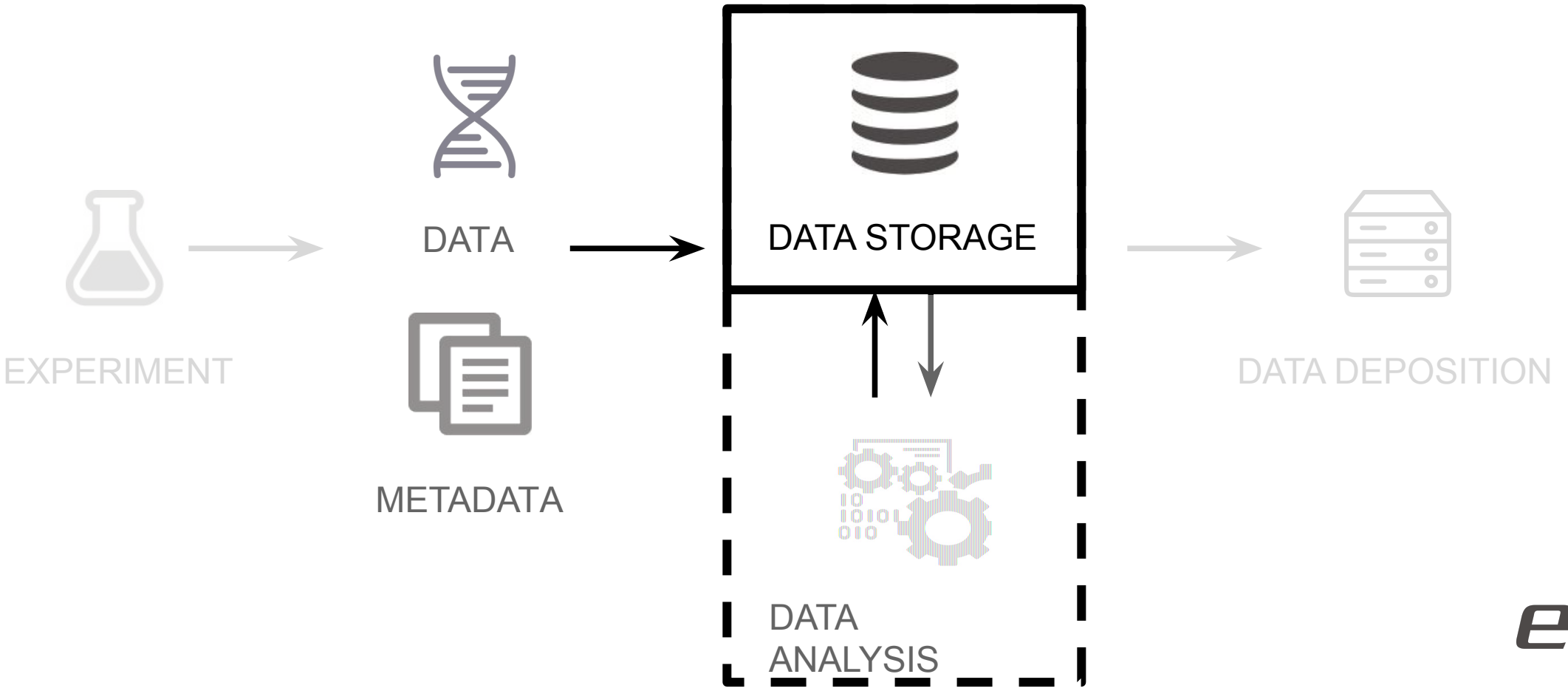
Data storage – from the researcher perspective



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

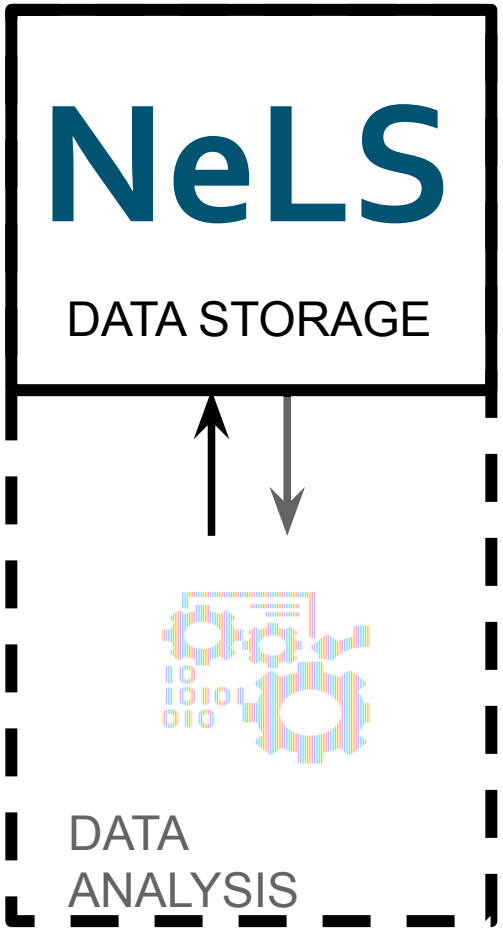
Integrated with compute

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

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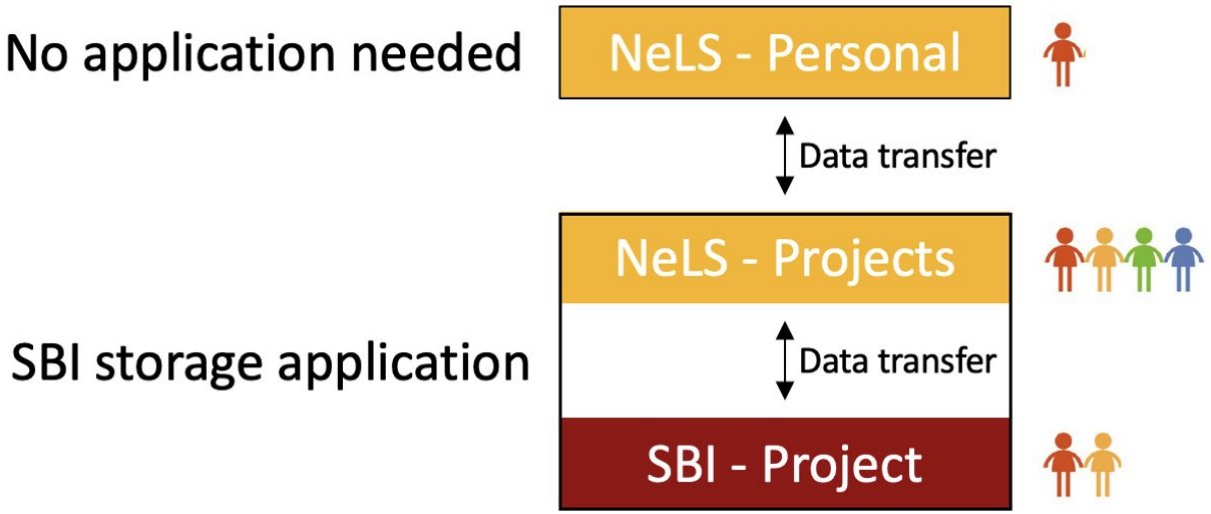
Data storage in NeLS/SBI – How to get access

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

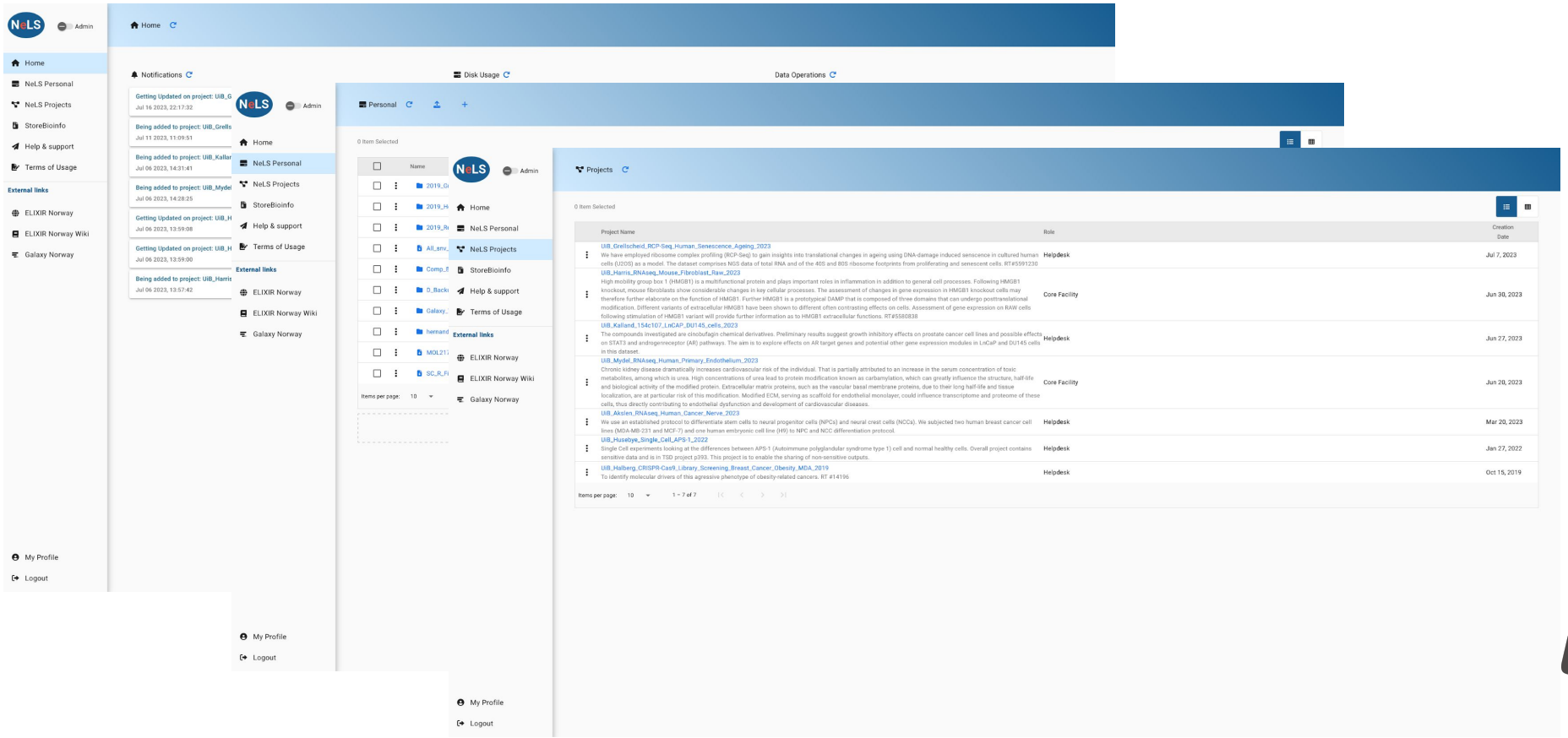


Apply for storage: support@elixir.no

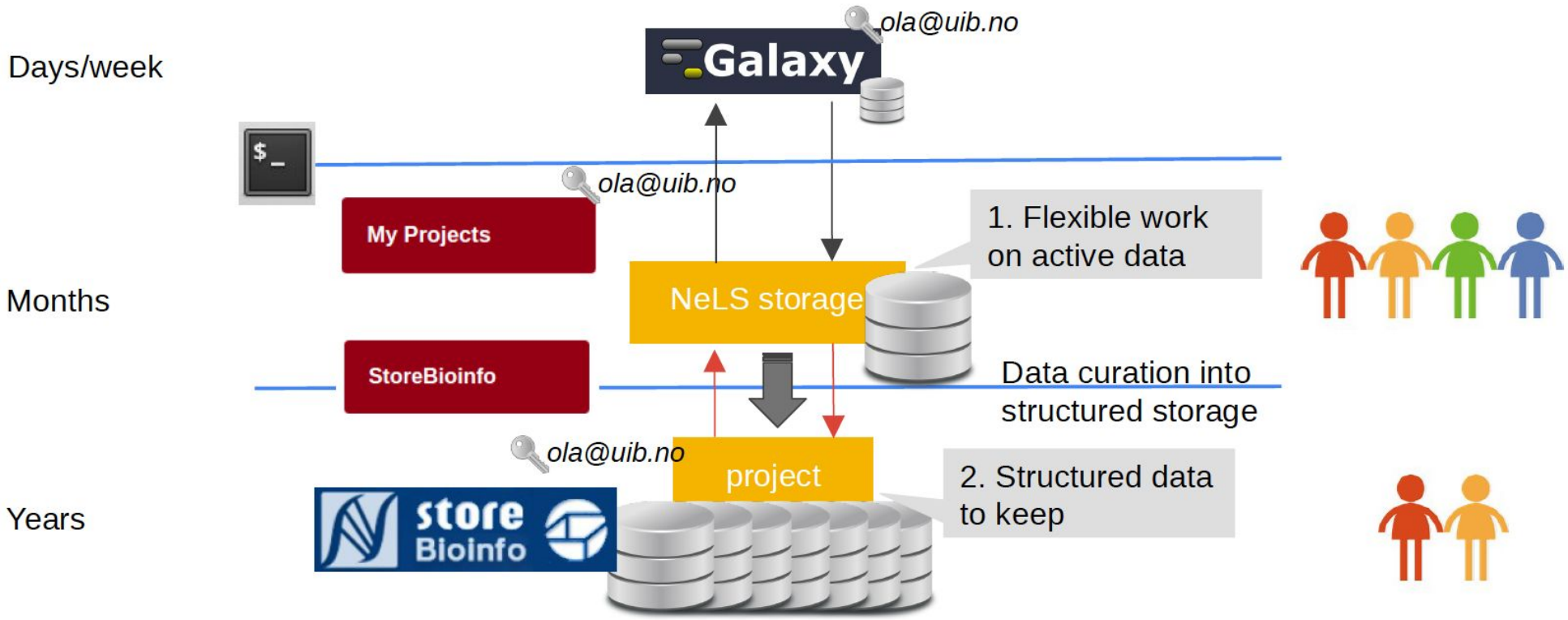
Wiki for usage: https://nels-docs.readthedocs.io/en/latest/

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



NeLS architecture



NIRD RESEARCH DATA ARCHIVE

Research data archive

elixir Core Data Resource

ENA European Nucleotide Archive

ArrayExpress

PRIDE

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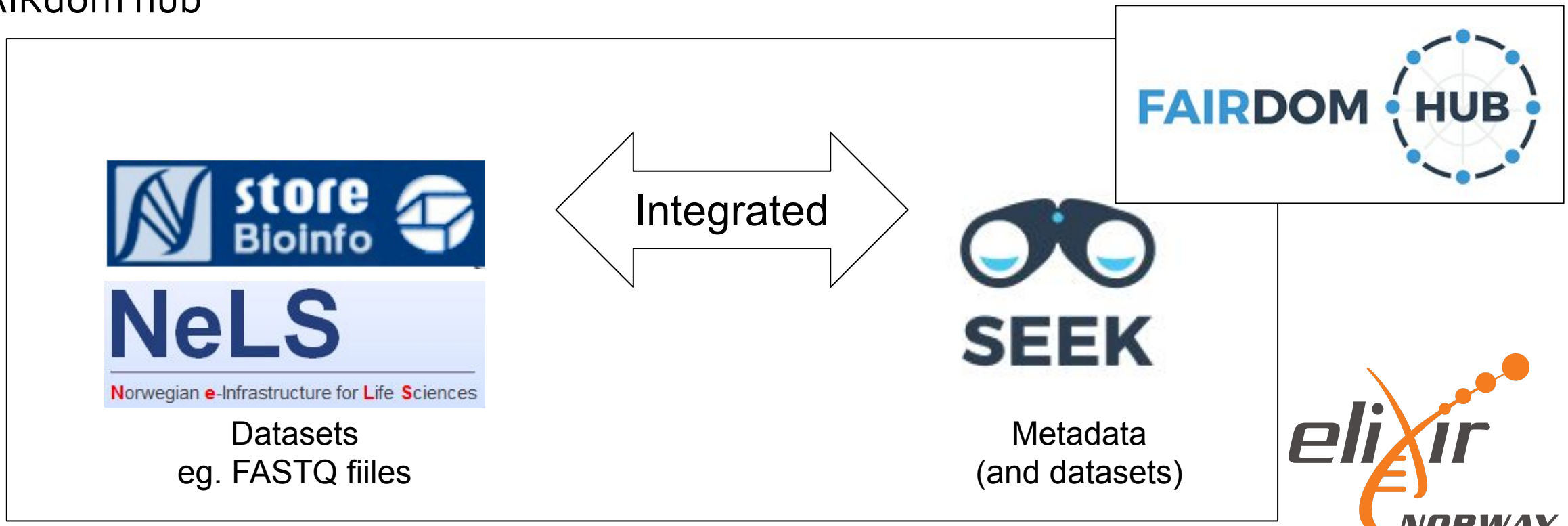
SEEK - sharing heterogeneous scientific research datasets, models or simulations, processes and research outcomes

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

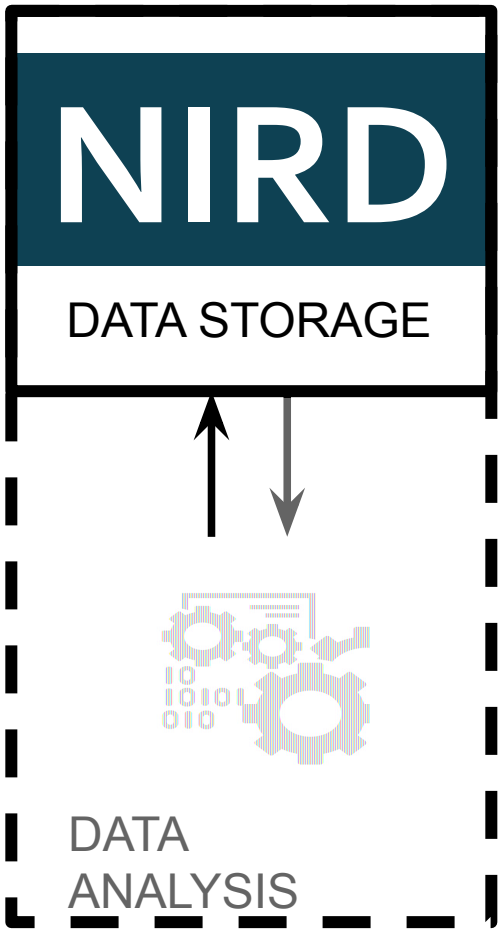
Enable collaborative projects

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*

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Data storage in NIRD – How to get access

Apply for a UNINETT SIGMA2 user.

Apply for a storage quota:

- **Category A:** Non-commercial projects with resources allocated through the Resource Allocation Committee (RFK) must contribute to the operational expenses of the service. This category should be used in applications to the Norwegian Research Council and other funders, except the EU.
- **Category B:** Non-commercial projects in need of Dedicated Resources, paying for capital and operational expenses.
- **Category C:** Commercial research and industry which will pay market price.
- **Category D:** For applications to the EU, as in-kind value.
- **Category 0:** Smaller projects using less than 200 000 CPU core hours pr. year or using less than 7 TB storage pr. year. If any organisation outside BOTT has an aggregated use for smaller projects with a value of more than 50 000 NOK, the organisation needs to contribute given 6 months' notice, for further future use of the infrastructure.

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

Contribution model: https://www.sigma2.no/user-contribution-model

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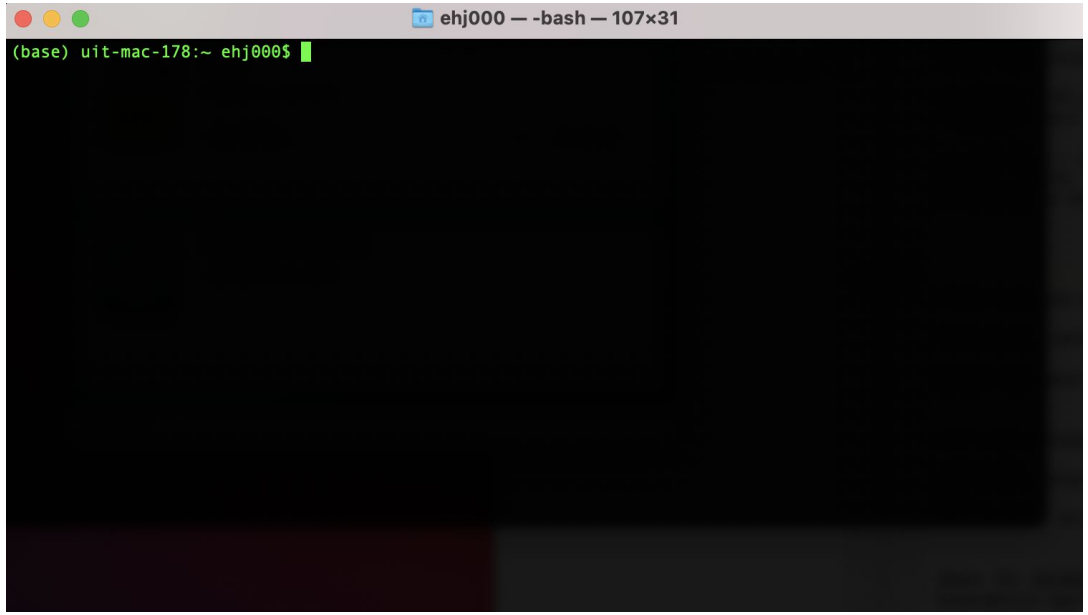
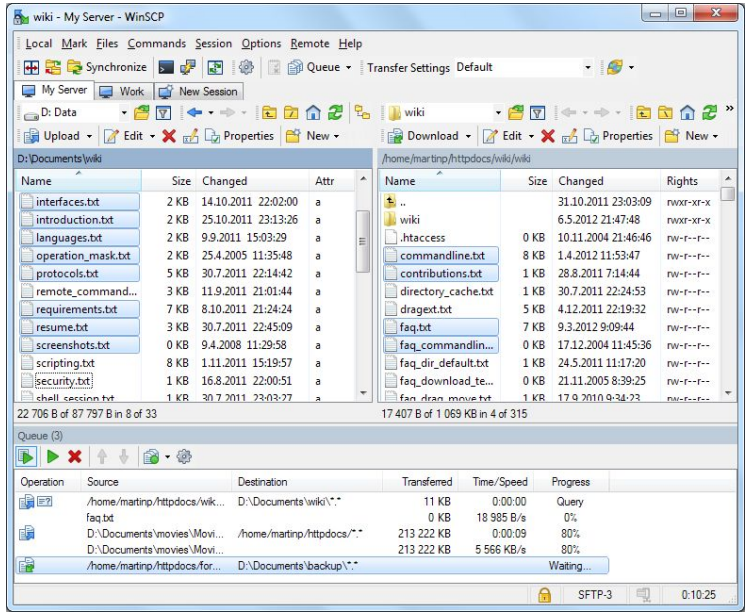
Access data storage in NIRD

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

Non-sensitive data

NeLS

Norwegian e-Infrastructure for Life Sciences

NIRD RESEARCH DATA ARCHIVE

DATA STORAGE

Sensitive data

TSD

SAFE

NTNU | HUNT Cloud

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Data storage in TSD

National service for sensitive data - developed and operated by UiO

TSD in general

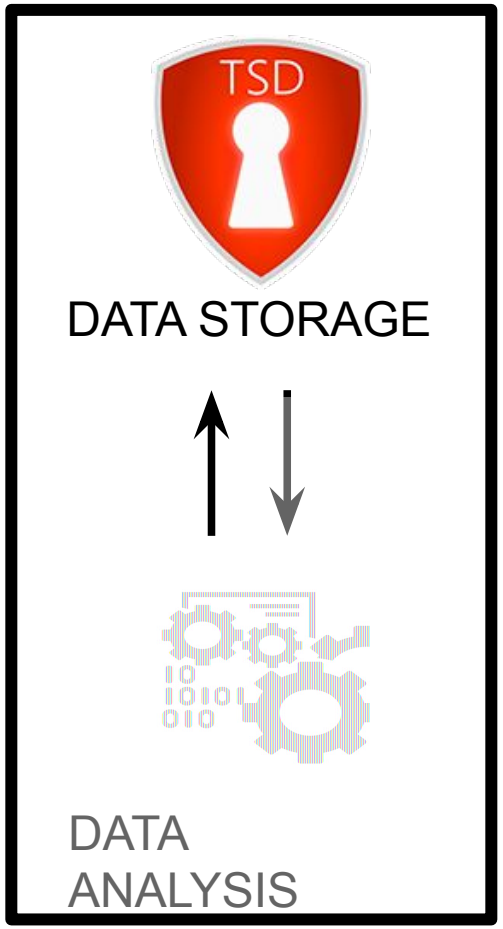
Available to all users with account

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

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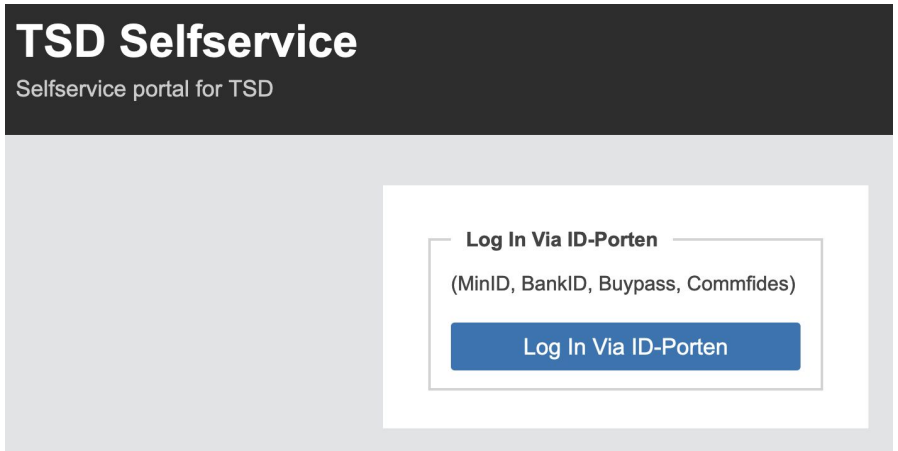
Data storage in TSD – How to get access

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



Apply for a TSD project through ELIXIR.NO: ELIXIR Norway has a quota in TSD that, and users can get subsidised quota through ELIXIR in TSD

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

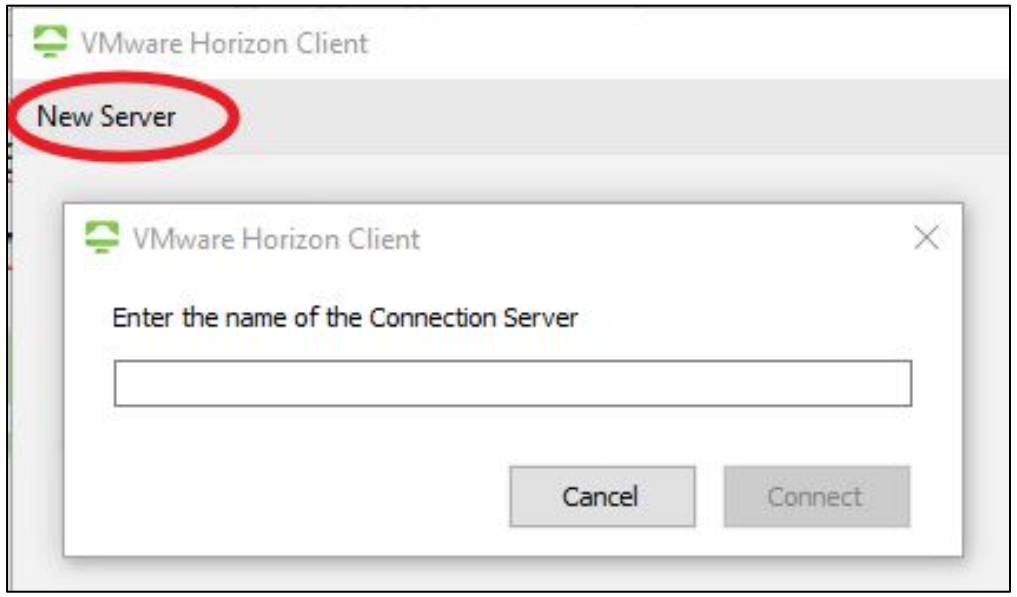
Apply for project: https://www.uio.no/tjenester/it/forskning/sensitiv/hjelp/start/registrer.html

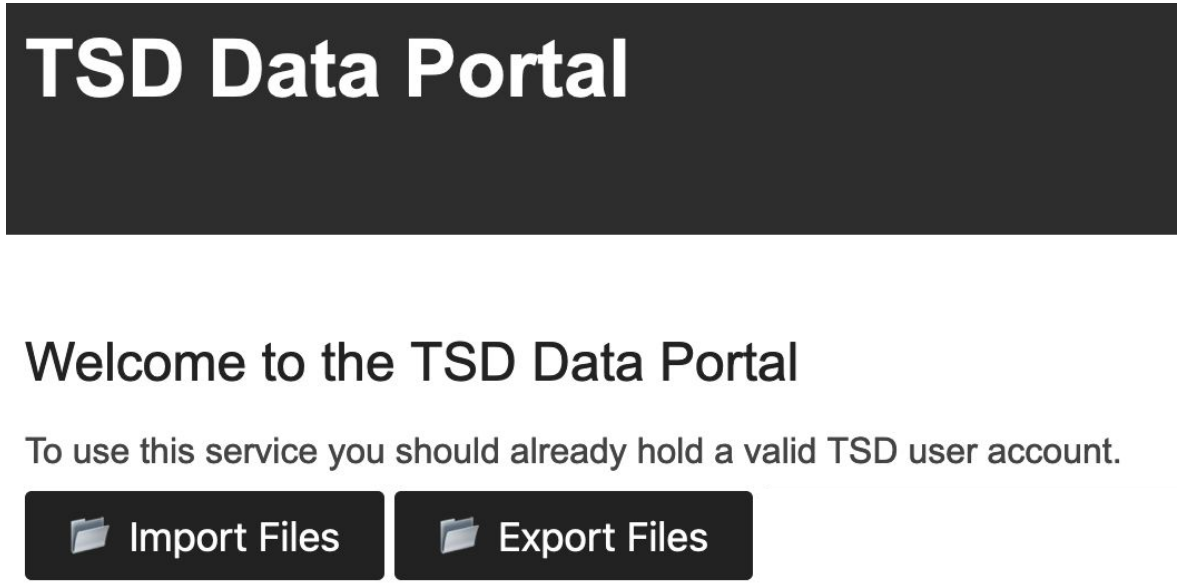
Wiki for usage: https://www.uio.no/tjenester/it/forskning/sensitiv/hjelp/start/index.html

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





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	✓	✓	✗	✓	✓	✗	✗	✗

*Direct access to the data and project management through the web browser

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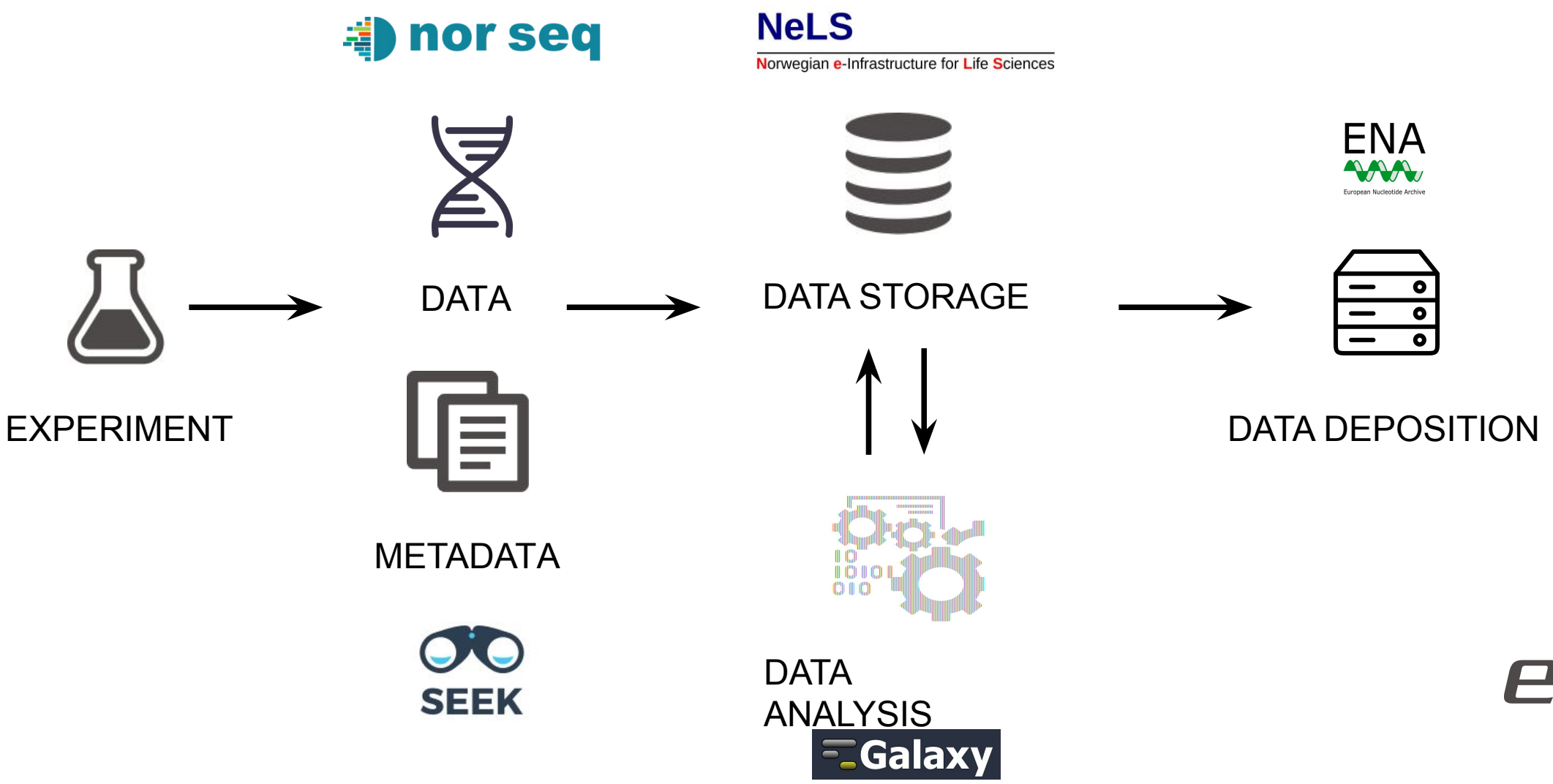
Example - Data flow/handle using ELIXIR Norway



Thank you!

elixir-norway.org

support@elixir.no

@elixirnorway