



Data Management by Design - common ground model

29 Jan 2019 16:02:08

Purpose

This report contains the modelling of common ground for research data management in a university setting. This is the result of work carried out in the Danish Datamanagement Forum activity Data Management by Design in 2018.

Reading through this report in its printed form may not be the best way to experience it. The information is far better presented by loading the model into an architecture model browser or using a web browser to view the online HTML version. Look at the projects GitHub page for descriptions of how best to browse the model from which this report is generated.

<https://github.com/Data-Management-by-Design/DMbD>

The Data Management by Design activity had participation from these Danish universities:

- Aalborg University
- The University of Southern Denmark
- Technical University of Denmark
- Copenhagen Business School
- University of Copenhagen

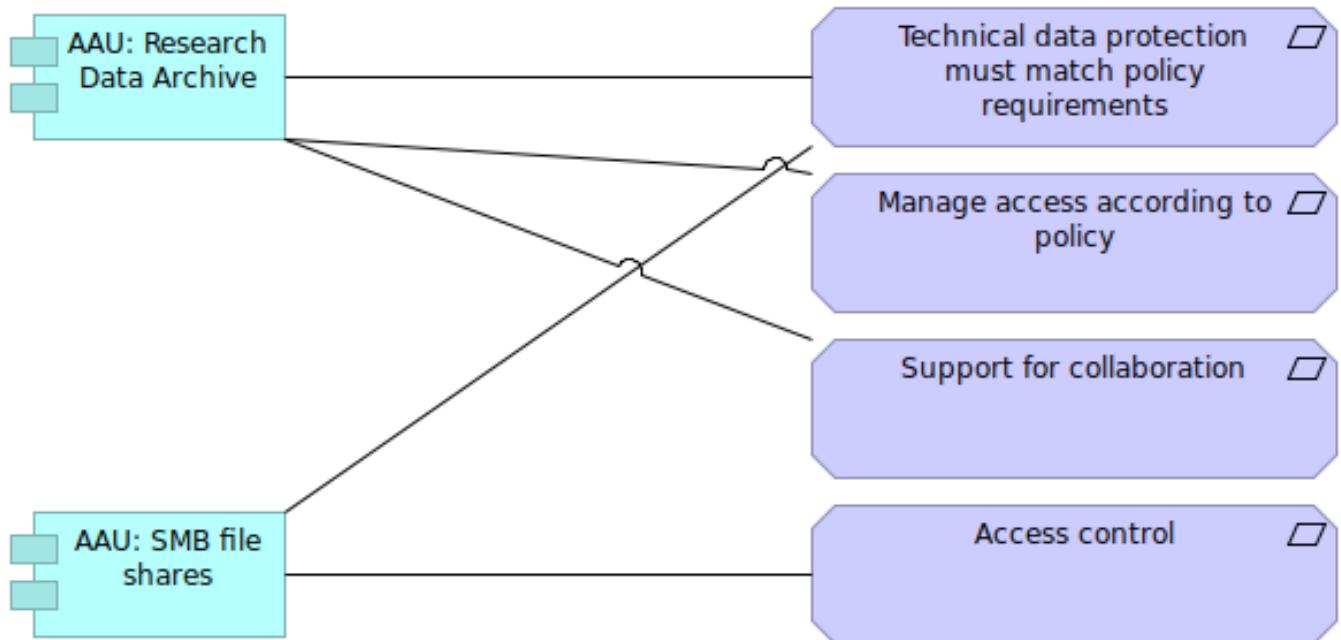
The activity was funded by Danish e-Infrastructure Cooperation (DeIC) and Denmark's Electronic Research Library (DEFF)

Notice: During the activity it was deemed most productive to only use a small subset of the Archimate modelling language, namely; drivers, goals, stakeholders, and requirements. The modelling of relations has been reduced to only model simple association, and where it is very obvious compositions. The simplified modelling is carried through to this report. It is the intention that this will be used as the starting point for a more evolved model of the common ground for research data management in a university setting.

Views

AAU Examples

Requirements Realization viewpoint



Documentation

Viewpoint showing examples of matching the requirements for research data management infrastructures that has been identified through the DMBD activity to some existing data services.

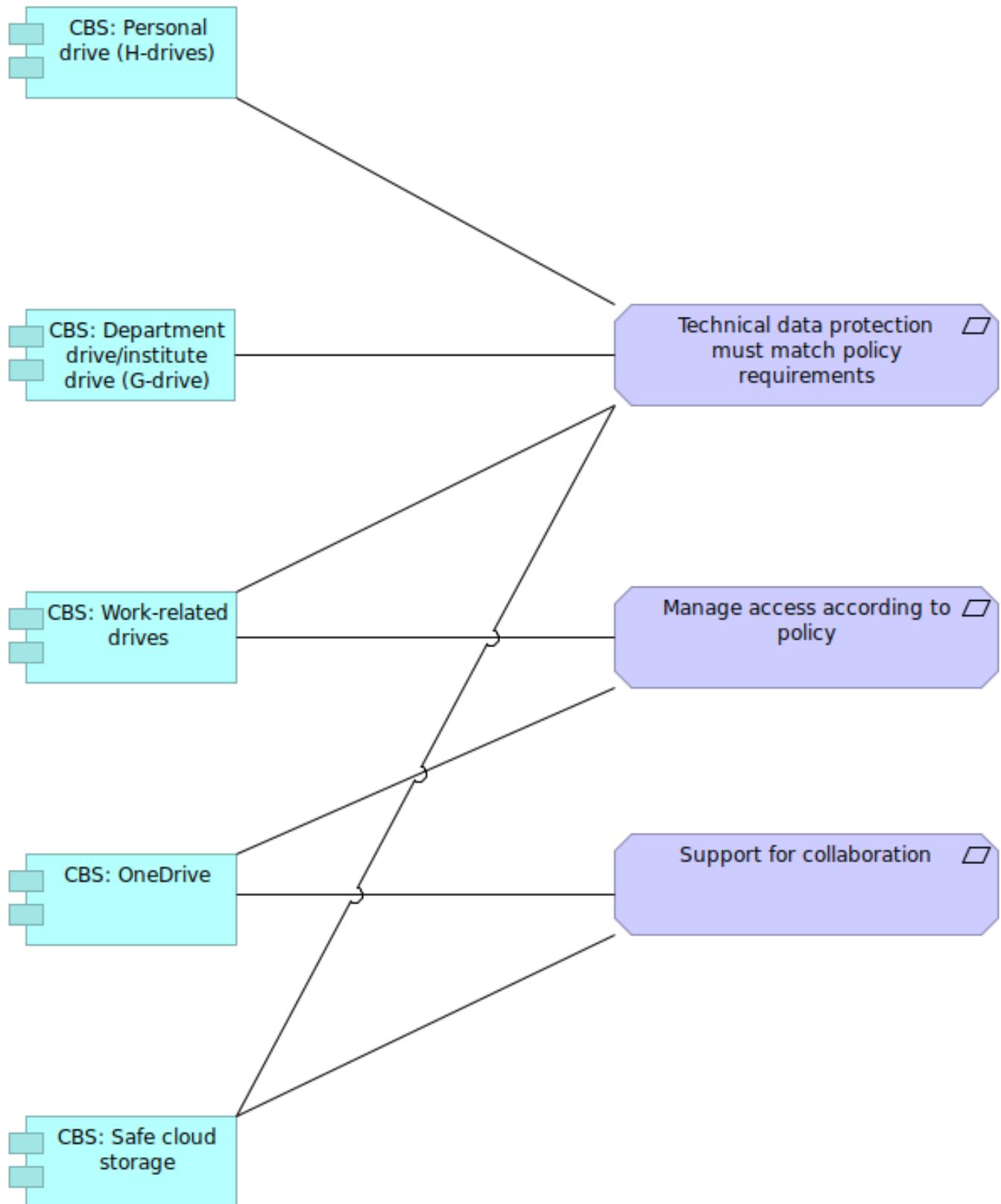
This view is based on examples of infrastructure services implemented at Aalborg University (AAU) late 2018.

Elements

Element	Type
AAU: Research Data Archive	Application Component
AAU: SMB file shares	Application Component
Access control	Requirement
Manage access according to policy	Requirement
Support for collaboration	Requirement
Technical data protection must match policy requirements	Requirement

CBS Examples

Requirements Realization viewpoint



Documentation

Viewpoint showing examples of matching the requirements for research data management infrastructures that has been identified through the DMbD activity to some existing data services.

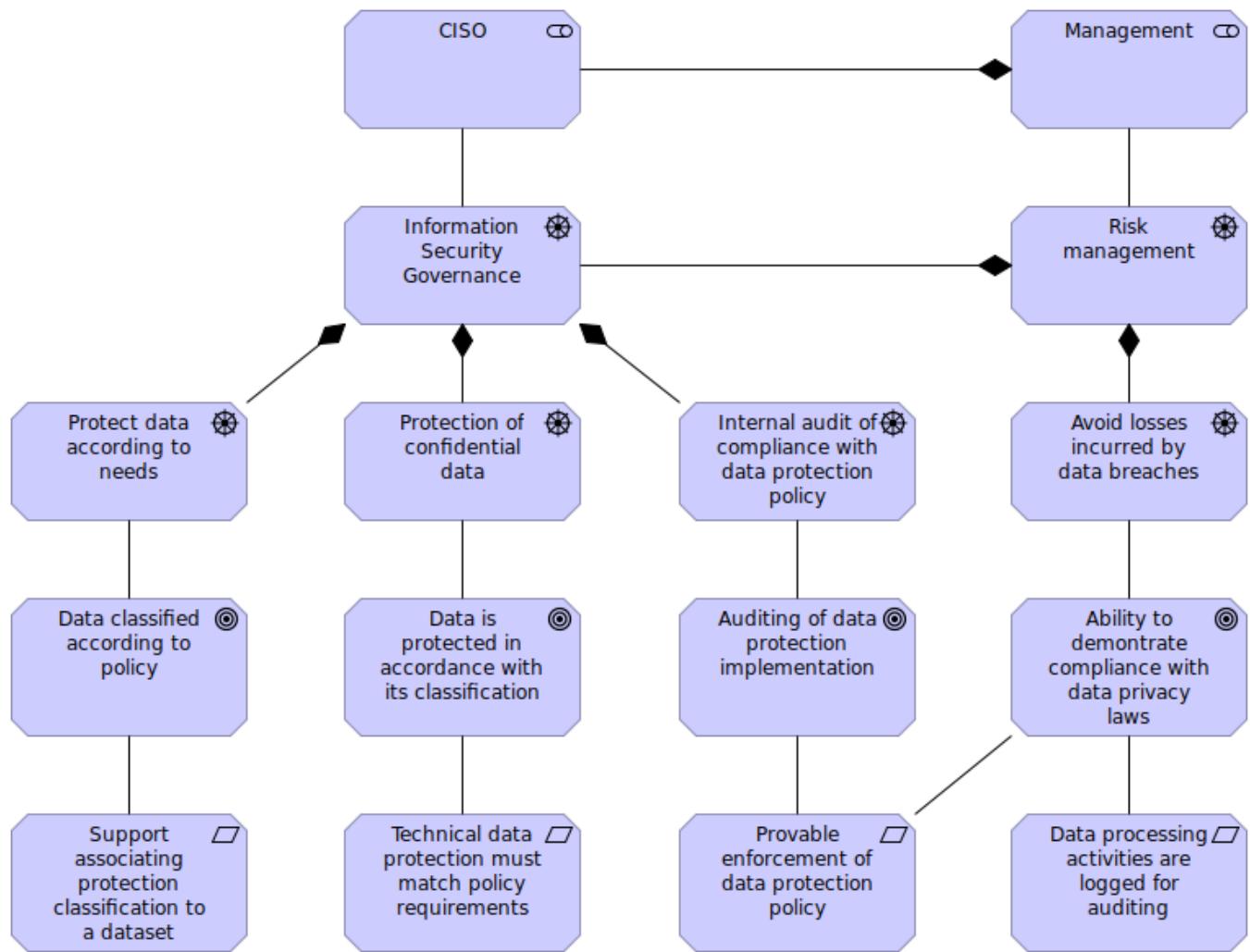
This view is based on examples of infrastructure services implemented at Copenhagen Business School (CBS) late 2018.

Elements

Element	Type
CBS: Department drive/institute drive (G-drive)	Application Component
CBS: OneDrive	Application Component
CBS: Personal drive (H-drives)	Application Component
CBS: Safe cloud storage	Application Component
CBS: Work-related drives	Application Component
Manage access according to policy	Requirement
Support for collaboration	Requirement
Technical data protection must match policy requirements	Requirement

Chief Information Security Officer

Motivation viewpoint



Documentation

CISO viewpoint for research data management

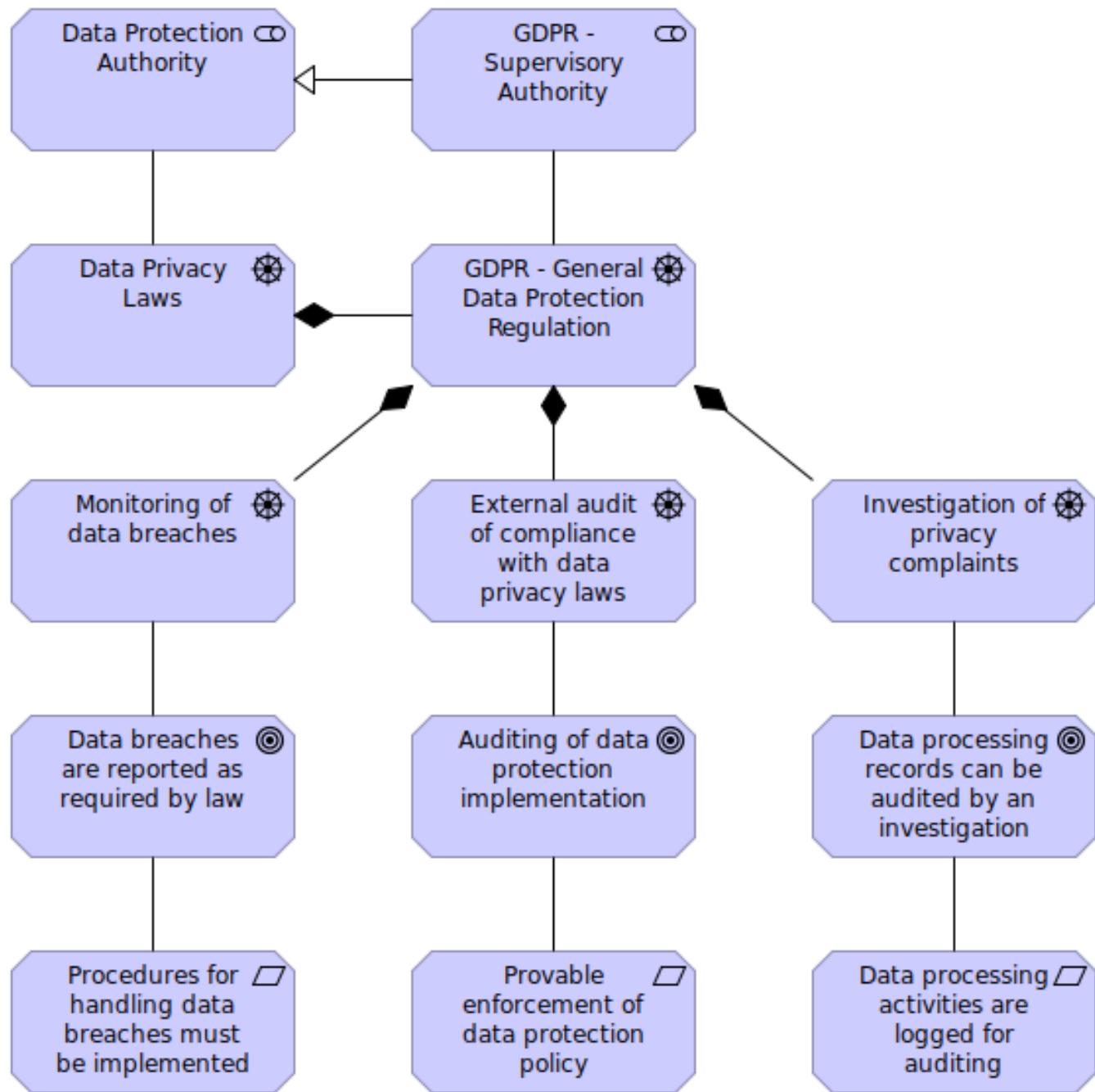
Elements

Element	Type
Ability to demonstrate compliance with data privacy laws	Goal
Auditing of data protection implementation	Goal
Avoid losses incurred by data breaches	Driver
CISO	Stakeholder
Data classified according to policy	Goal
Data is protected in accordance with its classification	Goal
Data processing activities are logged for auditing	Requirement
Information Security Governance	Driver
Internal audit of compliance with data protection policy	Driver

Element	Type
Management	Stakeholder
Protect data according to needs	Driver
Protection of confidential data	Driver
Provable enforcement of data protection policy	Requirement
Risk management	Driver
Support associating protection classification to a dataset	Requirement
Technical data protection must match policy requirements	Requirement

Data Protection Authority

Motivation viewpoint



Documentation

Data protection authority viewpoint for research data management.

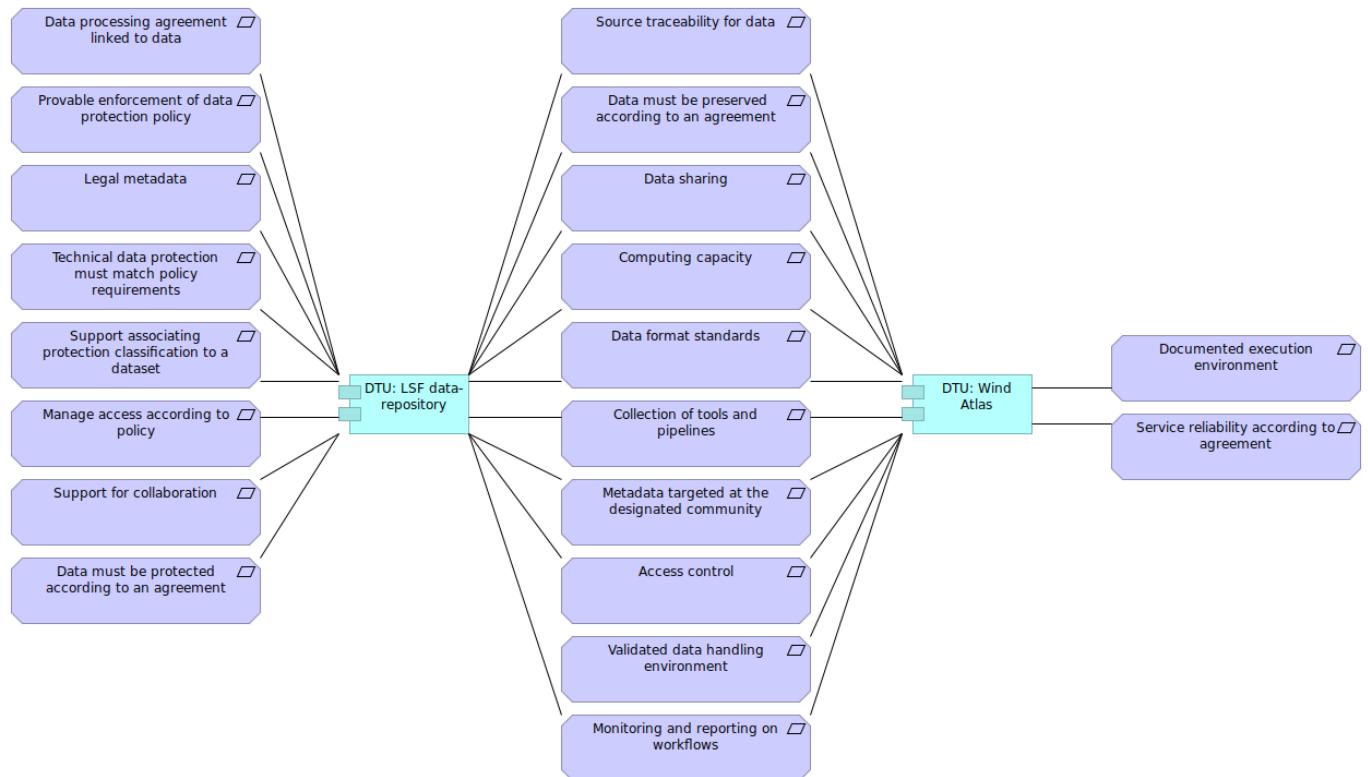
The national data protection authority is charged with enforcing data protection legislation like the GDPR

Elements

Element	Type
Auditing of data protection implementation	Goal
Data breaches are reported as required by law	Goal
Data Privacy Laws	Driver
Data processing activities are logged for auditing	Requirement
Data processing records can be audited by an investigation	Goal
Data Protection Authority	Stakeholder
External audit of compliance with data privacy laws	Driver
GDPR - General Data Protection Regulation	Driver
GDPR - Supervisory Authority	Stakeholder
Investigation of privacy complaints	Driver
Monitoring of data breaches	Driver
Procedures for handling data breaches must be implemented	Requirement
Provable enforcement of data protection policy	Requirement

DTU Examples

Requirements Realization viewpoint



Documentation

Viewpoint showing existing data services addressing the infrastructure requirements for research data management identified through the DMbD activity.

This view is based on a subset of the infrastructure services implemented or planned at the Technical University of Denmark (DTU) late 2018.

DTU has several digital infrastructures focused on serving specific research areas. This is a narrow focus is on services relating to the research infrastructure services available to specific research projects at Risø Campus.

Large Scale Facility (LSF henceforth)

The Large Scale Facility at Risø Campus enables research projects and companies to conduct non-destructive stress impact tests on wind turbine blades at large scale, in order to validate models and derive insight into the feasibility of a given blade for production. For pre-test analysis, finite element simulation models are employed. During experiments blade conditions are monitored e.g. with strain gauges, thermometer, accelerometer, and high-speed footage to create a realtime digital twin, effective metadata tagging for results is needed. Carrying out experiments is expensive and hence there is an economical incentive to properly document experimental setting and results to avoid duplicating work. This entails standardisation of data formats across- and within stakeholder institutions, i.e. a standardised catalogue of data and thorough metadata is required. Though at the same time, depending on the funding source, vendors must/cannot be guaranteed exclusive access to the dataset, so the standardised data repository will need to accommodate granular permission requirements depending on contractual obligations.

Wind atlas (WA henceforth)

The New European Wind Atlas project is producing high-resolution wind resource maps for Europe, made freely available for use as bases for wind farm planning at sites of interest. These are generated from global meteorological datasets and high-resolution land surface data using an open source regional weather model in combination with a high-resolution microscale flow model. The project offers a web interface similar to Google Maps, where the user can do ad-hoc analysis on the servers hosting the data or interactively mark a range of variables for an area of interest and download the data for further processing locally.

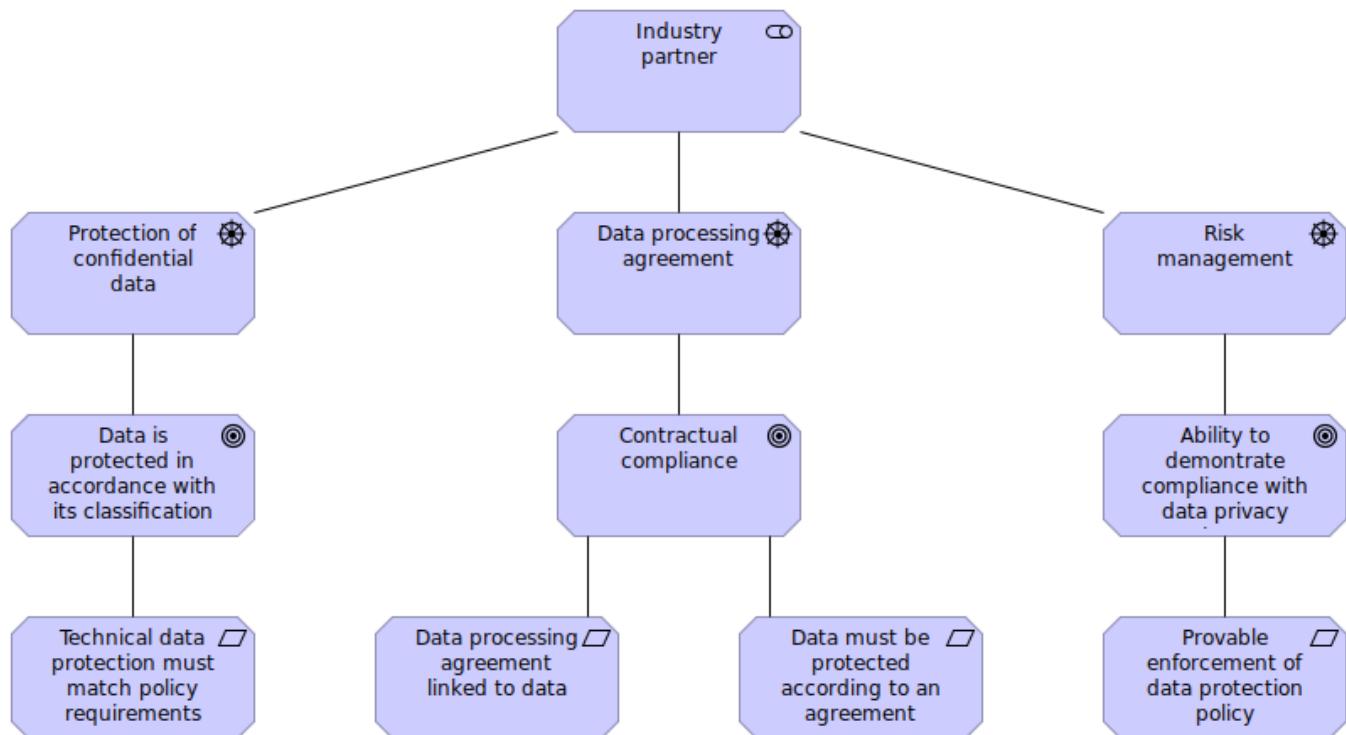
Elements

Element	Type
Access control	Requirement
Collection of tools and pipelines	Requirement
Computing capacity	Requirement
Data format standards	Requirement

Element	Type
Data must be preserved according to an agreement	Requirement
Data must be protected according to an agreement	Requirement
Data processing agreement linked to data	Requirement
Data sharing	Requirement
Documented execution environment	Requirement
DTU: LSF data-repository	Application Component
DTU: Wind Atlas	Application Component
Legal metadata	Requirement
Manage access according to policy	Requirement
Metadata targeted at the designated community	Requirement
Monitoring and reporting on workflows	Requirement
Provable enforcement of data protection policy	Requirement
Service reliability according to agreement	Requirement
Source traceability for data	Requirement
Support associating protection classification to a dataset	Requirement
Support for collaboration	Requirement
Technical data protection must match policy requirements	Requirement
Validated data handling environment	Requirement

Industry Partner

Motivation viewpoint



Documentation

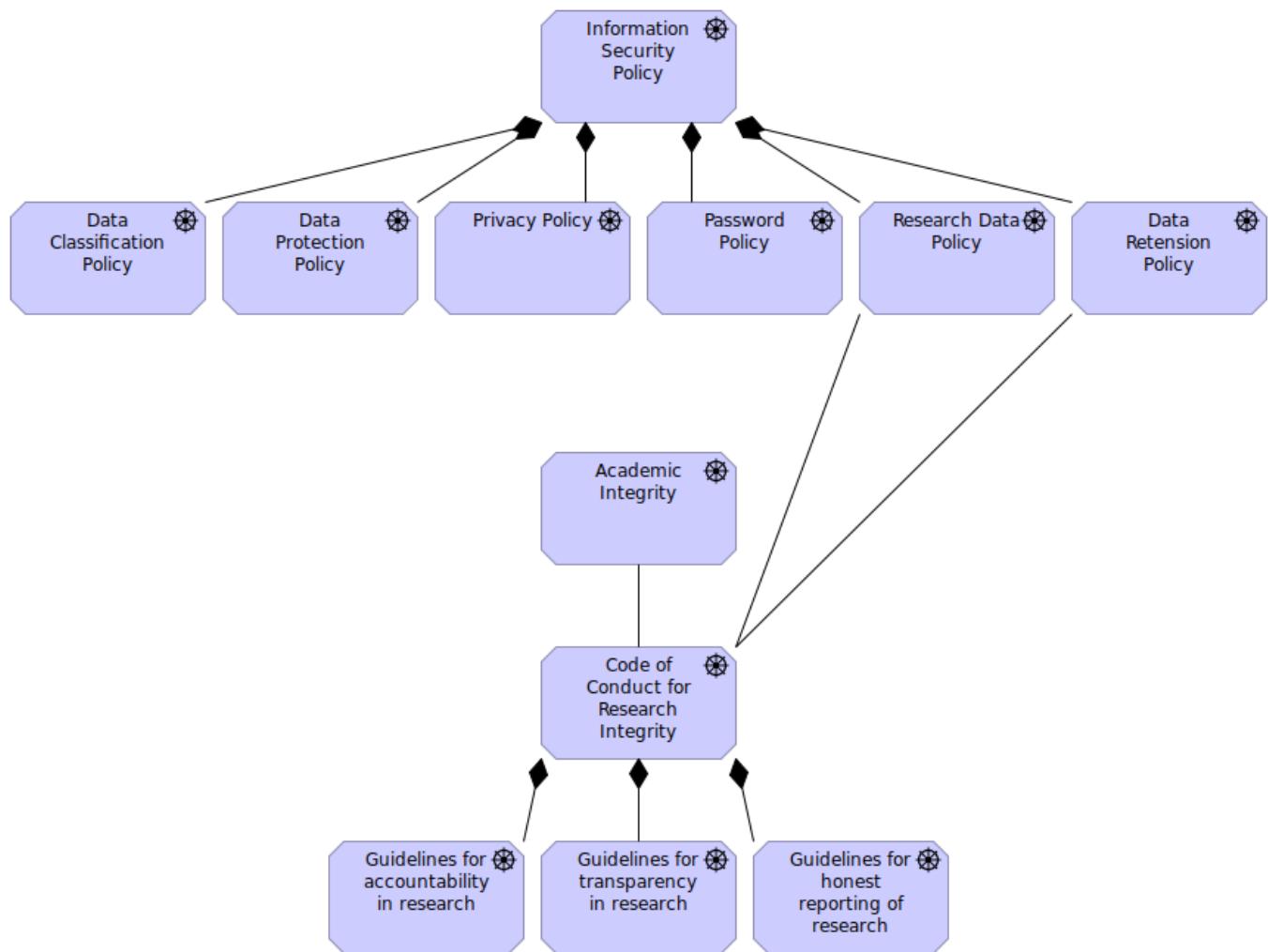
Industry partner viewpoint for research data management

Elements

Element	Type
Ability to demonstrate compliance with data privacy laws	Goal
Contractual compliance	Goal
Data is protected in accordance with its classification	Goal
Data must be protected according to an agreement	Requirement
Data processing agreement	Driver
Data processing agreement linked to data	Requirement
Industry partner	Stakeholder
Protection of confidential data	Driver
Provable enforcement of data protection policy	Requirement
Risk management	Driver
Technical data protection must match policy requirements	Requirement

Local Policies

Motivation viewpoint



Documentation

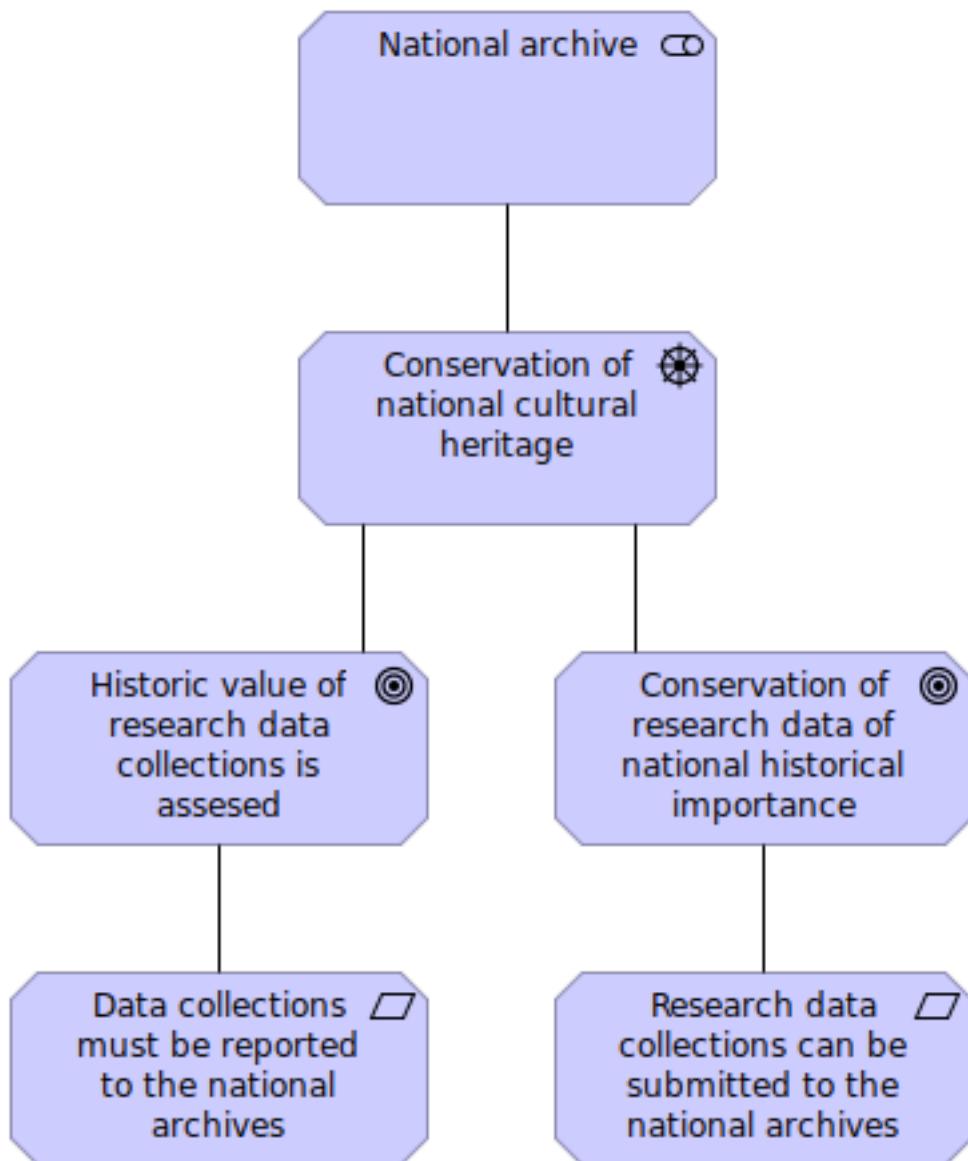
Policies at the university level influencing or driving research data management.

Elements

Element	Type
Academic Integrity	Driver
Code of Conduct for Research Integrity	Driver
Data Classification Policy	Driver
Data Protection Policy	Driver
Data Retension Policy	Driver
Guidelines for accountability in research	Driver
Guidelines for honest reporting of research	Driver
Guidelines for transparency in research	Driver
Information Security Policy	Driver
Password Policy	Driver
Privacy Policy	Driver
Research Data Policy	Driver

National Archive

Motivation viewpoint



Documentation

National archive viewpoint for research data management.

The national archive determines if data is of national historic importance and if and how it should be preserved for posterity.

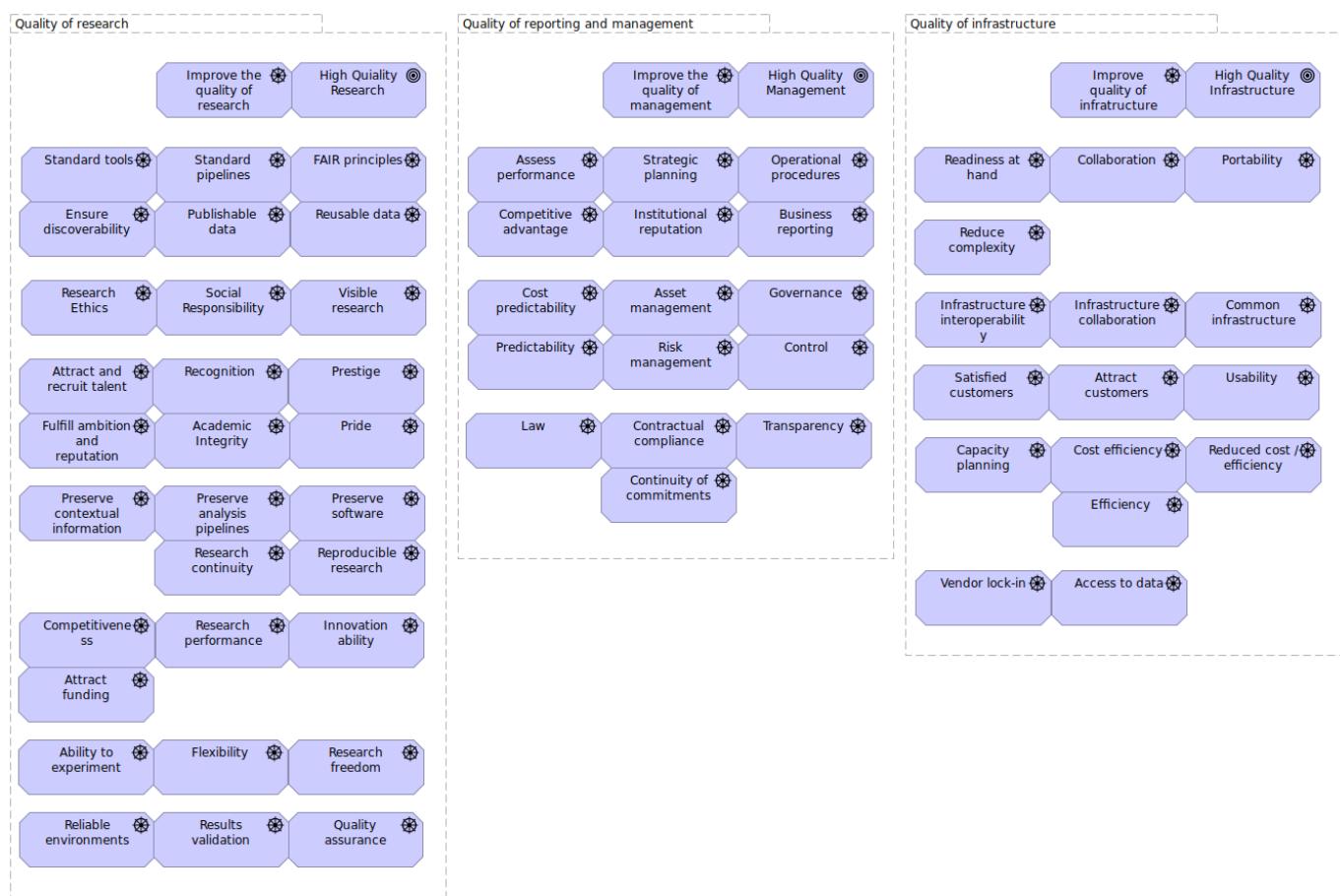
Elements

Element	Type
Conservation of national cultural heritage	Driver
Conservation of research data of national historical importance	Goal
Data collections must be reported to the national	Requirement

Element	Type
archives	
Historic value of research data collections is assesed	Goal
National archive	Stakeholder
Research data collections can be submitted to the national archives	Requirement

Raw data: Drivers

No viewpoint



Documentation

During the three workshops in the DMbD project more than a hundred possible drivers related to research data management were found. The raw findings varied widely in abstraction level and detail. After an initial effort to harmonize and eliminate duplicates this was reduced to about 60 drivers that were entered as ArchiMate driver elements.

Drivers that seem related have been visually grouped together.

A rough classification of the drivers have been made by whether they mostly drive the quality of research, management or infrastructure.

It is apparent that some of these should probably be modeled as goals and be replaced by the corresponding drivers when the views for the individual subject domains are created at a later stage.

Elements

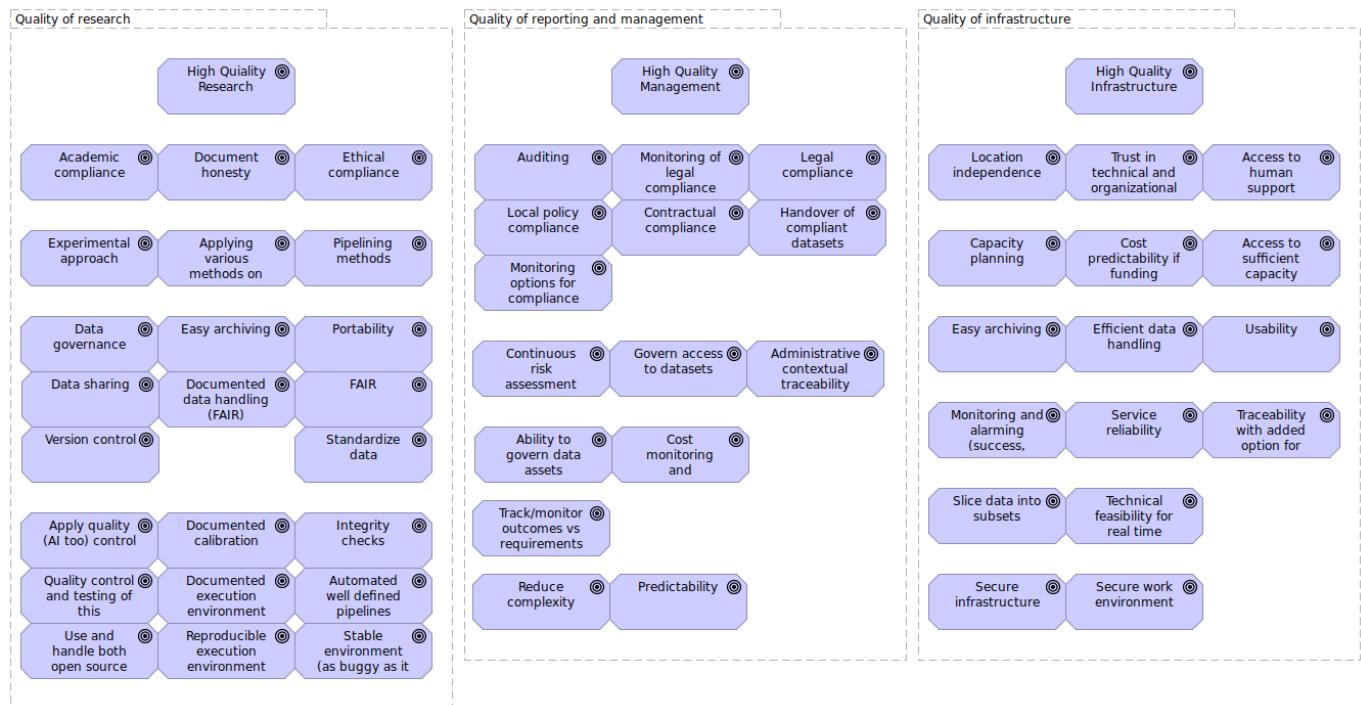
Element	Type
Ability to experiment	Driver
Academic Integrity	Driver

Element	Type
Access to data	Driver
Assess performance	Driver
Asset management	Driver
Attract and recruit talent	Driver
Attract customers	Driver
Attract funding	Driver
Business reporting	Driver
Capacity planning	Driver
Collaboration	Driver
Common infrastructure	Driver
Competitive advantage	Driver
Competitiveness	Driver
Continuity of commitments	Driver
Contractual compliance	Driver
Control	Driver
Cost efficiency	Driver
Cost predictability	Driver
Efficiency	Driver
Ensure discoverability	Driver
FAIR principles	Driver
Flexibility	Driver
Fulfill ambition and reputation	Driver
Governance	Driver
High Quality Infrastructure	Goal
High Quality Management	Goal
High Quality Research	Goal
Improve quality of infrastructure	Driver
Improve the quality of management	Driver
Improve the quality of research	Driver
Infrastructure collaboration	Driver
Infrastructure interoperability	Driver
Innovation ability	Driver
Institutional reputation	Driver
Law	Driver
Operational procedures	Driver
Portability	Driver
Predictability	Driver
Preserve analysis pipelines	Driver
Preserve contextual information	Driver
Preserve software	Driver
Prestige	Driver
Pride	Driver
Publishable data	Driver
Quality assurance	Driver

Element	Type
Quality of infrastructure	Grouping
Quality of reporting and management	Grouping
Quality of research	Grouping
Readiness at hand	Driver
Recognition	Driver
Reduce complexity	Driver
Reduced cost / efficiency	Driver
Reliable environments	Driver
Reproducible research	Driver
Research continuity	Driver
Research Ethics	Driver
Research freedom	Driver
Research performance	Driver
Results validation	Driver
Reusable data	Driver
Risk management	Driver
Satisfied customers	Driver
Social Responsibility	Driver
Standard pipelines	Driver
Standard tools	Driver
Strategic planning	Driver
Transparency	Driver
Usability	Driver
Vendor lock-in	Driver
Visible research	Driver

Raw data: Goals

No viewpoint



Documentation

During the three workshops in the DMbD project about 30 possible goals related to research data management were found. It was apparent that quite a few of the statements that had been described as "drivers" should probably be modelled as goals. After adding these as goals and an effort to harmonize abstraction levels about 50 goals have been identified.

Goals that seem related have been visually grouped together.

A rough classification of the goals have been made by whether they mostly relate to research, management or infrastructure.

It is possible that a few of these should be modeled as drivers. It can be difficult to formulate drivers and goals as stand-alone elements, but this becomes much clearer during the detailed modeling of different subject domains.

Elements

Element	Type
Ability to govern data assets	Goal
Academic compliance	Goal
Access to human support	Goal
Access to sufficient capacity	Goal
Administrative contextual traceability	Goal
Apply quality (AI too) control	Goal

Element	Type
Applying various methods on data	Goal
Auditing	Goal
Automated well defined pipelines	Goal
Capacity planning	Goal
Continuous risk assessment	Goal
Contractual compliance	Goal
Cost monitoring and optimization	Goal
Cost predictability if funding infrastructural needs	Goal
Data governance	Goal
Data sharing	Goal
Document honesty	Goal
Documented calibration	Goal
Documented data handling (FAIR)	Goal
Documented execution environment	Goal
Easy archiving	Goal
Easy archiving	Goal
Efficient data handling	Goal
Ethical compliance	Goal
Experimental approach	Goal
FAIR	Goal
Govern access to datasets	Goal
Handover of compliant datasets	Goal
High Quality Infrastructure	Goal
High Quality Management	Goal
High Quiality Research	Goal
Integrity checks	Goal
Legal compliance	Goal
Local policy compliance	Goal
Location independence	Goal
Monitoring and alarming (success, error)	Goal
Monitoring of legal compliance	Goal
Monitoring options for compliance	Goal
Pipelining methods	Goal
Portability	Goal
Predictability	Goal
Quality control and testing of this	Goal
Quality of infrastructure	Grouping
Quality of reporting and management	Grouping
Quality of research	Grouping
Reduce complexity	Goal
Reproducible execution environment	Goal
Secure infrastructure	Goal
Secure work environment	Goal
Service reliability	Goal

Element	Type
Slice data into subsets	Goal
Stable environment (as buggy as it was)	Goal
Standardize data	Goal
Technical feasibility for real time media	Goal
Traceability with added option for availability	Goal
Track/monitor outcomes vs requirements and/or promises	Goal
Trust in technical and organizational setup Accessible environment "Research related goals" (peger på samme krav som forskerne)	Goal
Usability	Goal
Use and handle both open source and commercial software	Goal
Version control	Goal

Raw data: Requirements

No viewpoint



Elements

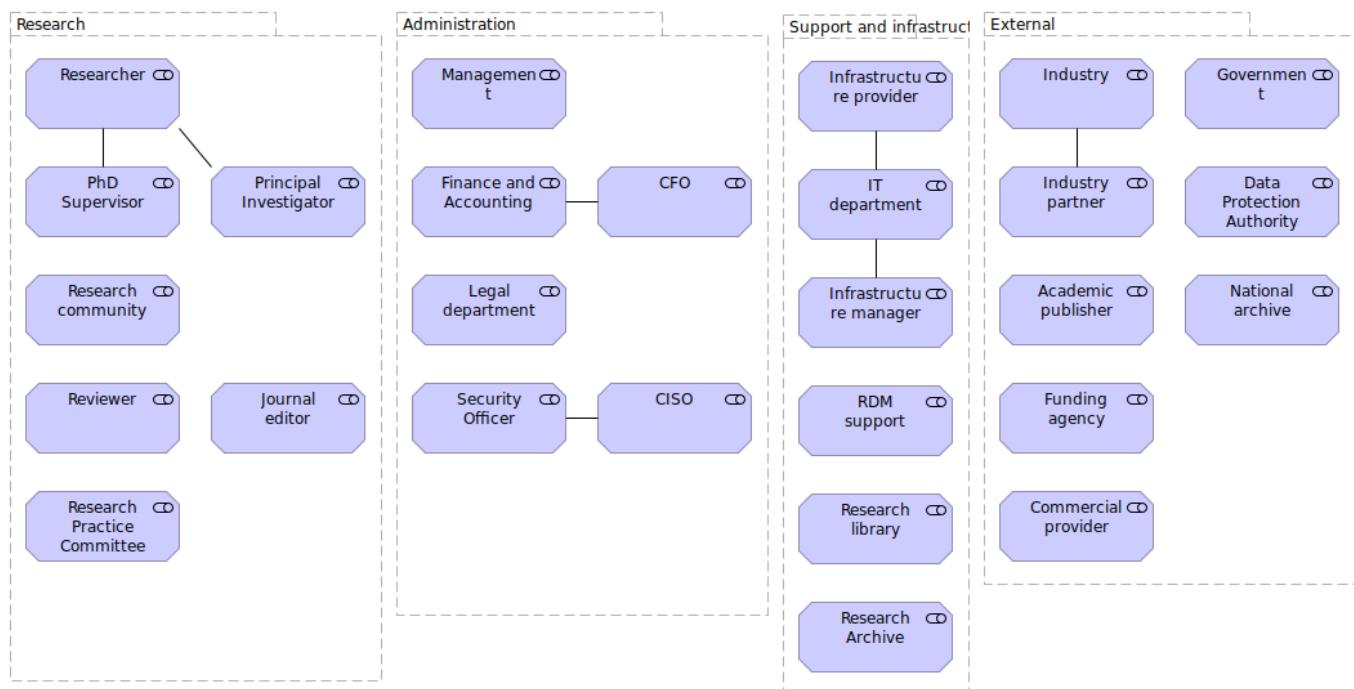
Element	Type
(Semi)automated ingestion	Requirement
Ability to test and inspect	Requirement
Academic compliance	Requirement
Access control	Requirement
Appropriate API's for data handling	Requirement
Asset management	Grouping
Asset overview	Requirement
Auditing at all levels	Requirement
Automated well defined pipelines	Requirement
Automation of data processing	Grouping
Availability of software in environment	Requirement
Capacity planning and assurance	Requirement
Certification ability	Requirement
Citable software, equipment etc.	Requirement
Clearly defined roles and responsibilities	Requirement
Compliance	Grouping
Compliance documentation	Requirement
Continuously available data collection	Requirement
Contractual compliance	Requirement
Curation ability	Requirement
Data according to specification	Requirement
Data ingestion	Grouping
Data Management	Grouping
Data must be preserved according to an agreement	Requirement
Data quality	Grouping
Data sharing	Requirement
Dataprotection	Grouping
Document and inspect data processing steps	Requirement
Documentation of data pipeline	Grouping
Documented calibration	Requirement
Documented execution environment	Requirement
Documenting assets with administrative contextual traceability	Requirement
Ease of use	Grouping
Ease of use	Requirement
Enforce policy	Requirement
Ethical compliance	Requirement
Evaluate and control risks	Requirement
Flexible ingestion methods	Requirement
Handling of software licenses	Requirement
Identify and notify and log problems, both historic and forecasted	Requirement

Element	Type
Identify dataset for reference	Requirement
Infrastructure interoperability and integration	Requirement
Integrity checks	Requirement
Legal compliance	Requirement
Local policy compliance	Requirement
Logging ability	Requirement
Manage access according to policy	Requirement
Monitoring ability	Requirement
Monitoring and reporting on workflows	Requirement
Monitoring capabilities	Grouping
No known security vulnerabilities	Requirement
Portability	Requirement
Publishable data	Requirement
Push to archive	Requirement
Push to publication	Requirement
Quality control and verification	Requirement
Reporting ability	Requirement
Reproducability of process	Grouping
Reproducible execution environment	Requirement
Resource management	Grouping
Retention policy compliance	Requirement
Reusable data	Requirement
Reuse data	Requirement
Reuse data processing environment	Requirement
Reuse data workflows	Requirement
Reuseability	Grouping
Reuseability	Requirement
Service reliability according to agreement	Requirement
Slice data into subsets	Requirement
Software management	Grouping
Source traceability for assets	Requirement
Source traceability for data	Requirement
Stable environment (as buggy as it was)	Requirement
Standardization	Requirement
Sufficient technical capability of platform according to research scenario	Requirement
Support for experimentation	Requirement
Support for external collaboration	Requirement
Synchronized working environment across users	Requirement
Technical isolation (the lab idea)	Requirement
Technical support capabilities	Grouping
Transfer data to/from the environment	Requirement
Transparent and predictable economy	Requirement
Transparent compliance levels (e.g. GDPR)	Requirement
Validated data handling environment	Requirement

Element	Type
Validation of data transformations	Grouping
Verifiability of transfer	Requirement
Version control of data	Requirement
Version control of software environment	Requirement

Raw data: Stakeholders (alternative classification)

No viewpoint



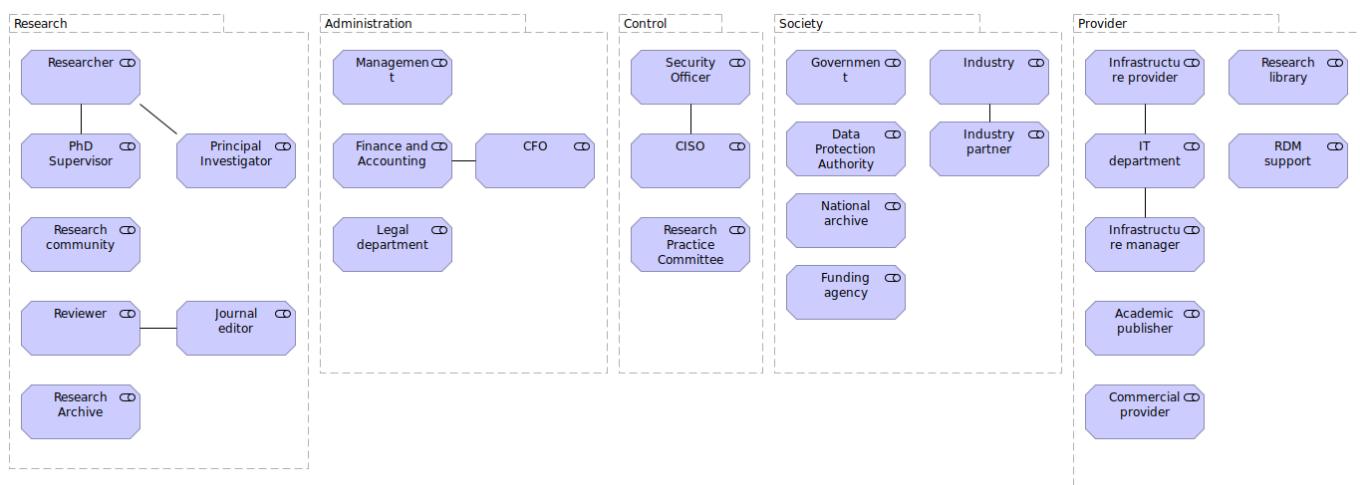
Elements

Element	Type
Academic publisher	Stakeholder
Administration	Grouping
CFO	Stakeholder
CISO	Stakeholder
Commercial provider	Stakeholder
Data Protection Authority	Stakeholder
External	Grouping
Finance and Accounting	Stakeholder
Funding agency	Stakeholder
Government	Stakeholder
Industry	Stakeholder
Industry partner	Stakeholder
Infrastructure manager	Stakeholder
Infrastructure provider	Stakeholder
IT department	Stakeholder
Journal editor	Stakeholder
Legal department	Stakeholder
Management	Stakeholder
National archive	Stakeholder
PhD Supervisor	Stakeholder
Principal Investigator	Stakeholder
RDM support	Stakeholder
Research	Grouping

Element	Type
Research Archive	Stakeholder
Research community	Stakeholder
Research library	Stakeholder
Research Practice Committee	Stakeholder
Researcher	Stakeholder
Reviewer	Stakeholder
Security Officer	Stakeholder
Support and infrastructure	Grouping

Raw data: Stakeholders (ws classification)

No viewpoint



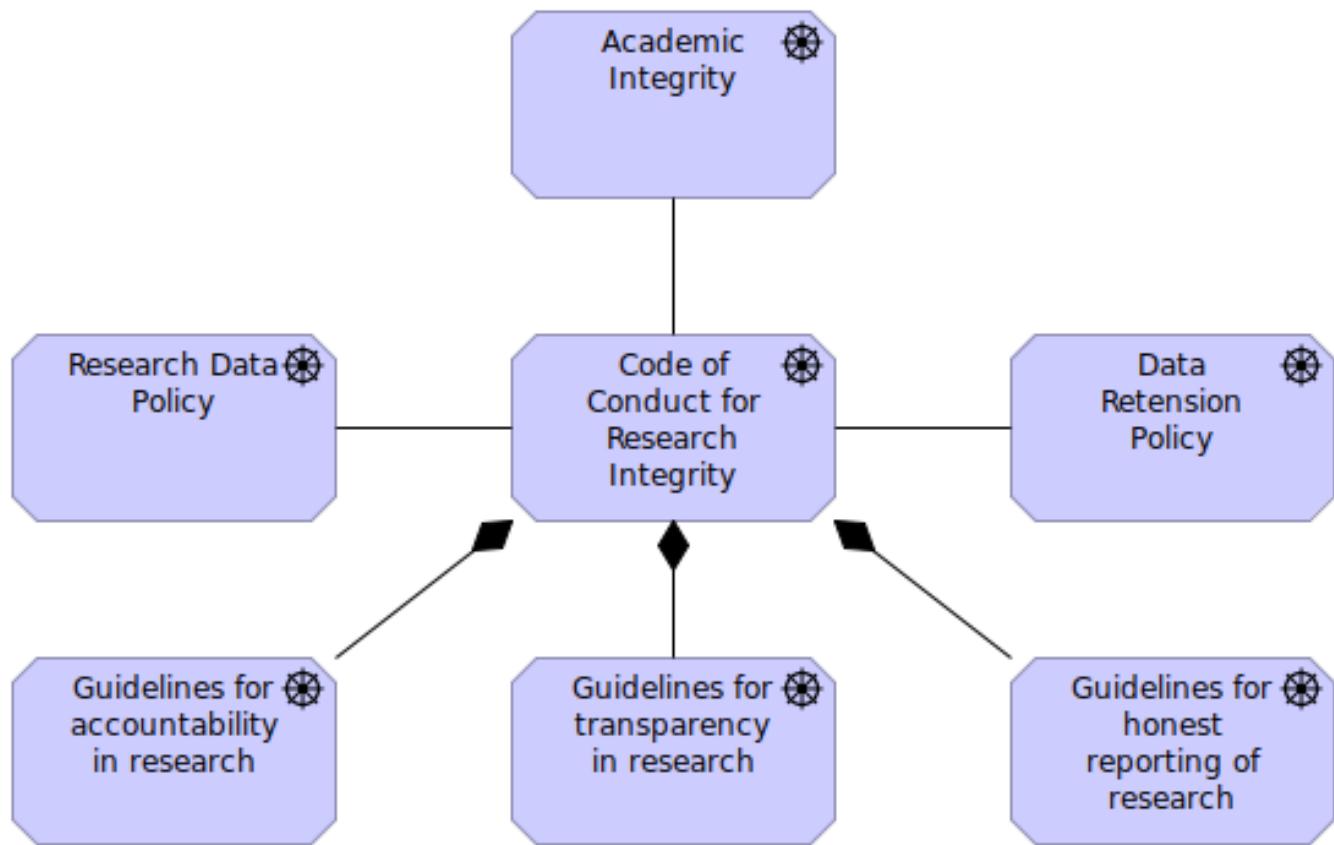
Elements

Element	Type
Academic publisher	Stakeholder
Administration	Grouping
CFO	Stakeholder
CISO	Stakeholder
Commercial provider	Stakeholder
Control	Grouping
Data Protection Authority	Stakeholder
Finance and Accounting	Stakeholder
Funding agency	Stakeholder
Government	Stakeholder
Industry	Stakeholder
Industry partner	Stakeholder
Infrastructure manager	Stakeholder
Infrastructure provider	Stakeholder
IT department	Stakeholder
Journal editor	Stakeholder
Legal department	Stakeholder
Management	Stakeholder
National archive	Stakeholder
PhD Supervisor	Stakeholder
Principal Investigator	Stakeholder
Provider	Grouping
RDM support	Stakeholder
Research	Grouping
Research Archive	Stakeholder
Research community	Stakeholder
Research library	Stakeholder
Research Practice Committee	Stakeholder

Element	Type
Researcher	Stakeholder
Reviewer	Stakeholder
Security Officer	Stakeholder
Society	Grouping

Research: Academic integrity

No viewpoint

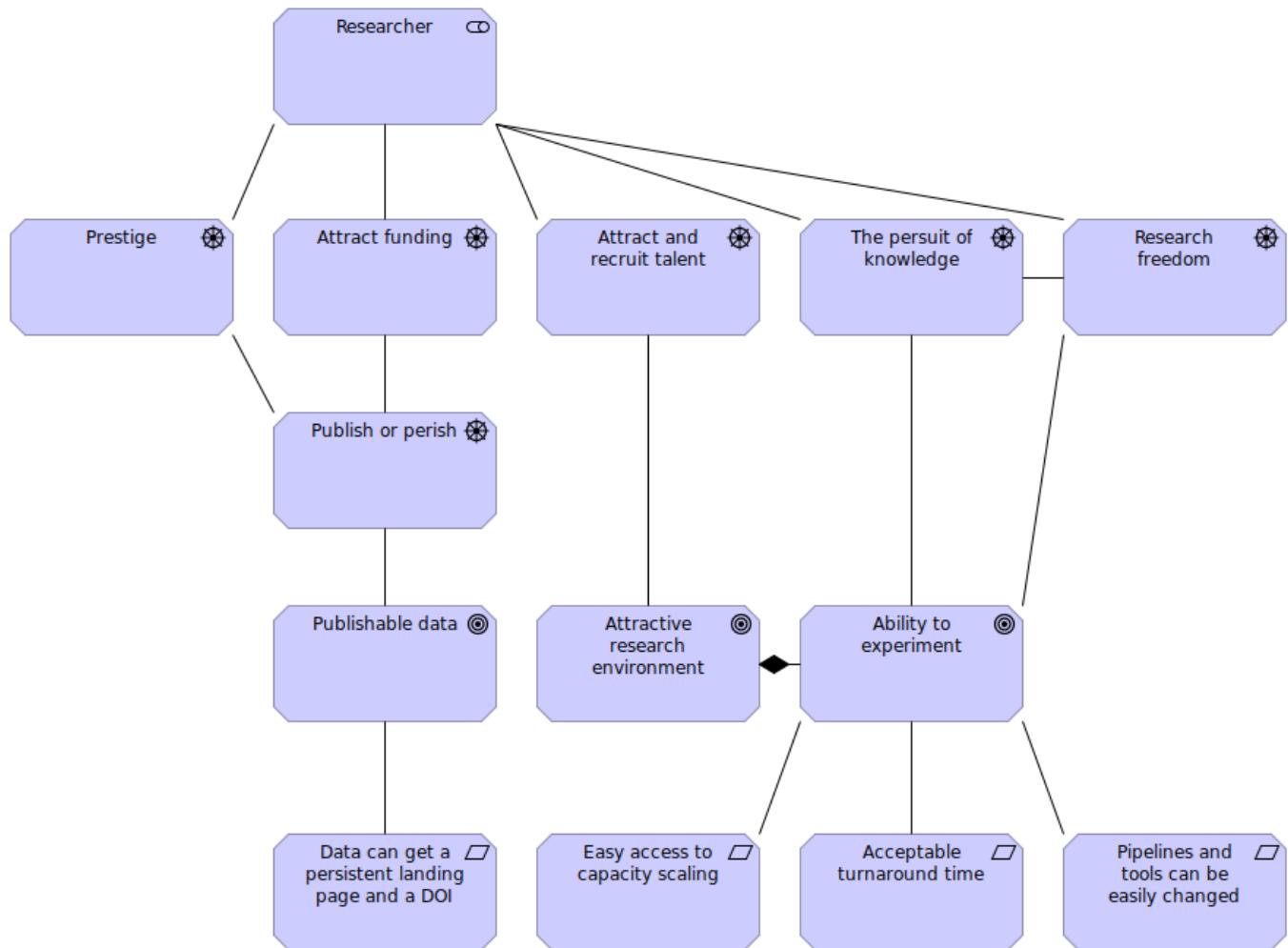


Elements

Element	Type
Academic Integrity	Driver
Code of Conduct for Research Integrity	Driver
Data Retension Policy	Driver
Guidelines for accountability in research	Driver
Guidelines for honest reporting of research	Driver
Guidelines for transparency in research	Driver
Research Data Policy	Driver

Research: The Researcher

Motivation viewpoint



Documentation

| Viewpoint for the individual researcher in relation to research data

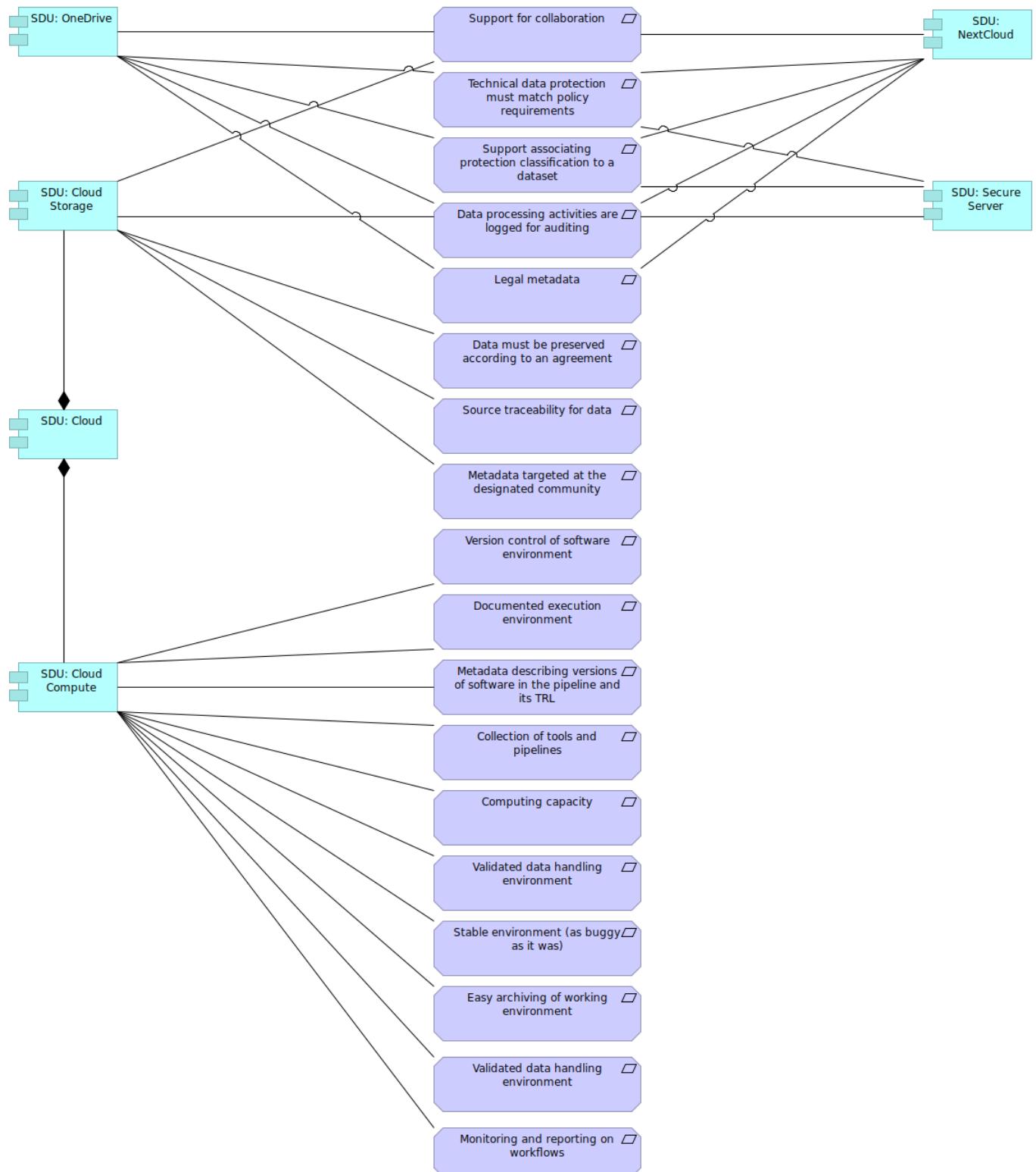
Elements

Element	Type
Ability to experiment	Goal
Acceptable turnaround time	Requirement
Attract and recruit talent	Driver
Attract funding	Driver
Attractive research environment	Goal
Data can get a persistent landing page and a DOI	Requirement
Easy access to capacity scaling	Requirement
Pipelines and tools can be easily changed	Requirement
Prestige	Driver
Publish or perish	Driver
Publishable data	Goal
Research freedom	Driver

Element	Type
Researcher	Stakeholder
The pursuit of knowledge	Driver

SDU Examples

Requirements Realization viewpoint



Documentation

Viewpoint showing existing data services addressing the infrastructure requirements for research data management identified through the DMbD activity.

This view is based on infrastructure services implemented or planned at The University of Southern Denmark (SDU) late 2018.

Elements

Element	Type
Collection of tools and pipelines	Requirement
Computing capacity	Requirement
Data must be preserved according to an agreement	Requirement
Data processing activities are logged for auditing	Requirement
Documented execution environment	Requirement
Easy archiving of working environment	Requirement
Legal metadata	Requirement
Metadata describing versions of software in the pipeline and its TRL	Requirement
Metadata targeted at the designated community	Requirement
Monitoring and reporting on workflows	Requirement
SDU: Cloud	Application Component
SDU: Cloud Compute	Application Component
SDU: Cloud Storage	Application Component
SDU: NextCloud	Application Component
SDU: OneDrive	Application Component
SDU: Secure Server	Application Component
Source traceability for data	Requirement
Stable environment (as buggy as it was)	Requirement
Support associating protection classification to a dataset	Requirement
Support for collaboration	Requirement
Technical data protection must match policy requirements	Requirement
Validated data handling environment	Requirement
Version control of software environment	Requirement

Application Layer

AAU: Research Data Archive

Type	Application Component
The AAU Research Data Archive is a research data depositing service that can be used by AAU researchers to store data or later retrieval. It is closely integrated with the private cloud infrastructure for research at AAU. Large datasets can be moved into and out of the archive very quickly.	

- the archive implements logging

AAU: SMB file shares

Type	Application Component
Once you have been registered in Aalborg University's IT systems, your personal document area will be created on the server. This is where you can store your data. If you are using one of our pre-installed Windows computers, you can find your document area under "Libraries" and then "Documents". If you are using a pre-installed Windows computer, your documents are automatically synchronised; this means that you can always find an updated version of your files on your hard drive and on the server.	

If several users need to work on the same files, you can use a group folder, called a fileshare. If you need a fileshare, simply send an email to support@its.aau.dk in which you include the desired name of your fileshare and the name (username) of the users who need access to the fileshare.

You will gain access to your own files on all your devices, and you can access these files anywhere via VPN.

If you are using your own Windows computer, a Mac computer or the Linux OS, you need to manually connect to your document area.

Application Component

Type	Application Component
Application Component	

Application Component

Type	Application Component
CBS: Department drive/institute drive (G-drive)	

Type	Application Component
Every department/institute usually has a shared drive, which is used for the exchanging of files. It is NOT meant as a personal drive. In principle, everyone in the department/institute may edit and delete files on this drive.	

CBS: OneDrive

Type	Application Component
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Institutional cloud storage:

- An institutional cloud storage solution for CBS researchers
- An institutional cloud storage solution for CBS researchers
- Easy and quick solution for data storage in some research projects
- However: Check CBS' Data Security Council's data classification, before storing research data on MS OneDrive

CBS: Personal drive (H-drives)

Type	Application Component
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You have access to a personal drive on a server. Access to this drive only happens through login with your username and password. It is recommended to save your data on this drive, since a backup will be made every night. Furthermore, you can always access this drive no matter which CBS computer you are working from. As default, 2 GB have been allocated to the H-drive.

CBS: Safe cloud storage

Type	Application Component
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CBS safe cloud storage:

- A safe cloud storage solution for researchers: <https://sciencedata.dk/>
- Login via WAYF (with your institutional credentials)
- Possibility to safely share your data with collaborators in DK and abroad
- Possibility to add metadata to your data
- Possibility to seamlessly access Abacus 2 (HPC system) and process your data there
- Possibility to automatically publish your data on Zenodo

CBS: Work-related drives

Type	Application Component
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In addition to that, there are drives, which are used for specific work areas, and only employees within this area will have access to those drives.

DTU: LSF data-repository

Type	Application Component
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The Large Scale Facility at Risø Campus enables research projects and companies to conduct non-destructive stress impact tests on wind turbine blades at large scale, in order to validate models and derive insight into the feasibility of a given blade for production. For pre-test analysis, finite element simulation models are employed. During experiments blade conditions are monitored e.g. with strain gauges, thermometer, accelerometer, and high-speed footage to create a realtime digital twin, effective metadata tagging for results is needed. Carrying out

experiments is expensive and hence there is an economical incentive to properly document experimental setting and results to avoid duplicating work. This entails standardisation of data formats across- and within stakeholder institutions, i.e. a standardised catalogue of data and thorough metadata is required. Though at the same time, depending on the funding source, vendors must/cannot be guaranteed exclusive access to the dataset, so the standardised data repository will need to accommodate granular permission requirements depending on contractual obligations.

LSF's data repository hosting and access management, as well as underlying infrastructure (servers, filesystems) and QoS (guaranteed uptime), could be handled by a third party, leading to requirements for

- agreed service levels
- capacity planning
- backup and archiving
- access control
- surveillance
- reporting

DTU: Wind Atlas

Type	Application Component
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The New European Wind Atlas (WA) project is producing high-resolution wind resource maps for Europe, made freely available for use as bases for wind farm planning at sites of interest. These are generated from global meteorological datasets and high-resolution land surface data using an open source regional weather model in combination with a high-resolution microscale flow model. The project offers a web interface similar to Google Maps, where the user can do ad-hoc analysis on the servers hosting the data or interactively mark a range of variables for an area of interest and download the data for further processing locally.

WA is EU financed and are obliged to make the promised datasets publicly available from April'19 and five years onwards. This relates to the following requirements listed:

- Contractual compliance (push to publication in this case? Contractual compliance is in this case "anti-NDA")
- Push to publication
- Service reliability according to SLA
- Slice data into subsets (I and R in FAIR; interoperability, reusability)
- Reuse data, workflows, software, environment etc. (research integrity, research efficiency)
- Sufficient technical capability of platform according to research scenario (functional requirements)
- Continuously available data collection (long, non-reproducible data series, SLA)
 - Reusable data (research efficiency, accessibility)
 - Appropriate API's for data handling (analysis, reuse)
 - Data sharing (data federation, permission control)
- Data format standards

The underlying infrastructure (servers, filesystems) and QoS (guaranteed uptime)

for WA, could be handled by a third party, leading to requirements

- agreed service levels
- capacity planning
- backup and archiving
- access control
- surveillance
- reporting

SDU: Cloud

Type	Application Component
	<p>SDUCloud platform is a new solution in development at SDU for research data. We have implemented a number of features based on the work in this activity. SDUCloud is a service for live research data, which provides secure data storage, data analysis/processing, and discoverability of data. Such integrated solutions are sometimes called "Virtual Research Environments".</p>

SDU: Cloud Compute

Type	Application Component
	<p>SDUCloud ships with a "store" of applications. An SDUCloud application is a tool created to facilitate analysis of data and runs in the "cloud". The app store acts as a directory of tools. Tools can be tagged and searched for. Each tool contains a concrete and machine readable description of the tool. This metadata includes, among others, software versions, fields, and references to documentation.</p>

During the design of the SDUCloud compute platform we had a large focus on reproducibility, automation, and traceability. We implemented reproducibility by using Docker for managing the software stack inside of applications.

Docker allows to create a "container" of software in the exact versions needed. These containers are portable and can easily move between different hardware.

When an application is executed, the platform saves job results and job parameters to a system folder in the user virtual drive. This step archives both the results and input parameters, allowing to re-run the application at a later point in time.

We plan to extend the platform to allow the composition of individual applications together to create a workflow. We define workflows using machine readable documents, like the ones used for applications.

SDU: Cloud Storage

Type	Application Component
	<p>The storage platform of SDUCloud is designed to store all kinds of live research data. This includes large datasets, as well as sensitive or confidential data.</p>

The storage support provided by SDUCloud is similar in functionality to the many other "cloud storage" solutions, e.g. OneDrive, Google Drive and, Dropbox. We provide a "virtual drive" for both research projects (shared folders) and personal accounts (private documents).

Keeping sensitive data requires to perform strict access control and detailed logging. For this we implemented a system-wide audit of all operations in the system. The system also supports encryption at rest and in transit.

All research projects in the system have associated structured metadata. This includes the project's data management plan. A structured data management plan allows us to standardize certain parts of it. We can, for example, automatically destroy/preserve data at the end of a project, or perform scheduled backups.

As research is commonly a collaborative discipline, the platform supports sharing of individual files/folders with other users. It is possible to grant limited or full access to files.

The SDUCloud platform aims to make data discoverable. We have implemented support in the system for attaching metadata to individual files and make it searchable. We are also planning to further implement domain specific metadata.

SDU: NextCloud

Type	Application Component
NextCloud is storage platform is use at SDU, similar in functionality to OneDrive. The solution is based on the open-source NextCloud v13 software. As OneDrive, it can store small to medium amounts of live data. NextCloud supports sharing of individual files/folders with other users. It is possible to grant limited and full access to files. Support for sensitive data is also similar to OneDrive. NextCloud can store sensitive data detailed logging and access control is implemented. NextDrive has the ability to add "tags" to data, which could be used as a limited form of metadata.	

SDU: OneDrive

Type	Application Component
OneDrive is a storage platform at SDU provided by MicroSoft that can store small to medium amounts of live data (typically word or excel documents, photos, videos, etc). OneDrive can be used to store and share sensitive and confidential data. OneDrive supports local file synchronization à la DropBox, although with many limitations on filenames. OneDrive supports sharing of individual files/folders with other users. It is possible to grant limited and full access to files. OneDrive can store sensitive data and detailed logging and access control is implemented. OneDrive has the ability to let the user attach metadata by an API on individual files and make it searchable. However such metadata support (e.g. what	

files refer to whom for sensitive data) is not implemented at SDU in any automatic way. Therefore procedures have been established for the users to follow, in case they store sensitive data for long periods of time (>30 days) on OneDrive. Since OneDrive can synchronize data to local (and insecure) drives, care should be taken for synchronization of sensitive data.

SDU: Secure Server

Type	Application Component
	This is a pure terminal server / remote desktop solution that is used for execution of softwares like "Stata" or "Spss" in a controlled environment. It offers limited computational support with a range of standard analysis tools. Sensitive data can be processed within the environment as long as they are pseudo anonymized.

Motivation

(Semi)automated ingestion

Type	Requirement
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Ability to demonstrate compliance with data privacy laws

Type	Goal
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Implementation of the procedures and protections required by data privacy laws and the ability to demonstrate compliance.

Ability to experiment

Type	Driver
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The ability and freedom to conduct experiments

Ability to experiment

Type	Goal
------	------

The ability support an experimental approach to data processing in a digital infrastructure.

Characteristic for an experimental approach is that each observation can result in a change to the approach. For experimentation to be efficient the time to setup a new experiment must be acceptable.

Handling this unpredictability requires flexibility and resources in the available digital infrastructure to accommodate the changes. This can be done in:

- * parameters
- * method of analysis
- * organisation of data
- * problem size
- * data processing pipeline

Ability to govern data assets

Type	Goal
------	------

managers

Ability to test and inspect

Type	Requirement
------	-------------

Academic compliance

Type	Goal
------	------

Compliance with established

research

Academic compliance

Type	Requirement
------	-------------

Academic Integrity

Type	Driver
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The need to demonstrate academic integrity and the ability to counter allegations of questionable research practices

Academic publisher

Type	Stakeholder
------	-------------

A publisher of scientific and scholarly publications

Examples: Springer Nature, Elsevier

Acceptable turnaround time

Type	Requirement
------	-------------

The amount of time taken to complete a process and return the result to the researcher must be acceptable.

Access control

Type	Requirement
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The infrastructure supports segmentation of privileges combined with an adequate access control mechanism.

Access to data

Type	Driver
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The vendor's use of stored data for its own purposes. Examples: monetization through data mining, model training

Access to human support

Type	Goal
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research

Access to sufficient capacity

Type	Goal
------	------

research

Administrative contextual traceability

Type	Goal
------	------

| research

Apply quality (AI too) control

Type	Goal
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| research

Applying various methods on data

Type	Goal
------	------

| research

Appropriate API's for data handling

Type	Requirement
------	-------------

Assess performance

Type	Driver
------	--------

| The ability to report on performance indicators

Asset management

Type	Driver
------	--------

| The ability to manage the organizations assets

Asset overview

Type	Requirement
------	-------------

Attract and recruit talent

Type	Driver
------	--------

| The ability of an institution or research group to attract and recruit talented researchers

Attract customers

Type	Driver
------	--------

| The ability to attract new customers to a service

Attract funding

Type	Driver
------	--------

| The ability to get funding for research activities and supporting infrastructures

Attractive research environment

Type	Goal
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Auditing

Type	Goal
------	------

research

Auditing at all levels

Type	Requirement
------	-------------

Auditing of data protection implementation

Type	Goal
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The data protection authority is charged with enforcing the implementation of data protection laws.

Automated well defined pipelines

Type	Goal
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When data processing pipelines are stable and well defined they can be automated with multiple positive effects:

- * Reduced risk of process errors
- * Increased efficiency in data handling

research

Automated well defined pipelines

Type	Requirement
------	-------------

Availability of software in environment

Type	Requirement
------	-------------

Avoid losses incurred by data breaches

Type	Driver
------	--------

Data breaches can lead to significant loss of reputation and can expose the university to financial risks like fines and payment of damages.

Business reporting

Type	Driver
------	--------

The ability to provide regular information to decision-makers within an organization to support their work

Capacity planning

Type	Driver
------	--------

The ability to predict and meet the changing demands placed on the infrastructure of an organization

Capacity planning

Type	Goal
research	

Capacity planning and assurance

Type	Requirement

Certification ability

Type	Requirement

CFO

Type	Stakeholder

Chief Financial Officer charged with oversight of economic and financial transactions.

CISO

Type	Stakeholder

Chief Information Security Officer charged with the oversight of policies and programs to reduce the risks to informational assets and ensure compliance with these

Citable software, equipment etc.

Type	Requirement

Software and hardware components used for data processing must be citable

Clearly defined roles and responsibilities

Type	Requirement

Code of Conduct for Research Integrity

Type	Driver

A set of rules and guidelines for how a research institution and the individual researcher should promote honesty, transparency, and accountability in the research process and the research culture.

This is often formulated by the institution or a national body on the basis of established standards like:

* The Singapore Statement on Research Integrity

- * The Montreal Statement on Research Integrity in Cross-Boundary Research Collaborations
- * The European Code of Conduct for Research Integrity

Example: The Danish Code of Conduct for Research Integrity

Collaboration

Type	Driver
The ability of multiple people to jointly work in the same data and subject	

Collection of tools and pipelines

Type	Requirement
The infrastructure should provide at collection of standard tools and data processing pipelines to facilitate uniform collection and analysis of data.	

Commercial provider

Type	Stakeholder
A vendor of supporting infrastructure for research activities	
Examples: Azure, AWS, Google	

Common infrastructure

Type	Driver
The use of concrete infrastructures or infrastructure designs that are shared with a wider community	

Competitive advantage

Type	Driver
The wish to attain or maintain a competitive advantage in an academic field	

Competitiveness

Type	Driver
The ability to establish superiority over others, notably in regards to peers	

Compliance documentation

Type	Requirement
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Computing capacity

Type	Requirement
------	-------------

Conservation of national cultural heritage

Type	Driver
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The deliberate act of keeping national cultural heritage from the present for the future

Conservation of research data of national historical importance

Type	Goal
	The deliberate act of keeping the nations cultural heritage from the present for the future is a common goal of the modern nation state. Most nations have laws requiring universities to report informational assets to the national archive for assessment of their historical value. The national archive may demand to receive a copy for conservation.

Continuity of commitments

Type	Driver
	The ability to continue an activity or regain a capability in case of an unforeseen or catastrophic event.
	This can be important to fulfill internal and external obligations.

Continuous risk assessment

Type	Goal
	managers

Continuously available data collection

Type	Requirement

Contractual compliance

Type	Driver
	The ability to demonstrate compliance with contractual obligations and policies

Contractual compliance

Type	Goal
	The ability to demonstrate compliance with contractual obligations

Contractual compliance

Type	Requirement

Control

Type	Driver
	The ability to exercise control

Cost efficiency

Type	Driver
------	--------

| The ability to minimize the costs associated with providing a service

Cost monitoring and optimization

Type	Goal
------	------

| managers

Cost predictability

Type	Driver
------	--------

| The ability to manage and predict the financial costs associated with research activities

Cost predictability if funding infrastructural needs

Type	Goal
------	------

| funders

Curation ability

Type	Requirement
------	-------------

Data

Type	Requirement
------	-------------

Data according to specification

Type	Requirement
------	-------------

Data breaches are reported as required by law

Type	Goal
------	------

| A data breach that poses a risk to the privacy of individuals must be reported to Data Protection Authority without undue delay. This is a requirement of the GDPR.

Data can get a persistent landing page and a DOI

Type	Requirement
------	-------------

| For data to be referenced in publications it must have a Data Object Identifier (DOI) and a landingpage.

Data Classification Policy

Type	Driver
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| Policy to support the assessment of risk to information assets.

- * Describes how information assets must be classified.
- * Defines the default classification that should be used for any assets that have not been classified.

Data classified according to policy

Type	Goal
Data is classified according to the organisations policy.	

Data collections must be reported to the national archives

Type	Requirement
New data collections must be reported to the national archives in accordance with reporting	

Data format standards

Type	Requirement
The infrastructure supports working with and conversions between accepted data standards.	
Examples of how an infrastructure can support data standards:	
<ul style="list-style-type: none"> - conversion tools - databases - aggregation of diverse data sources - validation of formatting 	

Data governance

Type	Goal
research	

Data is protected in accordance with its classification

Type	Goal
Data must be classified and protected	

Data must be preserved according to an agreement

Type	Requirement
It must be possible to ensure that data is handled in accordance with a contract or other agreement with an internal or external party.	

- respect an NDA
- respect a publication condition during an embargo period

- respect a data processing agreements

An infrastructure can assist in enforcing agreements in many ways. Some examples:

- raise user awareness through alerts and reminders
- enforce procedures for approval of usage
- automated enforcement and release according to an embargo/publication agreement

Data Privacy Laws

Type	Driver
Data privacy laws regulate the handling of personal data	
Examples: EU General Data Protection Regulation (GDPR), National data protection laws	

Data processing activities are logged for auditing

Type	Requirement
In general it must be logged when an agent, whether a user or a system, is granted access to data.	
When dealing with personal data this requirement is extended by the GDPR to:	

Records of processing activities must be maintained that include purposes of the processing, categories involved and envisaged time limits. The records must be made available to the supervisory authority on request (Article 30). [25]

-- Wikipedia

Data processing agreement

Type	Driver
A data processing agreement sets out the rights and obligations that apply to the parties of the agreement.	

Data processing agreement linked to data

Type	Requirement
A data processing agreement related to a dataset is available as protected metadata.	
This enables the implementation of automated policy checks.	

Data processing records can be audited by an investigation

Type	Goal
------	------

The University must keep

Data Protection Authority

Type	Stakeholder
National data protection authority charged with enforcing data protection legislation like the GDPR	
Examples: Datatilsynet	

Data Protection Policy

Type	Driver
Data Retension Policy	

Type	Driver
The data retention policies within an organization are a set of guidelines that describes which data will be archived, how long it will be kept, what happens to the data at the end of the retention period (archive or destroy) and other factors concerning the retention of the data.	

-- Wikipedia

Data sharing

Type	Goal
research	

Data sharing

Type	Requirement
Document and inspect data processing steps	

Type	Requirement
Document honesty	

Type	Goal
research	

Documented calibration

Type	Goal
research	

Documented calibration

Type	Requirement
------	-------------

Documented data handling (FAIR)

Type	Goal
------	------

| other researchers

Documented execution environment

Type	Goal
------	------

| research

Documented execution environment

Type	Requirement
------	-------------

| Exact versions of used software must be documented

Documenting assets with administrative contextual traceability

Type	Requirement
------	-------------

Ease of use

Type	Requirement
------	-------------

Easy access to capacity scaling

Type	Requirement
------	-------------

| The infrastructure can quickly accomodate dynamic changes to the resource requirements of an experiment.

Easy archiving

Type	Goal
------	------

| research

Easy archiving

Type	Goal
------	------

| research

Easy archiving of working environment

Type	Requirement
------	-------------

| It must be easy to "freeze" and preserve a working environment including the input data and the data processing pipeline.

Efficiency

Type	Driver
------	--------

The ability to minimize the cost of ownership of an infrastructure

Efficient data handling

Type	Goal
------	------

research

Enforce policy

Type	Requirement
------	-------------

Ensure discoverability

Type	Driver
------	--------

Discoverability is the degree to which information can be found when actively searched

Ethical compliance

Type	Goal
------	------

research

Ethical compliance

Type	Requirement
------	-------------

The ability to demonstrate compliance with ethical guidelines and policies

Evaluate and control risks

Type	Requirement
------	-------------

Experimental approach

Type	Goal
------	------

The experimental approach

research

External audit of compliance with data privacy laws

Type	Driver
------	--------

FAIR

Type	Goal
------	------

research

FAIR principles

Type	Driver
------	--------

The FAIR guiding principles for scientific data management and stewardship are intended to improve the management of research data in terms of:

- * Findability
- * Accessibility
- * Interoperability
- * Reuse of data

Finance and Accounting

Type	Stakeholder
------	-------------

The accounting department of the institution

Examples: CFO

Findable

Type	Requirement
------	-------------

The infrastructure must implement the means to search for a dataset based on search criteria that are relevant for the designated community.

Flexibility

Type	Driver
------	--------

The ability to support multiple methods and processes and allowing the researcher to choose the best match for a given task

Flexible ingestion methods

Type	Requirement
------	-------------

Fulfill ambition and reputation

Type	Driver
------	--------

The need to further an academic career and realize personal ambitions

Funding agency

Type	Stakeholder
------	-------------

A public or private funding agency for research

Examples: HORIZON 2020, ESF, NNF, DoD

GDPR - General Data Protection Regulation

Type	Driver
The General Data Protection Regulation is a regulation in EU Law on data protection and privacy for individuals within the European Union	

GDPR - Supervisory Authority

Type	Stakeholder
The GDPR requires each EU memberstate to establish a Supervisory Authority.	
<ul style="list-style-type: none">* Data breaches that pose a risk to the privacy of individuals must be reported to the Supervisory Authority* The university must have a Data Protection Officer registered with the Supervisory Authority* Records of data processing activities must be maintained and made available to the Supervisory Authority on request	

This role is typically given to the national Data Protection Authority.

Goal

Type	Goal
Govern access to datasets	
Type	Goal
research	

Governance

Type	Driver
The ability to create and implement policies, norms and rules that govern the interactions and responsibilities in an organization	

Government

Type	Stakeholder
Government at the national and international level.	
Examples: State government, Regional government, European Union, United Nations	

Guidelines for accountability in research

Type	Driver
To ensure the reliability of research, all parties involved should be accountable for the research carried out.	
This requires that researchers and institutions accept responsibility for the research they are conducting, in terms of:	

- accuracy and reliability of research results
- adherence to all relevant regulations
- fostering and maintaining a culture of research integrity through teaching, training, and supervision
- taking appropriate measures when dealing with breaches of responsible conduct of research

-- Danish Code of Conduct for Research Integrity

Guidelines for honest reporting of research

Type	Driver
	To ensure the trustworthiness of research, researchers should be honest when reporting objectives, methods, data, analysis, results, conclusions, etc.
	<p>This requires accurate and balanced reporting when:</p> <ul style="list-style-type: none"> • presenting and interpreting research • making claims based on findings • acknowledging the work of other researchers • applying for research funding • reviewing and evaluating research

-- Danish Code of Conduct for Research Integrity

Guidelines for transparency in research

Type	Driver
	To ensure the credibility of scientific reasoning and to ensure that academic reflection is consistent with practice in the relevant field of research, all phases of research should be transparent.
	<p>This requires openness when reporting:</p> <ul style="list-style-type: none"> • conflicts of interest • planning of research • research methods applied • results and conclusions • transparency

-- Danish Code of Conduct for Research Integrity

Handling of software licenses

Type	Requirement
	Software licences must be handled to make use of the software legal on the IT infrastructures that make it available.

Handover of compliant datasets

Type	Goal

High Quality Infrastructure

Type	Goal
------	------

High Quality Infrastructure

Type	Goal
------	------

High Quality Management

Type	Goal
------	------

High Quality Management

Type	Goal
------	------

High Quiality Research

Type	Goal
------	------

High Quiality Research

Type	Goal
------	------

Historic value of research data collections is assesed

Type	Goal
------	------

Identify and notify and log problems, both historic and forecasted

Type	Requirement
------	-------------

Identify dataset for reference

Type	Requirement
------	-------------

Improve quality of infratructure

Type	Driver
------	--------

Improve the quality of management

Type	Driver
------	--------

Improve the quality of research

Type	Driver
------	--------

Industry

Type	Stakeholder
------	-------------

The industry in relation to research

Examples: Industrial partner, Industrial PhD

Industry partner

Type	Stakeholder
------	-------------

| Industrial partner in a research project

Information Security Governance

Type	Driver
------	--------

| Protection of the organisations information assets

Information Security Policy

Type	Driver
------	--------

Infrastructure collaboration

Type	Driver
------	--------

| The ability to collaborate with partners on the architecture, implementation and operations of research infrastructures

Infrastructure interoperability

Type	Driver
------	--------

| The ability of users to combine the services from multiple providers and infrastructures

Infrastructure interoperability and integration

Type	Requirement
------	-------------

Infrastructure manager

Type	Stakeholder
------	-------------

| Executive in charge of infrastructures that serve research activities

| Examples

Infrastructure provider

Type	Stakeholder
------	-------------

| A provider of supporting infrastructure for research activities

| Examples: IT-department, PRACE, ELIXIR

Innovation ability

Type	Driver
------	--------

| The ability to be innovative within an academic field

Institutional reputation

Type	Driver
------	--------

The ability of a research institution to be recognized and achieve a high international ranking

Integrity checks

Type	Goal
research	

Integrity checks

Type	Requirement
------	-------------

Intellectual property law

Type	Driver
The legal protection of ownership of intangible assets	
Examples: Copyright, Patent, Trademark	

Internal audit of compliance with data protection policy

Type	Driver
Exexercise control over the implementation of the data protection policy	
Internal auditing is an independent, objective assurance and consulting activity designed to add value and improve an organization's operations. It helps an organization accomplish its objectives by bringing a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes.[1] Internal auditing is a catalyst for improving an organization's governance, risk management and management controls by providing insight and recommendations based on analyses and assessments of data and business processes.[2] With commitment to integrity and accountability, internal auditing provides value to governing bodies and senior management as an objective source of independent advice. Professionals called internal auditors are employed by organizations to perform the internal auditing activity.	

Investigation of privacy complaints

Type	Driver
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IT department

Type	Stakeholder
The local provider of IT services to research activities	

Journal editor

Type	Stakeholder
An editor of scientific and scholarly publications	

Law

Type	Driver
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Laws that apply to the domain whether enforced by the state or another entity

Examples: Privacy law, Intellectual property law, Copyright law

Legal compliance

Type	Goal
------	------

The ability to demonstrate compliance with external regulations and laws

Legal compliance

Type	Requirement
------	-------------

Legal department

Type	Stakeholder
------	-------------

The legal department of the organization oversees litigation and compliance with external regulations and laws

Examples: CLO, Intellectual property department

Legal metadata

Type	Requirement
------	-------------

- Metadata describing owner and affiliation

Local policy compliance

Type	Goal
------	------

research

Local policy compliance

Type	Requirement
------	-------------

Location independence

Type	Goal
------	------

The ability to perform process research data from any location

Logging ability

Type	Requirement
------	-------------

Manage access according to policy

Type	Requirement
------	-------------

The IT infrastructure must implement management of access control in accordance with the data protection policy. This means that the infrastructure supports or even enforces that the procedures specified by the data protection policy is followed when access control is changed.

Management

Type	Stakeholder
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The general management of a university or similar research organization

Examples: Dean, CISO, CFO

Metadata describing versions of software in the pipeline and its TRL

Type	Requirement
------	-------------

Metadata describing versions of software in the pipeline and its TRL

Metadata targeted at the designated community

Type	Requirement
------	-------------

The infrastructure must support associating domain specific metadata to a dataset.

Monitoring ability

Type	Requirement
------	-------------

Monitoring and alarming (success, error)

Type	Goal
------	------

research

Monitoring and reporting on workflows

Type	Requirement
------	-------------

The infrastructure must support monitoring, recording, and reporting on the progress and success or failure of processes in a workflow. At least these services should be available :

- a log of the steps in the workflow and their exit status: success, error, restart
- it should be possible to raise an alarm when a workflow fails

Monitoring of data breaches

Type	Driver
------	--------

Monitoring of legal compliance

Type	Goal
	Inspect and audit that an organisation handles data in accordance with laws and regulations.
	This is typically done by inspecting that the organisation has implemented proper data handling procedures.

Monitoring options for compliance

Type	Goal
	managers
	National archive
Type	Stakeholder
	A branch of government charged with preserving and documenting historical records of the nation
	Examples: Rigsarkivet (The Danish National Archives)

No known security vulnerabilities

Type	Requirement
	Operational procedures

Operational procedures

Type	Driver
	The ability to adhere to an organization's standard operational procedures

Password Policy

Type	Driver
	PhD Supervisor

PhD Supervisor

Type	Stakeholder
	A researcher supervising a PhD

Pipelines and tools can be easily changed

Type	Requirement
	The infrastructure can quickly accommodate dynamic changes to the experimental setup of software and data processing pipelines to fit the requirements of an experiment.

Pipelining methods

Type	Goal
Use of data pipelines and protocols for data processing has multiple positive effects:	
* It reduces the risk of process errors	
* It can lead to higher efficiency	

research

Portability

Type	Driver
The freedom to work with data where it is practical	

Portability

Type	Goal
The ability to move data to a different context and use it there.	
Example: .	data in a different context.
research	

Portability

Type	Requirement
------	-------------

Predictability

Type	Driver
The ability to predict outcomes of processes	

Predictability

Type	Goal
The ability to predict outcomes of processes	

Preserve analysis pipelines

Type	Driver
The preservation of the data analysis pipelines that have been used in a study	

Preserve contextual information

Type	Driver
The preservation of information that is important to the interpretation of data	

Preserve software

Type	Driver
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The long-term preservation of software and the ability to execute it

Prestige

Type	Driver
------	--------

Attaining and maintaining high esteem among one's peers

Pride

Type	Driver
------	--------

Pride in the achievements of a person, study, institution, nation

Principal Investigator

Type	Stakeholder
------	-------------

A researcher in the administrative role of managing a research project or study

Examples: Grant-holder, Head of lab, Research group leader

Privacy Policy

Type	Driver
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Procedures for handling data breaches must be implemented

Type	Requirement
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Under the GDPR, the data controller is under a legal obligation to notify the supervisory authority without undue delay unless the breach is unlikely to result in a risk to the rights and freedoms of the individuals. There is a maximum of 72 hours after becoming aware of the data breach to make the report (Article 33). Individuals have to be notified if adverse impact is determined (Article 34). In addition, the data processor will have to notify the controller without undue delay after becoming aware of a personal data breach (Article 33).

However, the notice to data subjects is not required if the data controller has implemented appropriate technical and organisational protection measures that render the personal data unintelligible to any person who is not authorised to access it, such as encryption (Article 34).

-- Wikipedia

Protect data according to needs

Type	Driver
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Data should be protected in accordance with its needs. For research data this is sometimes expressed as data should be "as open as possible, as closed as necessary"

This is implemented through a policy for data security classification and associated rules for how data should be handled depending on its classification.

Protection of confidential data

Type	Driver
Protection of data that must be kept confidential	

Provable enforcement of data protection policy

Type	Requirement
The enforcement of the organisation's data protection policy and regular internal audits of this is documented for the purpose of external auditing.	

Publish or perish

Type	Driver
"Publish or perish" is a phrase coined to describe the pressure in academia to rapidly and continually publish academic work to sustain or further one's career.	
Frequent publication is one of the few methods at scholars' disposal to demonstrate academic talent. Successful publications bring attention to scholars and their sponsoring institutions, which can facilitate continued funding and an individual's progress through a chosen field.	

-- Wikipedia

Publishable data

Type	Driver
The right and ability to publish research data to a wider community	

Publishable data

Type	Goal
Data that can be shared with a wider community.	

Publishable data

Type	Requirement
Data that can be published and used in the wider community	

Push to archive

Type	Requirement
------	-------------

Push to publication

Type	Requirement
------	-------------

Quality assurance

Type	Driver
------	--------

The ability to assure that a certain quality has been maintained in a process or result

Quality control and testing of this

Type	Goal
------	------

research

Quality control and verification

Type	Requirement
------	-------------

RDM support

Type	Stakeholder
------	-------------

Support function for researcher data management

Readiness at hand

Type	Driver
------	--------

The availability of a resource when it is needed

Recognition

Type	Driver
------	--------

The ability to be recognized in the wider community

Reduce complexity

Type	Driver
------	--------

A process change that leads to simplification

Reduce complexity

Type	Goal
------	------

A process change that leads to simplification

Reduced cost / efficiency

Type	Driver
------	--------

Improvements in efficiency from a the perspective of cost

Reliable environments

Type	Driver
------	--------

The need to maintain a stable and trusted environment for the handling of data throughout a study

Reporting ability

Type	Requirement
------	-------------

Reproducible execution environment

Type	Goal
------	------

research

Reproducible execution environment

Type	Requirement
------	-------------

Reproducible research

Type	Driver
------	--------

The ability to document the research process in sufficient detail to allow others to reproduce the results

Research Archive

Type	Stakeholder
------	-------------

The unit responsible for preserving research data and publications

Examples: Publication archive, Research Data Archive

Research community

Type	Stakeholder
------	-------------

A research community associated with an academic discipline. This is seldom a formally defined group and can be wide or narrow depending the subject.

Examples: Historians, Philosophers, Glaciologists

Research continuity

Type	Driver
------	--------

The ability to continue research activities or regain a capability in case of a catastrophic event

Research data collections can be submitted to the national archives

Type	Requirement
------	-------------

The national archive can demand that data is submitted in an accepted format for preservation.

Research Data Policy

Type	Driver
------	--------

Research Ethics

Type	Driver
------	--------

| Research ethics provides guidelines for the responsible conduct of research.

Research freedom

Type	Driver
------	--------

| The freedom of the researcher to govern the methods used in a study

Research library

Type	Stakeholder
------	-------------

| Library supporting research at the institution.

Research performance

Type	Driver
------	--------

| The ability to demonstrate the innovation and impact of research activities

Research Practice Committee

Type	Stakeholder
------	-------------

| A unit charged with investigating allegations of questionable research practice and allegations of research misconduct

| Example: Praksisudvalg

Researcher

Type	Stakeholder
------	-------------

| Person engaged in academic research.

| Examples: PhD student, Postdoc, Professor

Results validation

Type	Driver
------	--------

| The ability to validate that the processes used to deriving results from raw data are functioning as expected

Retention policy compliance

Type	Requirement
------	-------------

Reusable data

Type	Driver
------	--------

The right and ability to use research data in further studies

Reusable data

Type	Requirement
------	-------------

Reuse data

Type	Requirement
------	-------------

Reuse data processing environment

Type	Requirement
------	-------------

Reuse data workflows

Type	Requirement
------	-------------

Reuseability

Type	Requirement
------	-------------

Reviewer

Type	Stakeholder
------	-------------

A researcher reviewing the work of peers working in the same field

Examples: Reviewer, Editor

Risk management

Type	Driver
------	--------

The ability to asses and manage risk in an organization.

This includes all kinds of risks to the value, operations and reputation of an organisation

Satisfied customers

Type	Driver
------	--------

The ability to meet or surpass the expectations of the users of a service

Secure infrastructure

Type	Goal
------	------

research

Secure work environment

Type	Goal
------	------

research

Security Officer

Type	Stakeholder
Executive charged with the oversight of policies and programs to reduce risks and ensure compliance with policies	
Examples: CSO, CISO	

Service reliability

Type	Goal
research	

Service reliability according to agreement

Type	Requirement
The infrastructure can deliver services with a demonstrable reliability that matches an agreement.	
This could be a Service Level Agreement (SLA) in the traditional sense, but in research, there is often non standard considerations that makes the scope for agreements and plans for mitigation, when a problem arrises, much wider than a standard SLA can encompass.	

Slice data into subsets

Type	Goal
research	

Slice data into subsets

Type	Requirement

Social Responsibility

Type	Driver
The extension of legal and ethical compliance with a responsibility for serving the community	

Source traceability for assets

Type	Requirement

Source traceability for data

Type	Requirement

The metadata that provides the traceability back to the biobank sample that was analyzed must be preserved through the analysis pipeline.

Stable environment (as buggy as it was)

Type	Goal
research	

Stable environment (as buggy as it was)

Type	Requirement
It must be possible to keep the same software stack for a whole study	

Standard pipelines

Type	Driver
The use of data pipelines that are used by a wider community	

Standard tools

Type	Driver
The use of tools that are common to a wider community	

Standardization

Type	Requirement
Standardize data	

Standardize data

Type	Goal
research	

Strategic planning

Type	Driver
The ability to set internal goals and manage a strategy for reaching these	

Sufficient technical capability of platform according to research scenario

Type	Requirement
The technical capabilities of the platform and the staff maintaining it must be able to support must be capable	

Support associating protection classification to a dataset

Type	Requirement
A dataset's data protection classification can be associated to it in the infrastructure. This could be implemented as some form of protected metadata or extended attributes.	

This enables the implementation of automated policy checks.

Support for collaboration

Type	Requirement
	The infrastructure must support collaboration between multiple researchers possibly across institutions.

Support for experimentation

Type	Requirement
	The ability support an experimental approach to data processing in a digital infrastructure.
	Characteristic for an experimental approach is that each observation can result in a change to the approach. For experimentation to be efficient the time to setup a new experiment must be acceptable.
	Handling this unpredictability requires flexibility and resources in the available digital infrastructure to accommodate the changes. This can be changes in:

- * parameters
- * method of analysis
- * organisation of data
- * problem size
- * data processing pipeline

Support for external collaboration

Type	Requirement
	Synchronized working environment across users
	Technical data protection must match policy requirements

Technical data protection must match policy requirements

Type	Requirement
	The IT infrastructure must implement technical data protection measures that correspond to the data protection policy.

Technical feasibility for real time media

Type	Goal
	research

Technical isolation (the lab idea)

Type	Requirement

The persuit of knowledge

Type	Driver
------	--------

| The persuit of knowlede for the sake of knowing

Traceability with added option for availability

Type	Goal
------	------

| research

Track/monitor outcomes vs requirements and/or promises

Type	Goal
------	------

| funders

Transfer data to/from the environment

Type	Requirement
------	-------------

Transparency

Type	Driver
------	--------

| Operating a way that makes it easy for others to see what actions are performed

Transparent and predictable economy

Type	Requirement
------	-------------

Transparent compliance levels (e.g. GDPR)

Type	Requirement
------	-------------

Trust in technical and organizational setup Accessible environment "Research related goals" (peger på samme krav som forskerne)

Type	Goal
------	------

| collaboration partners

Usability

Type	Driver
------	--------

| The degree to which a service or process can be learned and used to achieve intended objectives with effectiveness and efficiency

Usability

Type	Goal
------	------

| The degree to which a service or process can be learned and used to achieve intended objectives with effectiveness and efficiency

Use and handle both open source and commercial software

Type	Goal
------	------

| research

Valid data

Type	Goal
------	------

| Validation of data is integral

Valid results

Type	Goal
------	------

A valid study answers research questions in a scientifically rigorous manner.

In an academic study validity is the aggregate of:

- * Internal validity. Whether changes in the outcome could be attributed to alternative explanations.
- * External validity is the validity of applying the conclusions of a scientific study outside the context of that study
- * Construct validity is the appropriateness of inferences made on the basis of observations or measurements

Validated data handling environment

Type	Requirement
------	-------------

| Software and hardware components of the data handling environment have been validated to function according to a specification

Vendor lock-in

Type	Driver
------	--------

| The wish to make a customer dependent on a product or service and unable to switch to another vendor without substantial switching cost

Verifiability of transfer

Type	Requirement
------	-------------

Version control

Type	Goal
------	------

| research

Version control of data

Type	Requirement
------	-------------

Version control of software environment

Type	Requirement
	<p>The must be versions control of the software that is available and being used must be managed:</p> <ul style="list-style-type: none">- It must be possible to choose a specific version of software- Information about which software is being used is available in the environment- It must be possible to recreate the desired software stack on demand- It must all users in a team to use the same software environment

Visible research

Type	Driver
	<p>The ability to demonstrate the progress and value of research to the general public</p>

Other

Administration

Type	Grouping
------	----------

Asset management

Type	Grouping
------	----------

Automation of data processing

Type	Grouping
------	----------

Compliance

Type	Grouping
------	----------

Control

Type	Grouping
------	----------

Data ingestion

Type	Grouping
------	----------

Data Management

Type	Grouping
------	----------

Data quality

Type	Grouping
------	----------

Dataprotection

Type	Grouping
------	----------

Documentation of data pipeline

Type	Grouping
------	----------

Ease of use

Type	Grouping
------	----------

External

Type	Grouping
------	----------

Monitoring capabilities

Type	Grouping
------	----------

Provider

Type	Grouping
------	----------

Quality of infrastructure

Type	Grouping
------	----------

Drivers from the raw findings that are mostly aimed at improving the quality of infrastructure.

Quality of infrastructure

Type	Grouping
------	----------

Quality of reporting and management

Type	Grouping
------	----------

Drivers from the raw findings that are mostly aimed at improving the quality of management.

Quality of reporting and management

Type	Grouping
------	----------

Quality of research

Type	Grouping
------	----------

Drivers from the raw findings that are mostly aimed at improving the quality of research.

Quality of research

Type	Grouping
------	----------

Reproducability of process

Type	Grouping
------	----------

Research

Type	Grouping
------	----------

Resource management

Type	Grouping
------	----------

Reuseability

Type	Grouping
------	----------

Society

Type	Grouping
------	----------

Software management

Type	Grouping
------	----------

Support and infrastructure

Type	Grouping
------	----------

Technical support capabilities

Type	Grouping
------	----------

Validation of data transformations

Type	Grouping
------	----------

Relations

Composition relation

Type	Composition relation
Source	Quality of research
Target	High Quality Research

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	High Quality Management

Composition relation

Type	Composition relation
Source	Quality of research
Target	Improve the quality of research

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	High Quality Infrastructure

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Improve quality of infrastructure

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Improve the quality of management

Composition relation

Type	Composition relation
Source	Quality of research
Target	Attract and recruit talent

Composition relation

Type	Composition relation
Source	Quality of research
Target	Quality assurance

Composition relation

Type	Composition relation
------	----------------------

Source	Quality of research
Target	Reusable data

Composition relation

Type	Composition relation
Source	Quality of research
Target	Reliable environments

Composition relation

Type	Composition relation
Source	Quality of research
Target	Pride

Composition relation

Type	Composition relation
Source	Quality of research
Target	Research performance

Composition relation

Type	Composition relation
Source	Quality of research
Target	Standard pipelines

Composition relation

Type	Composition relation
Source	Quality of research
Target	Attract funding

Composition relation

Type	Composition relation
Source	Quality of research
Target	Preserve software

Composition relation

Type	Composition relation
Source	Quality of research
Target	Research continuity

Composition relation

Type	Composition relation
Source	Quality of research
Target	Fulfill ambition and reputation

Composition relation

Type	Composition relation
Source	Quality of research
Target	Preserve contextual information

Composition relation

Type	Composition relation
Source	Quality of research
Target	Reproducible research

Composition relation

Type	Composition relation
Source	Quality of research
Target	Academic Integrity

Composition relation

Type	Composition relation
Source	Quality of research
Target	Publishable data

Composition relation

Type	Composition relation
Source	Quality of research
Target	Preserve analysis pipelines

Composition relation

Type	Composition relation
Source	Quality of research
Target	Standard tools

Composition relation

Type	Composition relation
Source	Quality of research
Target	Competitiveness

Composition relation

Type	Composition relation
Source	Quality of research
Target	Flexibility

Composition relation

Type	Composition relation
Source	Quality of research
Target	Social Responsibility

Composition relation

Type	Composition relation
Source	Quality of research
Target	Ability to experiment

Composition relation

Type	Composition relation
Source	Quality of research
Target	Ensure discoverability

Composition relation

Type	Composition relation
Source	Quality of research
Target	Visible research

Composition relation

Type	Composition relation
Source	Quality of research
Target	Results validation

Composition relation

Type	Composition relation
Source	Quality of research
Target	Innovation ability

Composition relation

Type	Composition relation
Source	Quality of research
Target	Research freedom

Composition relation

Type	Composition relation
Source	Quality of research
Target	Prestige

Composition relation

Type	Composition relation
Source	Quality of research
Target	FAIR principles

Composition relation

Type	Composition relation
Source	Quality of research

Target	Research Ethics
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Composition relation

Type	Composition relation
Source	Quality of research
Target	Recognition

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Assess performance

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Institutional reputation

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Governance

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Predictability

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Asset management

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Law

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Control

Composition relation

Type	Composition relation
-------------	----------------------

Source	Quality of reporting and management
Target	Contractual compliance

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Transparency

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Competitive advantage

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Risk management

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Cost predictability

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Continuity of commitments

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Strategic planning

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Operational procedures

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Business reporting

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Cost efficiency

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Access to data

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Readiness at hand

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Reduced cost / efficiency

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Capacity planning

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Efficiency

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Common infrastructure

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Portability

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Infrastructure interoperability

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Satisfied customers

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Infrastructure collaboration

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Reduce complexity

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Attract customers

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Usability

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Vendor lock-in

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Collaboration

Composition relation

Type	Composition relation
Source	Quality of research
Target	High Quality Research

Composition relation

Type	Composition relation
Source	Quality of reporting and management

Target	High Quality Management
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Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	High Quality Infrastructure

Composition relation

Type	Composition relation
Source	Quality of research
Target	Ethical compliance

Composition relation

Type	Composition relation
Source	Quality of research
Target	Integrity checks

Composition relation

Type	Composition relation
Source	Quality of research
Target	Apply quality (AI too) control

Composition relation

Type	Composition relation
Source	Quality of research
Target	Reproducible execution environment

Composition relation

Type	Composition relation
Source	Quality of research
Target	Standardize data

Composition relation

Type	Composition relation
Source	Quality of research
Target	Academic compliance

Composition relation

Type	Composition relation
Source	Quality of research
Target	Easy archiving

Composition relation

Type	Composition relation
-------------	----------------------

Source	Quality of research
Target	Automated well defined pipelines

Composition relation

Type	Composition relation
Source	Quality of research
Target	Quality control and testing of this

Composition relation

Type	Composition relation
Source	Quality of research
Target	Data governance

Composition relation

Type	Composition relation
Source	Quality of research
Target	Documented calibration

Composition relation

Type	Composition relation
Source	Quality of research
Target	Stable environment (as buggy as it was)

Composition relation

Type	Composition relation
Source	Quality of research
Target	Portability

Composition relation

Type	Composition relation
Source	Quality of research
Target	Documented data handling (FAIR)

Composition relation

Type	Composition relation
Source	Quality of research
Target	Version control

Composition relation

Type	Composition relation
Source	Quality of research
Target	Use and handle both open source and commercial software

Composition relation

Type	Composition relation
Source	Quality of research
Target	Applying various methods on data

Composition relation

Type	Composition relation
Source	Quality of research
Target	Experimental approach

Composition relation

Type	Composition relation
Source	Quality of research
Target	FAIR

Composition relation

Type	Composition relation
Source	Quality of research
Target	Pipelining methods

Composition relation

Type	Composition relation
Source	Quality of research
Target	Documented execution environment

Composition relation

Type	Composition relation
Source	Quality of research
Target	Data sharing

Composition relation

Type	Composition relation
Source	Quality of research
Target	Document honesty

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Handover of compliant datasets

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Track/monitor outcomes vs requirements and/or promises

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Predictability

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Govern access to datasets

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Monitoring of legal compliance

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Monitoring options for compliance

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Cost monitoring and optimization

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Ability to govern data assets

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Auditing

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Administrative contextual traceability

Composition relation

Type	Composition relation
Source	Quality of reporting and management

Target	Continuous risk assessment
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Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Contractual compliance

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Reduce complexity

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Local policy compliance

Composition relation

Type	Composition relation
Source	Quality of reporting and management
Target	Legal compliance

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Monitoring and alarming (success, error)

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Secure infrastructure

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Technical feasibility for real time media

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Access to sufficient capacity

Composition relation

Type	Composition relation
-------------	----------------------

Source	Quality of infrastructure
Target	Usability

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Efficient data handling

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Capacity planning

Composition relation

Type	Composition relation
Source	Quality of infrastructure
	Trust in technical and organizational setup "Research related goals" (peger på samme krav som forskerne)

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Traceability with added option for availability

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Location independence

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Service reliability

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Cost predictability if funding infrastructural needs

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Access to human support

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Easy archiving

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Secure work environment

Composition relation

Type	Composition relation
Source	Quality of infrastructure
Target	Slice data into subsets

Association relation

Type	Association relation
Source	Researcher
Target	Principal Investigator

Association relation

Type	Association relation
Source	IT department
Target	Infrastructure manager

Association relation

Type	Association relation
Source	Infrastructure provider
Target	IT department

Association relation

Type	Association relation
Source	CISO
Target	Security Officer

Association relation

Type	Association relation
Source	CFO
Target	Finance and Accounting

Association relation

Type	Association relation
Source	Industry
Target	Industry partner

Association relation

Type	Association relation
Source	Researcher
Target	PhD Supervisor

Composition relation

Type	Composition relation
Source	Research
Target	Research Archive

Composition relation

Type	Composition relation
Source	Research
Target	Reviewer

Composition relation

Type	Composition relation
Source	Research
Target	PhD Supervisor

Composition relation

Type	Composition relation
Source	Research
Target	Journal editor

Composition relation

Type	Composition relation
Source	Research
Target	Researcher

Composition relation

Type	Composition relation
Source	Research
Target	Principal Investigator

Composition relation

Type	Composition relation
Source	Research
Target	Research community

Composition relation

Type	Composition relation
Source	Administration

Target	Finance and Accounting
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Composition relation

Type	Composition relation
Source	Administration
Target	Management

Composition relation

Type	Composition relation
Source	Administration
Target	CFO

Composition relation

Type	Composition relation
Source	Administration
Target	Legal department

Composition relation

Type	Composition relation
Source	Provider
Target	Infrastructure provider

Composition relation

Type	Composition relation
Source	Provider
Target	Infrastructure manager

Composition relation

Type	Composition relation
Source	Provider
Target	IT department

Composition relation

Type	Composition relation
Source	Provider
Target	RDM support

Composition relation

Type	Composition relation
Source	Provider
Target	Research library

Composition relation

Type	Composition relation
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Source	Provider
Target	Commercial provider

Composition relation

Type	Composition relation
Source	Control
Target	CISO

Composition relation

Type	Composition relation
Source	Control
Target	Security Officer

Composition relation

Type	Composition relation
Source	Control
Target	Research Practice Committee

Composition relation

Type	Composition relation
Source	Society
Target	Government

Composition relation

Type	Composition relation
Source	Society
Target	Data Protection Authority

Composition relation

Type	Composition relation
Source	Society
Target	National archive

Composition relation

Type	Composition relation
Source	Society
Target	Funding agency

Association relation

Type	Association relation
Source	Reviewer
Target	Journal editor

Composition relation

Type	Composition relation
Source	Society
Target	Industry

Composition relation

Type	Composition relation
Source	Society
Target	Industry partner

Composition relation

Type	Composition relation
Source	Provider
Target	Academic publisher

Composition relation

Type	Composition relation
Source	Research
Target	Research Practice Committee

Composition relation

Type	Composition relation
Source	Administration
Target	CISO

Composition relation

Type	Composition relation
Source	Administration
Target	Security Officer

Composition relation

Type	Composition relation
Source	Support and infrastructure
Target	IT department

Composition relation

Type	Composition relation
Source	Support and infrastructure
Target	Infrastructure manager

Composition relation

Type	Composition relation
Source	Support and infrastructure
Target	Infrastructure provider

Composition relation

Type	Composition relation
Source	Support and infrastructure
Target	RDM support

Composition relation

Type	Composition relation
Source	Support and infrastructure
Target	Research library

Composition relation

Type	Composition relation
Source	Support and infrastructure
Target	Research Archive

Composition relation

Type	Composition relation
Source	External
Target	National archive

Composition relation

Type	Composition relation
Source	External
Target	Academic publisher

Composition relation

Type	Composition relation
Source	External
Target	Industry partner

Composition relation

Type	Composition relation
Source	External
Target	Commercial provider

Composition relation

Type	Composition relation
Source	External
Target	Government

Composition relation

Type	Composition relation
Source	External

Target	Industry
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Composition relation

Type	Composition relation
Source	External
Target	Funding agency

Composition relation

Type	Composition relation
Source	External
Target	Data Protection Authority

Composition relation

Type	Composition relation
Source	Asset management
Target	Source traceability for assets

Composition relation

Type	Composition relation
Source	Asset management
Target	Documenting assets with administrative contextual traceability

Composition relation

Type	Composition relation
Source	Asset management
Target	Asset overview

Composition relation

Type	Composition relation
Source	Compliance
Target	Ethical compliance

Composition relation

Type	Composition relation
Source	Compliance
Target	Enforce policy

Composition relation

Type	Composition relation
Source	Compliance
Target	Retention policy compliance

Composition relation

Type	Composition relation
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Source	Compliance
Target	Contractual compliance

Composition relation

Type	Composition relation
Source	Compliance
Target	Legal compliance

Composition relation

Type	Composition relation
Source	Compliance
Target	Certification ability

Composition relation

Type	Composition relation
Source	Compliance
Target	Local policy compliance

Composition relation

Type	Composition relation
Source	Compliance
Target	Auditing at all levels

Composition relation

Type	Composition relation
Source	Compliance
Target	Compliance documentation

Composition relation

Type	Composition relation
Source	Compliance
Target	Academic compliance

Composition relation

Type	Composition relation
Source	Compliance
Target	Transparent compliance levels (e.g. GDPR)

Composition relation

Type	Composition relation
Source	Reproducability of process
Target	Stable environment (as buggy as it was)

Composition relation

Type	Composition relation
Source	Reproducability of process
Target	Technical isolation (the lab idea)

Composition relation

Type	Composition relation
Source	Reproducability of process
Target	Citable software, equipment etc.

Composition relation

Type	Composition relation
Source	Reproducability of process
Target	Reproducible execution environment

Composition relation

Type	Composition relation
Source	Validation of data tranformations
Target	Verifiability of transfer

Composition relation

Type	Composition relation
Source	Validation of data tranformations
Target	Quality control and verification

Composition relation

Type	Composition relation
Source	Validation of data tranformations
Target	Ability to test and inspect

Composition relation

Type	Composition relation
Source	Validation of data tranformations
Target	Integrity checks

Composition relation

Type	Composition relation
Source	Validation of data tranformations
Target	Validated data handling environment

Composition relation

Type	Composition relation
Source	Automation of data processing
Target	Automated well defined pipelines

Composition relation

Type	Composition relation
Source	Automation of data processing
Target	Appropriate API's for data handling

Composition relation

Type	Composition relation
Source	Documentation of data pipeline
Target	Documented execution environment

Composition relation

Type	Composition relation
Source	Documentation of data pipeline
Target	Documented calibration

Composition relation

Type	Composition relation
Source	Documentation of data pipeline
Target	Document and inspect data processing steps

Composition relation

Type	Composition relation
Source	Technical support capabilities
Target	Sufficient technical capability of platform according to research scenario

Composition relation

Type	Composition relation
Source	Technical support capabilities
Target	Capacity planning and assurance

Composition relation

Type	Composition relation
Source	Technical support capabilities
Target	Service reliability according to agreement

Composition relation

Type	Composition relation
Source	Monitoring capabilities
Target	Monitoring and reporting on workflows

Composition relation

Type	Composition relation
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Source	Monitoring capabilities
Target	Identify and notify and log problems, both historic and forecasted

Composition relation

Type	Composition relation
Source	Monitoring capabilities
Target	Logging ability

Composition relation

Type	Composition relation
Source	Monitoring capabilities
Target	Monitoring ability

Composition relation

Type	Composition relation
Source	Dataprotection
Target	No known security vulnerabilities

Composition relation

Type	Composition relation
Source	Dataprotection
Target	Access control

Composition relation

Type	Composition relation
Source	Dataprotection
Target	Manage access according to policy

Composition relation

Type	Composition relation
Source	Dataprotection
Target	Evaluate and control risks

Composition relation

Type	Composition relation
Source	Software management
Target	Availability of software in environment

Composition relation

Type	Composition relation
Source	Software management
Target	Handling of software licenses

Composition relation

Type	Composition relation
Source	Software management
Target	Version control of software environment

Composition relation

Type	Composition relation
Source	Data Management
Target	Data sharing

Composition relation

Type	Composition relation
Source	Data Management
Target	Version control of data

Composition relation

Type	Composition relation
Source	Data Management
Target	Slice data into subsets

Composition relation

Type	Composition relation
Source	Data Management
Target	Source traceability for data

Composition relation

Type	Composition relation
Source	Data Management
Target	Transfer data to/from the environment

Composition relation

Type	Composition relation
Source	Data Management
Target	Identify dataset for reference

Composition relation

Type	Composition relation
Source	Ease of use
Target	Push to publication

Composition relation

Type	Composition relation
Source	Ease of use
Target	Push to archive

Composition relation

Type	Composition relation
Source	Ease of use
Target	Infrastructure interoperability and integration

Composition relation

Type	Composition relation
Source	Ease of use
Target	Support for external collaboration

Composition relation

Type	Composition relation
Source	Ease of use
Target	Synchronized working environment across users

Composition relation

Type	Composition relation
Source	Ease of use
Target	Ease of use

Composition relation

Type	Composition relation
Source	Reuseability
Target	Reuse data processing environment

Composition relation

Type	Composition relation
Source	Reuseability
Target	Reuse data workflows

Composition relation

Type	Composition relation
Source	Reuseability
Target	Reuseability

Composition relation

Type	Composition relation
Source	Reuseability
Target	Reuse data

Composition relation

Type	Composition relation
Source	Resource management

Target	Reporting ability
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Composition relation

Type	Composition relation
Source	Resource management
Target	Transparent and predictable economy

Composition relation

Type	Composition relation
Source	Data ingestion
Target	Flexible ingestion methods

Composition relation

Type	Composition relation
Source	Data ingestion
Target	(Semi)automated ingestion

Composition relation

Type	Composition relation
Source	Data ingestion
Target	Continuously available data collection

Composition relation

Type	Composition relation
Source	Data quality
Target	Publishable data

Composition relation

Type	Composition relation
Source	Data quality
Target	Data according to specification

Composition relation

Type	Composition relation
Source	Reuseability
Target	Reusable data

Composition relation

Type	Composition relation
Source	Data quality
Target	Curation ability

Composition relation

Type	Composition relation
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Source	Data quality
Target	Portability

Composition relation

Type	Composition relation
Source	Reuseability
Target	Standardization

Association relation

Type	Association relation
Source	CISO
Target	Protect data according to needs

Association relation

Type	Association relation
Source	CISO
Target	Risk management

Composition relation

Type	Composition relation
Source	Information Security Governance
Target	Protect data according to needs

Association relation

Type	Association relation
Source	Protect data according to needs
Target	Data is protected in accordance with its classification

Association relation

Type	Association relation
Source	Protect data according to needs
Target	Data classified according to policy

Association relation

Type	Association relation
Source	Data classified according to policy
Target	Data is protected in accordance with its classification

Composition relation

Type	Composition relation
Source	Law
Target	Data Privacy Laws

Association relation

Type	Association relation
Source	Data Protection Authority
Target	Data Privacy Laws

Association relation

Type	Association relation
Source	Data Privacy Laws
Target	Monitoring of legal compliance

Composition relation

Type	Composition relation
Source	Legal compliance
Target	Data is protected in accordance with its classification

Composition relation

Type	Composition relation
Source	Legal compliance
Target	Data classified according to policy

Composition relation

Type	Composition relation
Source	Legal compliance
Target	Ability to demonstrate compliance with data privacy laws

Association relation

Type	Association relation
Source	Data is protected in accordance with its classification
Target	Technical data protection must match policy requirements

Association relation

Type	Association relation
Source	Data classified according to policy
Target	Support associating protection classification to a dataset

Association relation

Type	Association relation
Source	Data Privacy Laws
Target	Ability to demonstrate compliance with data privacy laws

Association relation

Type	Association relation
Source	Monitoring of legal compliance
Target	Data processing activities are logged for auditing

Association relation

Type	Association relation
Source	Monitoring of legal compliance
Target	Provable enforcement of data protection policy

Association relation

Type	Association relation
Source	Ability to demonstrate compliance with data privacy laws
Target	Auditing of data protection implementation

Composition relation

Type	Composition relation
Source	Law
Target	Intellectual property law

Association relation

Type	Association relation
Source	Intellectual property law
Target	Protection of confidential data

Association relation

Type	Association relation
Source	Protection of confidential data
Target	Data Privacy Laws

Association relation

Type	Association relation
Source	Industry partner
Target	Protection of confidential data

Composition relation

Type	Composition relation
Source	Contractual compliance
Target	Ability to demonstrate compliance with data privacy laws

Association relation

Type	Association relation
Source	Data is protected in accordance with its classification
Target	Protection of confidential data

Association relation

Type	Association relation
Source	CISO

Target	Protection of confidential data
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Composition relation

Type	Composition relation
Source	Information Security Governance
Target	Protection of confidential data

Composition relation

Type	Composition relation
Source	Risk management
Target	Information Security Governance

Association relation

Type	Association relation
Source	CISO
Target	Information Security Governance

Composition relation

Type	Composition relation
Source	Information Security Governance
Target	Internal audit of compliance with data protection policy

Composition relation

Type	Composition relation
Source	Management
Target	CISO

Association relation

Type	Association relation
Source	Management
Target	Risk management

Association relation

Type	Association relation
Source	Industry partner
Target	Risk management

Association relation

Type	Association relation
Source	Industry partner
Target	Data processing agreement

Association relation

Type	Association relation
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Source	Data processing agreement
Target	Contractual compliance

Association relation

Type	Association relation
Source	Contractual compliance
Target	Data processing agreement linked to data

Association relation

Type	Association relation
Source	Internal audit of compliance with data protection policy
Target	Auditing of data protection implementation

Association relation

Type	Association relation
Source	Auditing of data protection implementation
Target	Provable enforcement of data protection policy

Composition relation

Type	Composition relation
Source	Information Security Policy
Target	Data Classification Policy

Composition relation

Type	Composition relation
Source	Information Security Policy
Target	Data Retension Policy

Composition relation

Type	Composition relation
Source	Information Security Policy
Target	Privacy Policy

Composition relation

Type	Composition relation
Source	Information Security Policy
Target	Password Policy

Composition relation

Type	Composition relation
Source	Information Security Policy
Target	Data Protection Policy

Composition relation

Type	Composition relation
Source	Information Security Policy
Target	Research Data Policy

Association relation

Type	Association relation
Source	National archive
Target	Conservation of national cultural heritage

Association relation

Type	Association relation
Source	Conservation of research data of national historical importance
Target	Conservation of national cultural heritage

Association relation

Type	Association relation
Source	Data collections must be reported to the national archives
Target	Historic value of research data collections is assesed

Association relation

Type	Association relation
Source	Conservation of national cultural heritage
Target	Historic value of research data collections is assesed

Association relation

Type	Association relation
Source	Research data collections can be submitted to the national archives
Target	Conservation of research data of national historical importance

Composition relation

Type	Composition relation
Source	Data Privacy Laws
Target	GDPR - General Data Protection Regulation

Association relation

Type	Association relation
Source	External audit of compliance with data privacy laws
Target	Auditing of data protection implementation

Specialization relation

Type	Specialization relation
Source	GDPR - Supervisory Authority
Target	Data Protection Authority

Association relation

Type	Association relation
Source	GDPR - Supervisory Authority
Target	GDPR - General Data Protection Regulation

Association relation

Type	Association relation
Source	Monitoring of data breaches
Target	Data breaches are reported as required by law

Association relation

Type	Association relation
Source	Data breaches are reported as required by law
Target	GDPR - General Data Protection Regulation

Association relation

Type	Association relation
Source	Data breaches are reported as required by law
Target	Procedures for handling data breaches must be implemented

Association relation

Type	Association relation
Source	Investigation of privacy complaints
Target	Data processing records can be audited by an investigation

Association relation

Type	Association relation
Source	Data processing records can be audited by an investigation
Target	Data processing activities are logged for auditing

Association relation

Type	Association relation
Source	Avoid losses incurred by data breaches
Target	Ability to demonstrate compliance with data privacy laws

Composition relation

Type	Composition relation
Source	Risk management
Target	Avoid losses incurred by data breaches

Composition relation

Type	Composition relation
Source	GDPR - General Data Protection Regulation

Target	Monitoring of data breaches
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Composition relation

Type	Composition relation
Source	GDPR - General Data Protection Regulation
Target	External audit of compliance with data privacy laws

Composition relation

Type	Composition relation
Source	GDPR - General Data Protection Regulation
Target	Investigation of privacy complaints

Association relation

Type	Association relation
Source	Risk management
Target	Ability to demonstrate compliance with data privacy laws

Association relation

Type	Association relation
Source	Ability to demonstrate compliance with data privacy laws
Target	Provable enforcement of data protection policy

Association relation

Type	Association relation
Source	Ability to demonstrate compliance with data privacy laws
Target	Data processing activities are logged for auditing

Association relation

Type	Association relation
Source	Research Practice Committee
Target	Research Ethics

Composition relation

Type	Composition relation
Source	Code of Conduct for Research Integrity
Target	Guidelines for honest reporting of research

Association relation

Type	Association relation
Source	Code of Conduct for Research Integrity
Target	Research Ethics

Composition relation

Type	Composition relation
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Source	Code of Conduct for Research Integrity
Target	Guidelines for transparency in research

Composition relation

Type	Composition relation
Source	Code of Conduct for Research Integrity
Target	Guidelines for accountability in research

Association relation

Type	Association relation
Source	Academic Integrity
Target	Code of Conduct for Research Integrity

Association relation

Type	Association relation
Source	Research Practice Committee
Target	Code of Conduct for Research Integrity

Association relation

Type	Association relation
Source	Academic Integrity
Target	Research Practice Committee

Association relation

Type	Association relation
Source	Code of Conduct for Research Integrity
Target	Research Data Policy

The code of conduct requires the institution to have a transparent research data policy.

Association relation

Type	Association relation
Source	Code of Conduct for Research Integrity
Target	Data Retension Policy

The code of conduct contains guidelines for minimum retension of research data backing a published finding.

Association relation

Type	Association relation
Source	Researcher
Target	Attract funding

Association relation

Type	Association relation
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Source	Researcher
Target	Attract and recruit talent

Association relation

Type	Association relation
Source	Researcher
Target	Prestige

Association relation

Type	Association relation
Source	Researcher
Target	The persuit of knowledge

Association relation

Type	Association relation
Source	Prestige
Target	Publish or perish

Association relation

Type	Association relation
Source	Attract funding
Target	Publish or perish

Association relation

Type	Association relation
Source	The persuit of knowledge
Target	Research freedom

Association relation

Type	Association relation
Source	Researcher
Target	Research freedom

Composition relation

Type	Composition relation
Source	High Quiality Research
Target	Valid results

Association relation

Type	Association relation
Source	Reproducible research
Target	Valid results

Association relation

Type	Association relation
Source	The pursuit of knowledge
Target	Ability to experiment

Association relation

Type	Association relation
Source	Research freedom
Target	Ability to experiment

Association relation

Type	Association relation
Source	Publish or perish
Target	Publishable data

Composition relation

Type	Composition relation
Source	High Quality Research
Target	Valid data

Composition relation

Type	Composition relation
Source	Support for experimentation
Target	Easy access to capacity scaling

Composition relation

Type	Composition relation
Source	Support for experimentation
Target	Pipelines and tools can be easily changed

Composition relation

Type	Composition relation
Source	Support for experimentation
Target	Acceptable turnaround time

Association relation

Type	Association relation
Source	Easy access to capacity scaling
Target	Ability to experiment

Association relation

Type	Association relation
Source	Acceptable turnaround time
Target	Ability to experiment

Association relation

Type	Association relation
Source	Pipelines and tools can be easily changed
Target	Ability to experiment

Association relation

Type	Association relation
Source	Data can get a persistent landing page and a DOI
Target	Publishable data

Composition relation

Type	Composition relation
Source	Attractive research environment
Target	Ability to experiment

Association relation

Type	Association relation
Source	Attract and recruit talent
Target	Attractive research environment

Composition relation

Type	Composition relation
Source	SDU: Cloud
Target	SDU: Cloud Storage

Composition relation

Type	Composition relation
Source	SDU: Cloud
Target	SDU: Cloud Compute

Association relation

Type	Association relation
Source	Support for collaboration
Target	SDU: OneDrive

Association relation

Type	Association relation
Source	SDU: OneDrive
Target	Technical data protection must match policy requirements

Association relation

Type	Association relation
Source	Support associating protection classification to a dataset

Target	SDU: OneDrive
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Association relation

Type	Association relation
Source	Data processing activities are logged for auditing
Target	SDU: OneDrive

Association relation

Type	Association relation
Source	SDU: NextCloud
Target	Support for collaboration

Association relation

Type	Association relation
Source	SDU: NextCloud
Target	Support associating protection classification to a dataset

Association relation

Type	Association relation
Source	Legal metadata
Target	SDU: NextCloud

Association relation

Type	Association relation
Source	Legal metadata
Target	SDU: OneDrive

Association relation

Type	Association relation
Source	SDU: NextCloud
Target	Data processing activities are logged for auditing

Association relation

Type	Association relation
Source	SDU: NextCloud
Target	Technical data protection must match policy requirements

Association relation

Type	Association relation
Source	SDU: Cloud Storage
Target	Data processing activities are logged for auditing

Composition relation

Type	Composition relation
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Source	Data Management
Target	Data must be preserved according to an agreement

Composition relation

Type	Composition relation
Source	Ease of use
Target	Support for experimentation

Association relation

Type	Association relation
Source	Data must be preserved according to an agreement
Target	SDU: Cloud Storage

Association relation

Type	Association relation
Source	SDU: Cloud Storage
Target	Support for collaboration

Association relation

Type	Association relation
Source	Source traceability for data
Target	SDU: Cloud Storage

Association relation

Type	Association relation
Source	Metadata targeted at the designated community
Target	SDU: Cloud Storage

Association relation

Type	Association relation
Source	SDU: Cloud Compute
Target	Version control of software environment

Association relation

Type	Association relation
Source	Documented execution environment
Target	SDU: Cloud Compute

Association relation

Type	Association relation
Source	Metadata describing versions of software in the pipeline and its TRL
Target	SDU: Cloud Compute

Association relation

Type	Association relation
Source	SDU: Secure Server
Target	Technical data protection must match policy requirements

Association relation

Type	Association relation
Source	SDU: Secure Server
Target	Support associating protection classification to a dataset

Association relation

Type	Association relation
Source	SDU: Secure Server
Target	Data processing activities are logged for auditing

Association relation

Type	Association relation
Source	Collection of tools and pipelines
Target	SDU: Cloud Compute

Association relation

Type	Association relation
Source	Computing capacity
Target	SDU: Cloud Compute

Association relation

Type	Association relation
Source	Validated data handling environment
Target	SDU: Cloud Compute

Association relation

Type	Association relation
Source	Stable environment (as buggy as it was)
Target	SDU: Cloud Compute

Association relation

Type	Association relation
Source	Easy archiving of working environment
Target	SDU: Cloud Compute

Association relation

Type	Association relation
Source	Monitoring and reporting on workflows
Target	SDU: Cloud Compute

Association relation

Type	Association relation
Source	Manage access according to policy
Target	CBS: Work-related drives

Association relation

Type	Association relation
Source	Support for collaboration
Target	CBS: OneDrive

Association relation

Type	Association relation
Source	Support for collaboration
Target	CBS: Safe cloud storage

Association relation

Type	Association relation
Source	Technical data protection must match policy requirements
Target	CBS: Work-related drives

Association relation

Type	Association relation
Source	Technical data protection must match policy requirements
Target	CBS: Department drive/institute drive (G-drive)

Association relation

Type	Association relation
Source	Technical data protection must match policy requirements
Target	CBS: Personal drive (H-drives)

Association relation

Type	Association relation
Source	Technical data protection must match policy requirements
Target	CBS: Safe cloud storage

Association relation

Type	Association relation
Source	CBS: OneDrive
Target	Manage access according to policy

Association relation

Type	Association relation
Source	Data processing agreement linked to data

Target	DTU: LSF data-repository
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Association relation

Type	Association relation
Source	Provable enforcement of data protection policy
Target	DTU: LSF data-repository

Association relation

Type	Association relation
Source	DTU: LSF data-repository
Target	Technical data protection must match policy requirements

Association relation

Type	Association relation
Source	Legal metadata
Target	DTU: LSF data-repository

Association relation

Type	Association relation
Source	Support associating protection classification to a dataset
Target	DTU: LSF data-repository

Association relation

Type	Association relation
Source	Metadata targeted at the designated community
Target	DTU: LSF data-repository

Association relation

Type	Association relation
Source	Collection of tools and pipelines
Target	DTU: LSF data-repository

Association relation

Type	Association relation
Source	Support for collaboration
Target	DTU: LSF data-repository

Association relation

Type	Association relation
Source	Source traceability for data
Target	DTU: LSF data-repository

Association relation

Type	Association relation
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Source	Data must be preserved according to an agreement
Target	DTU: LSF data-repository

Association relation

Type	Association relation
Source	DTU: Wind Atlas
Target	Computing capacity

Association relation

Type	Association relation
Source	Data sharing
Target	DTU: Wind Atlas

Association relation

Type	Association relation
Source	Data sharing
Target	DTU: LSF data-repository

Association relation

Type	Association relation
Source	Metadata targeted at the designated community
Target	DTU: Wind Atlas

Association relation

Type	Association relation
Source	Collection of tools and pipelines
Target	DTU: Wind Atlas

Association relation

Type	Association relation
Source	Computing capacity
Target	DTU: LSF data-repository

Association relation

Type	Association relation
Source	Documented execution environment
Target	DTU: Wind Atlas

Association relation

Type	Association relation
Source	Validated data handling environment
Target	DTU: Wind Atlas

Association relation

Type	Association relation
Source	Monitoring and reporting on workflows
Target	DTU: Wind Atlas

Association relation

Type	Association relation
Source	Manage access according to policy
Target	DTU: LSF data-repository

Association relation

Type	Association relation
Source	Contractual compliance
Target	Data must be protected according to an agreement

Association relation

Type	Association relation
Source	Data must be protected according to an agreement
Target	DTU: LSF data-repository

Association relation

Type	Association relation
Source	Data format standards
Target	DTU: Wind Atlas

Association relation

Type	Association relation
Source	Data format standards
Target	DTU: LSF data-repository

Association relation

Type	Association relation
Source	Source traceability for data
Target	DTU: Wind Atlas

Association relation

Type	Association relation
Source	Data must be preserved according to an agreement
Target	DTU: Wind Atlas

Association relation

Type	Association relation
Source	Access control
Target	DTU: LSF data-repository

Association relation

Type	Association relation
Source	Access control
Target	DTU: Wind Atlas

Association relation

Type	Association relation
Source	Monitoring and reporting on workflows
Target	DTU: LSF data-repository

Association relation

Type	Association relation
Source	Service reliability according to agreement
Target	DTU: Wind Atlas

Association relation

Type	Association relation
Source	Technical data protection must match policy requirements
Target	AAU: Research Data Archive

Association relation

Type	Association relation
Source	Technical data protection must match policy requirements
Target	AAU: SMB file shares

Association relation

Type	Association relation
Source	Manage access according to policy
Target	AAU: Research Data Archive

Association relation

Type	Association relation
Source	Access control
Target	AAU: SMB file shares

Association relation

Type	Association relation
Source	Support for collaboration
Target	AAU: Research Data Archive