# Health-RI FAIR Data stewards basics course

## 19 & 20 June + 3 July 2023

Fieke Schoots & Mijke Jetten

# Welcome

## Mijke Jetten
**FAIR Data Lead**

## Fieke Schoots
**Training Coördinator FAIR Data**

Contact us via
Fairservicedesk@health-ri.nl

https://www.health-ri.nl/nl/over-health-ri/health-ri-team

# About the course

- **Introductory course**, that touches upon many topics of datastewardship in the health domain (follow-up of previous Helis Academy courses)
- Participants come from **different backgrounds and have different levels of expertise**. We try to cater for all, but inevitably some topics may be too specific, others too general for individual participants.
- We try to make the course as interactive as possible. We invite you **participate actively**, and relate the information to your daily practice.
- You are the first cohort, of the course in this form. Please **tell us your experiences** so that we can improve. During the course and in the final evaluation.
- We try to be flexible: **the training is a success if you feel that it is time well spent**!

# Programme

- Day 1: Data stewardship, policy and planning
- Day 2: Tools and workflows for FAIR (meta)data
- Day 3: Sharing and reuse for research

The full programme is in the Teams folder and here

# Data stewardship, Policy and Planning

Day 1 | 19 June 2023

# DAY 1 | Programme

| Day 1 | Topic | Trainers | Type |
|---|---|---|---|
| 10.00 - 11.00 | Welcome & Programme<br>Research data life cycle & FAIR principles | Course organisers | Informal; Presentation |
| 11.00 – 11.30 | Demonstrator project: Duchenne Data Platform | Nawel Lalout, Project Manager Duchenne FAIR Data | Presentation |
| 11.30 – 11.45 | Coffee break | | |
| 11.45 – 12.30 | Data stewardship: introduction to profiles and competencies & learning goals | Course organisers | Group activity |
| 12.30 – 13.15 | Lunch break | | |
| 13.15 – 14.00 | Perspectives on FAIR data stewardship<br>- Funder<br>- Health institutions | - Ellen Carbo, ZonMW | Presentation |
| 14.00 – 14.15 | Tea break | | |
| 14.15 – 15.30 | Data Management Planning<br>- Reviewing Data Management Plans activity | Petra Overveld & Martiene Moester, LUMC | Presentation; Hands-on |
| 15.30 – 16.30 | Ethical, Legal and Societal Implications (ELSI) of FAIR data<br>- Informed consent<br>- Frequently Asked Questions (and answers) | - Elize Vlainic, AUMC,<br>- Miriam Beusink, ELSI Team Health-RI | Presentation; Hands-on |
| 16.30 – 16.45 | Wrap-up | Course organisers | |

# DAY 1 | Data stewardship, Policy and Planning

**10.00 - 11.00**

## Introduction(s)

**Fieke Schoots, Mijke Jetten**
**FAIR data implementation team, Health-RI**

### Learning outcomes

- Identify the focus, goals and program of the course
- Understand the ambitions of Health-RI
- Explain the different phases in the research data life cycle
- Explain what the FAIR principles stand for

# Agenda

- Introduction round
- Introduction Health-RI & FAIR implementation team in H-RI
- Research data life cycle
- FAIR Principles

# Let’s get to know each other

- As an icebreaker, in 1 minute, tell us:
  - What is your role?
  - A  fun fact about yourself

# From the registration form

5. How long have you been working in your current role?

Meer details

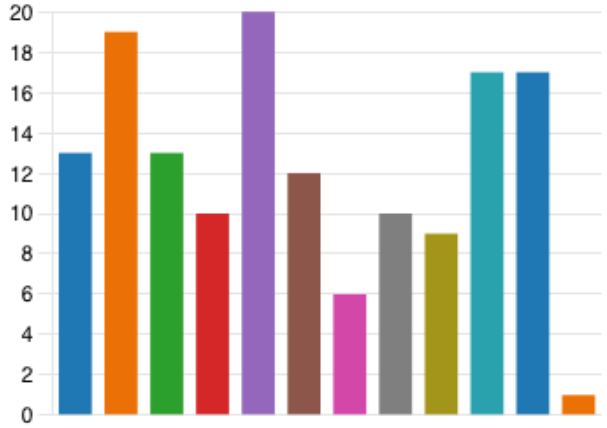
| | |
|---|---|
| Less than 3 months | 9 |
| Between 3 and 6 months | 2 |
| Between 6 and 12 months | 6 |
| Longer than 1 year | 5 |

# From the registration form

6. In which topics are you particularly interested?

Meer details

| | |
|---|---|
| Data stewards task areas and co... | 13 |
| FAIR principles | 19 |
| Reviewing data management pl... | 13 |
| Ethical, Legal, Social Implications | 10 |
| Metadata & ontologies | 20 |
| RDM infrastructure and tools | 12 |
| Software sustainability | 6 |
| Data discovery and capture | 10 |
| Data processing | 9 |
| Data publishing and archiving | 17 |
| Awareness raising & delivering t... | 17 |
| Andere | 1 |



# Landscape

- Many initiatives and communities on a local, domain, national and global level
- In this presentation, we provide a quick overview of the most important ones
- Click the links for further info + how to join
- In case of questions (later), contact Mijke or Fieke and we are happy to further explain / help you

# Domain community (LSH)

**Harmonise good data access & stewardship**

Develop the TDCC as data stewardship hub for the LSH domain, supporting data access across LSH stakeholders (and beyond)

**Enhance Interoperability of digital solutions & resources**

Develop the TDCC as "LSH interoperability-network", supporting the need to combine data, software and models across teams and organisations

**Strengthen capacity & expertise base in digital research**

Develop the TDCC as LSH community platform to strengthen the training & support network in digital LSH research, aligned with the international field

TDCC-LSH
Life Sciences & Health

## Supporting the future of data driven health & life sciences

Training & community building

Technology Hotels

Learning healthcare system

Learning nutrition system

Learning biotech system

Learning food production system

Learning 'Eco system'

https://tdcc.nl/lsh

UMCG Digital Competence Center (DCC)
We help researchers to make the research data FAIR and compliant with applicable laws and regulations.

# Domain community (LSH)

## Health-RI Data Stewardship Community

The Health-RI Data Stewardship Community (DSC) is a community hub for health and life sciences data stewards that facilitates sharing experiences and collaboration.

The Health-RI Data Stewardship Community aims to:

- Accelerate the implementation of data stewardship in health care and life sciences institutes
- Share experiences between data stewards across the health care and life sciences domain
- Join forces to tackle cross-domain and cross-institutional problems together

health RI enabling data driven health

TDCC-LSH Life Sciences & Health

## Get involved

The next meeting will be scheduled soon.

Are you a data steward working in the health or life sciences domain? Sign up to become a member of the Health-RI DSC and receive updates on meetings and other activities.

**Previous meetings:**

- 2023-04-20 Shared notes

- 2023-03-13 Shared notes

The Health-RI DSC is facilitated by Fieke Schoots and Mijke Jetten (Health-RI). Feel free to contact us to learn more about the Health-RI DSC or if you want to collaborate.

Website
Mailinglist

# National community (cross domain)

## Data Stewards Interest Group (DSIG)

- Informal, inclusive community for data stewards and like-minded, fostering the (Dutch) national implementation of data stewardship
- Gradually changed into a cross-domain community: it currently welcomes data stewards related to all three Dutch Thematic Digital Competence Centres (LSH, SSH and NES)) and international colleagues
- Open to everyone interested in data stewardship: not limited to a specific academic discipline, nor to the Netherlands, but it is Netherlands based
- Facilitates direct peer-learning and knowledge sharing in a very fruitful way
- Via the DSIG website and TDCC website all materials are available for others who want to set up a similar community within their own country, region or discipline
- The DSIG facilitates a mailing list and a Slack community, to promote events, ask each other questions or feedback, and share experiences

# National community (cross domain)

Landelijk Coördinatiepunt Research Data Management

Home | Results | RDM NL | (L)DCC | About | Contact


https://www.lcrdm.nl/en

## THE DATA SUPPORT COLLECTIVE

The National Coordination Point Research Data Management (LCRDM) is a national **network** of experts in the field of research data management (RDM). The LCRDM forms the link between **policy and solution**. Within the LCRDM, experts work together to put RDM topics on the agenda that require a joint national approach.

Results | RDM NL

- Data Stewardship
- Engagement of researchers
- Financial aspects of FAIR
- Governance & policy
- Legal aspects & privacy
- Metadata & vocabularies
- Sustainable software
- Tools & I

RDM NL | (L)DCC

- Glossary
- Online tools
- Repositories
- Research infrastructures
- Training
- Working groups

# National community (cross domain)

## Regieorgaan Open Science officieel van start onder de naam Open Science NL

23 maart 2023

**Vertegenwoordigers van vijftien kennisinstellingen en het ministerie van OCW hebben het convenant voor Open Science NL ondertekend. Hierin staan nadere afspraken over het nieuw op te zetten regieorgaan Open Science bij NWO, dat Open Science NL heet. De feestelijke ondertekening vond plaats tijdens een bijeenkomst aan de TU in Delft, die geheel in het teken stond van open science.**

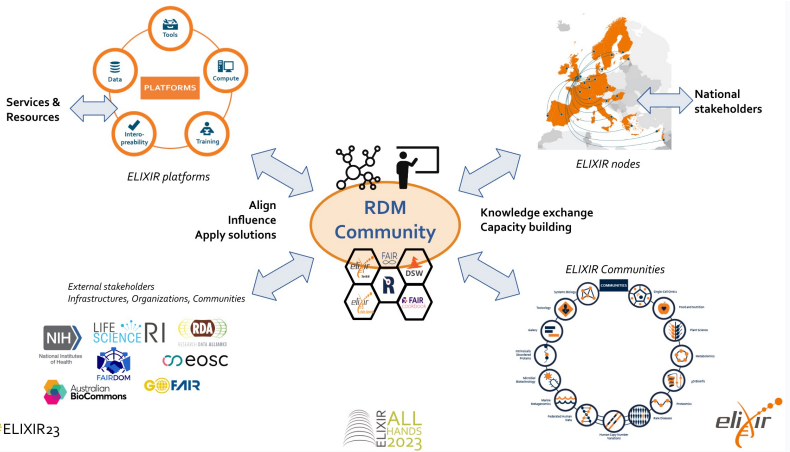
Met de ondertekening van het convenant is het nieuw op te richten regieorgaan een feit. Het doel van Open Science NL is om de transitie naar open science in Nederland verder te versnellen. Open Science NL zal organisatorisch onderdeel zijn van NWO, maar heeft een breed gedragen governance, waarin alle belangrijke partijen uit het veld die op dit onderwerp samenwerken hun perspectief geven.

"Met de ondertekening breekt de volgende fase aan, waarin we vernieuwende financieringsprogramma's gaan ontwikkelen om de hoge ambities die we in Nederland hebben te ondersteunen en versnellen."

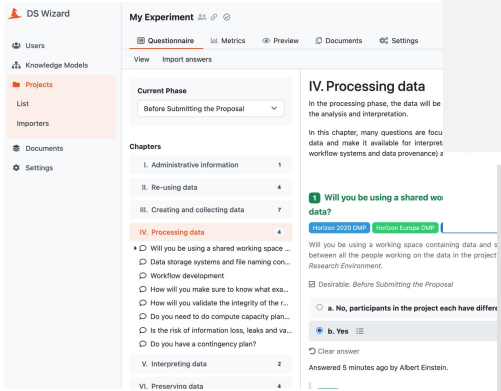
Hans de Jonge, kwartiermaker/directeur Regieorgaan Open Science NL

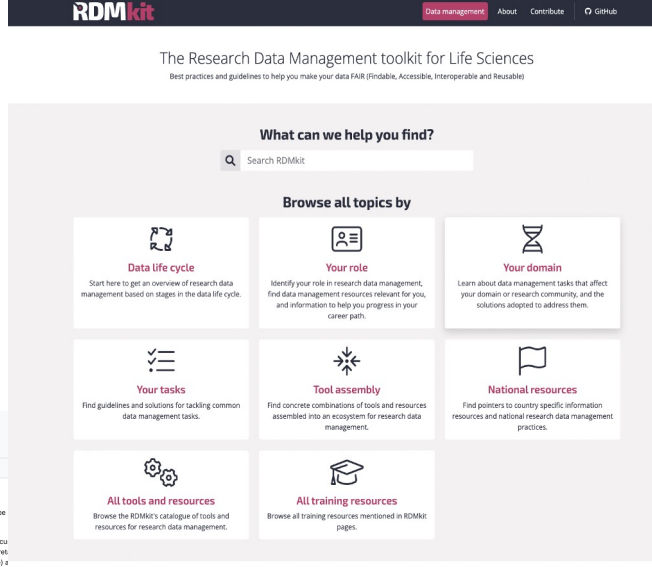
[Persbericht]
[Nationaal Programma Open Science]

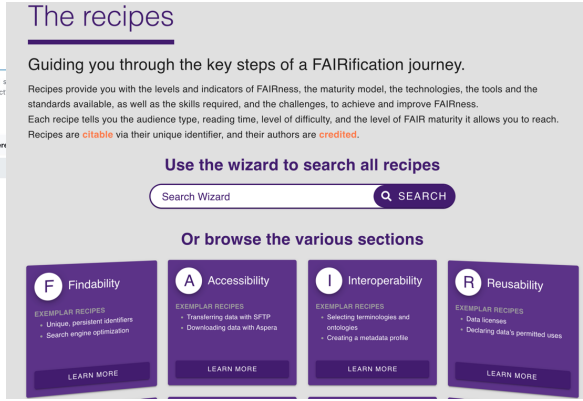
# European community (LSH)




[Mailinglist]

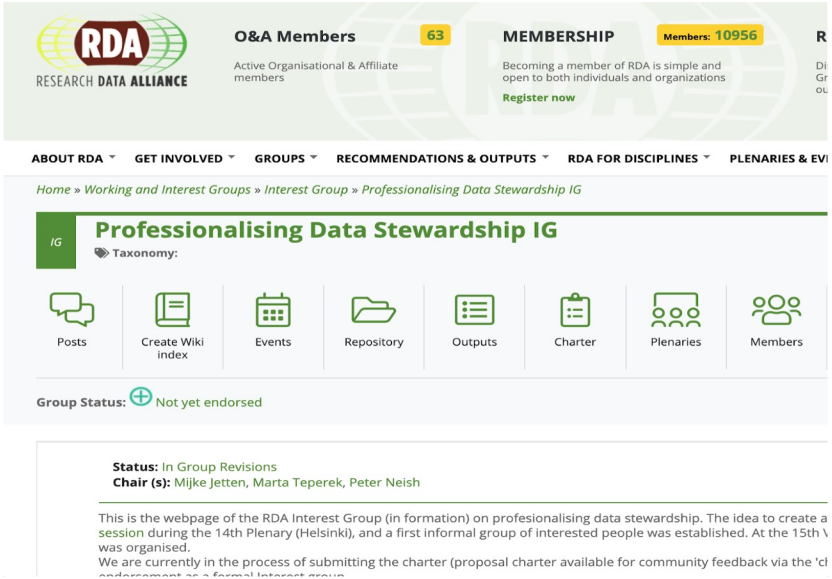


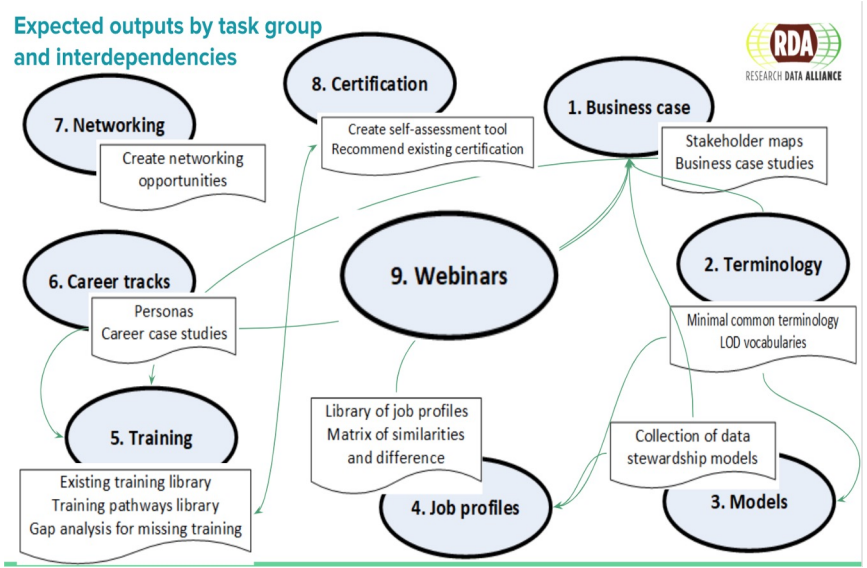




https://rdmkit.elixir-europe.org
https://faircookbook.elixir-europe.org
https://ds-wizard.org

# Global community (cross domain)




[Website + join option]

[Slack community]

# European community (cross-domain)


## The European Open Science Cloud

The ambition of the European Open Science Cloud, known as EOSC, is to develop a **'Web of FAIR Data and Services' for science in Europe**. EOSC will be a multi-disciplinary environment where researchers can publish, find and re-use data, tools and services, enabling them to better conduct their work.

EOSC builds on existing infrastructure and services supported by the European Commission, Member States and research communities. It brings these together in a federated 'system of systems' approach, adding value by aggregating content and enabling services to be used together.

## Data stewardship, curricula and career paths

The Task Force **Data stewardship, curriculum and career paths** will focus on the Data Stewards role and their core activities. To help researchers to make FAIR data it is necessary to have professional staff. To keep professional staff, we need to have a common curriculum for their skills and possibilities for career paths.

Website

## Metadata and data quality

To ensure research objects can be discovered, understood and reused, as well a
content can be relied on.

- FAIR Metrics and Data Quality Task Force
- Semantic Interoperability Task Force
- PID Policy and Implementation Task Force (PID TF)

## Research careers and curricula

The most important stakeholders for EOSC are the researchers.

- Data Stewardship, Curricula and Career Paths Task Force
- Research Careers, Recognition and Credit Task Force
- Upskilling Countries to Engage in EOSC Task Force
- Researcher Engagement & Adoption Task Force (REA TF)

## Technical challenges

s on implementing the technical architecture and interoperability in EOSC a

- Authentication and Authorization Infrastructure Architecture (AAI) Task Force
- Infrastructures for Quality Research Software Task Force
- Technical Interoperability of Data and Services Task Force
- Long-Term Data Preservation Task Force

# European Commission regulation (cross-domain)

## European Health Data Space

Website

In order to unleash the full potential of health data, the European Commission is presenting a regulation to set up the European Health Data Space EN ••• . This proposal

- supports individuals to take control of their own health data
- supports the use of health data for better healthcare delivery, better research, innovation and policy making and
- enables the EU to make full use of the potential offered by a safe and secure exchange, use and reuse of health data

The European Health Data Space is a health specific ecosystem comprised of rules, common standards and practices, infrastructures and a governance framework that aims at

- empowering individuals through increased digital access to and control of their electronic personal health data, at national level and EU-wide, and support to their free movement, as well as fostering a genuine single market for electronic health record systems, relevant medical devices and high risk AI systems (primary use of data EN •••)
- providing a consistent, trustworthy and efficient set-up for the use of health data for research, innovation, policy-making and regulatory activities (secondary use of data)

# Health-RI & FAIR data

- Quick overview of Health-RI as an organisation, including current activities
- Focus on the FAIR team efforts, as that is where this course, trainers and many of your UMCs RDM/FAIR colleagues are positioned
- In case of questions (later), contact Mijke or Fieke and we are happy to further explain / help you

health RI
enabling data driven health & life sciences

# Our mission

Better health(care) for citizens and patients

*by*

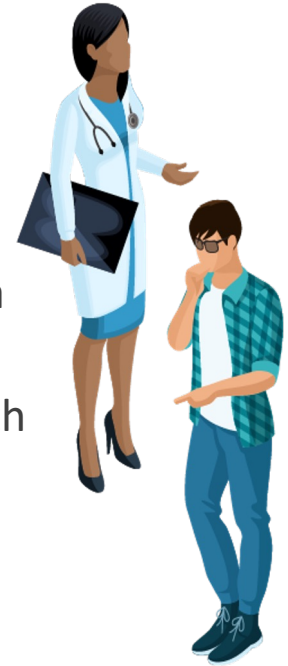
reusing health data

*with*

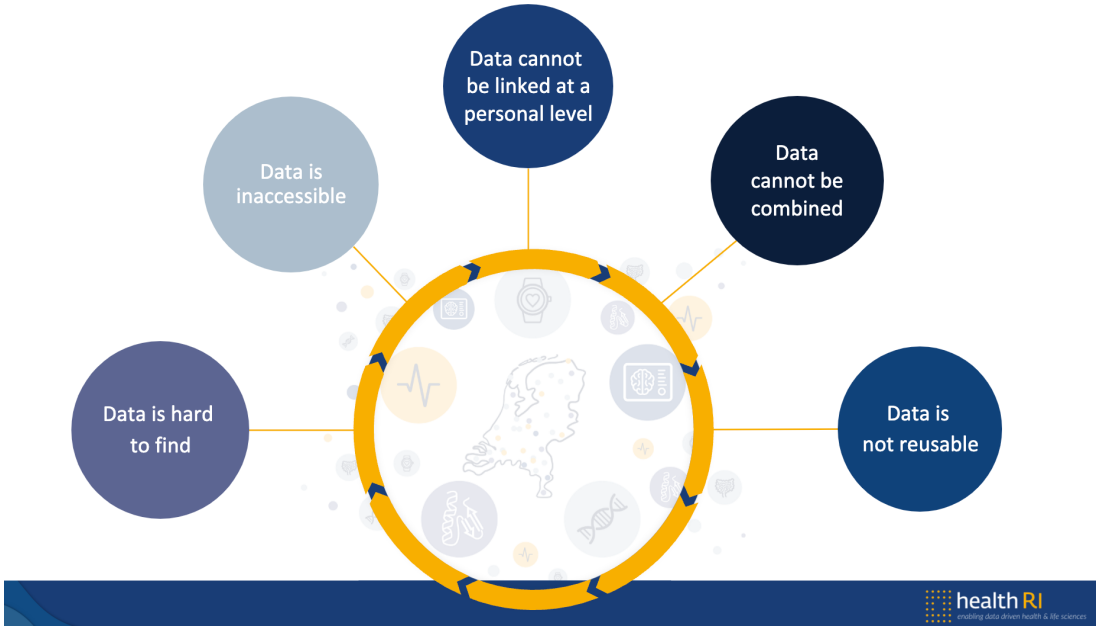
an integrated health data infrastructure

*for*

research and innovation



# The problem



# The challenge: fragmentation

Not a technical problem, but an organizational, social and cultural problem

## Momentum

← News

**Dutch Government has pledged 69 million euros investment to Health-RI**

News | 9 April 2021

# How does Health-RI work?

**1**

**National trust framework**

A. Citizen control
B. Interoperability & linking standards
C. Data governance policy & agreements
D. Public-private collaboration models

**2**

**FAIR health data**

A. Establishing hub and nodes model with regional nodes
B. Establishing central hub and international connection
C. Facilitating federated analysis and federated learning

**3**

**One-stop shop**

A. Central FAIR data catalogue
B. Developing a portal for data driven research and innovation
C. Analysis software and digital workspace
D. Support, training & dissemination

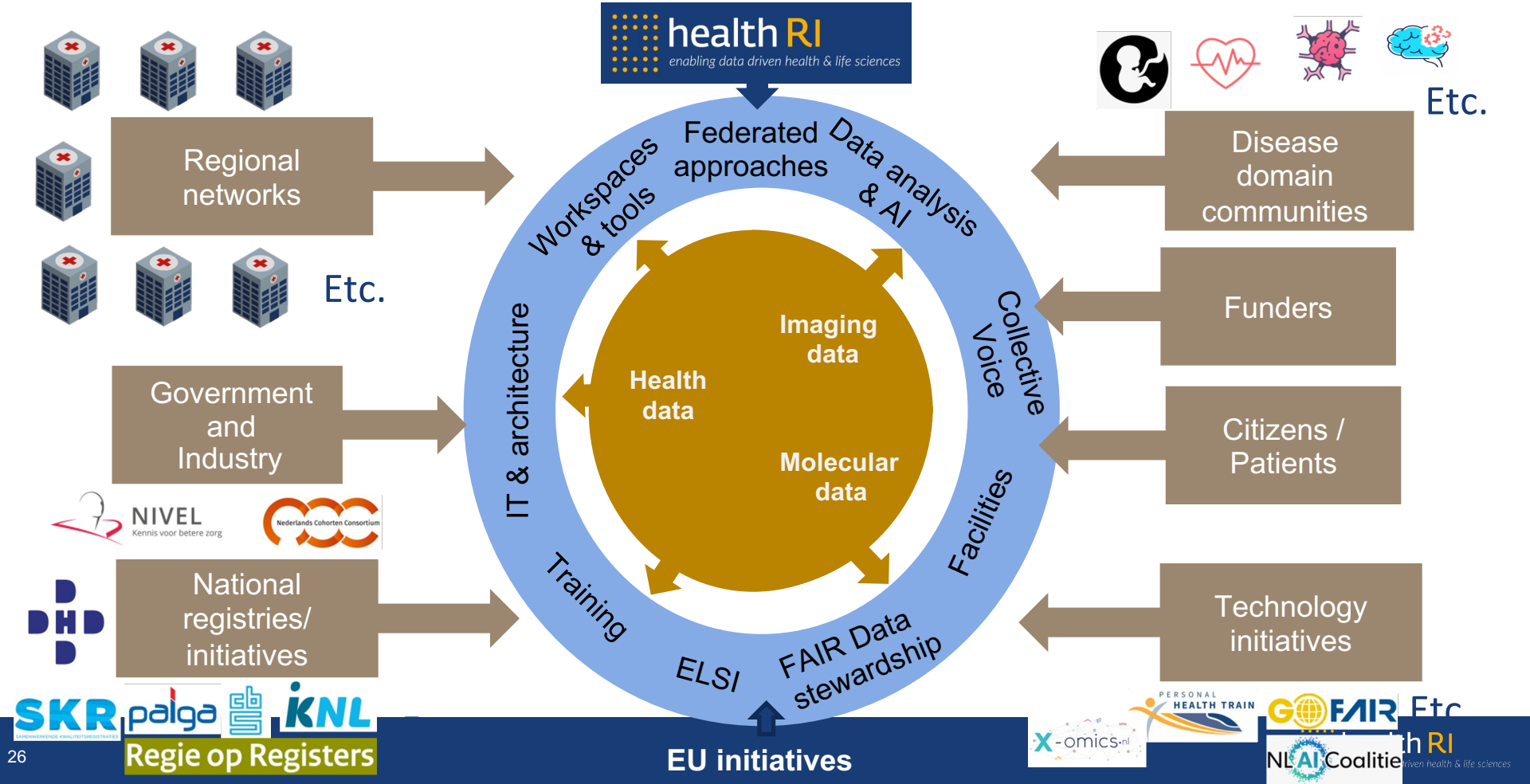
**0** Management & organization

A. Stakeholder management
B. Sustainable business model
C. Communication

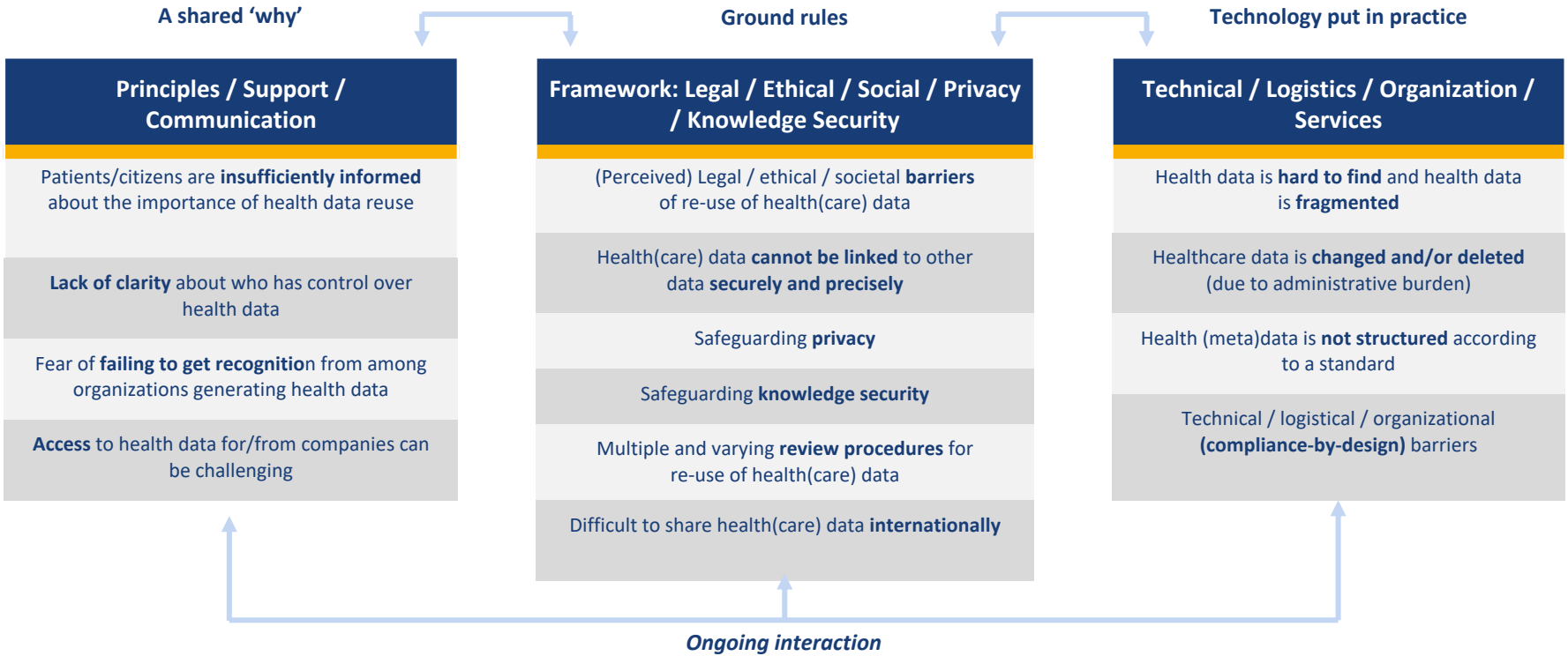

**TEAMS**

**ELSI, FAIR, ARCHITECTURE, BIOBANK&COLLECTIONS, SERVICES**

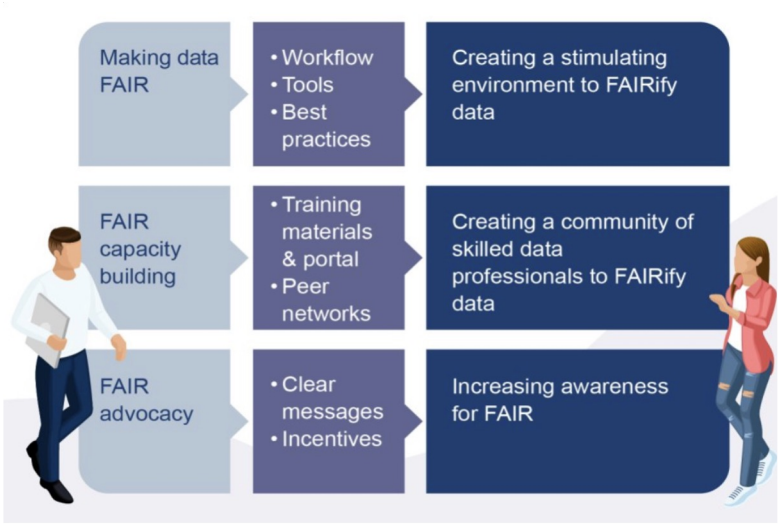
# **Health-RI:** integrated health data infrastructure for research and innovation



# Data reuse obstacle-removal-traject (OVT)



# FAIR activities




Together with the FAIR Data Implementation team, a group of experts within the Health-RI regional nodes is taking the next steps for these three core activities. Details can be found in our 2022-23 workplan.

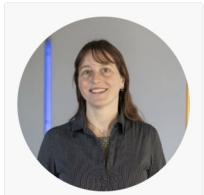
## Links to blogs

- Health-RI demonstrator projects and data champions: the FAIR principles put into practice
- Looking back at 2022 within the Health-RI FAIR Data Implementation team

## Newsletters

- #19 08-MAY-2023
- #18 28-MAR-2023
- #17 27-FEB-2023
- #16 17-JAN-2023
- #15 23-DEC-2022

Website



**Mijke Jetten**
*FAIR Data Lead*

**Pauline L'Hénaff**
*Program Manager FAIR Data*

**Bruna dos Santos Vieira**
*Working with FAIR since 2019; Radboudumc; Health-RI*

**Jolanda Strubel**
*Working with FAIR since 2019; Health-RI*

**Sander de Ridder**

**Fieke Schoots**
*Training Coördinator FAIR Data*

**Ruben Kok**
*Chief Strategic Alliances, Board member*

## Health-RI FAIR coordinators at regional nodes

Morris Swertz & Efi Gkoumasi (node Groningen), Rudy Scholte (node Amsterdam), Viola Woeckel (node Rotterdam), Klaske Siegersma (node Utrecht), Olav Palmen (node Maastricht), Marco Roos, Marian Beekman (node Leiden), Mirjam Brullemans-Spansier (node Nijmegen), Toine Kuiper (node Eindhoven).

# Demonstrator & Data Champions portfolio

- Currently 5 Demonstrator projects and 10 Data Champions published
- Register your projects and champions (see overview pages)
- Contact: Jolanda Strubel

**Duchenne Data Platform (DDP)**
Key facts:
- Rare Diseases Domain
- Patient Clinical Data
- Patient Reported Outcomes
- Data Access Restricted
- First sustainable patient-empowered FAIR registry
- Custom-designed Extract, Transform and Load pipeline
- Open source 'FAIR-in-a-Box' solution

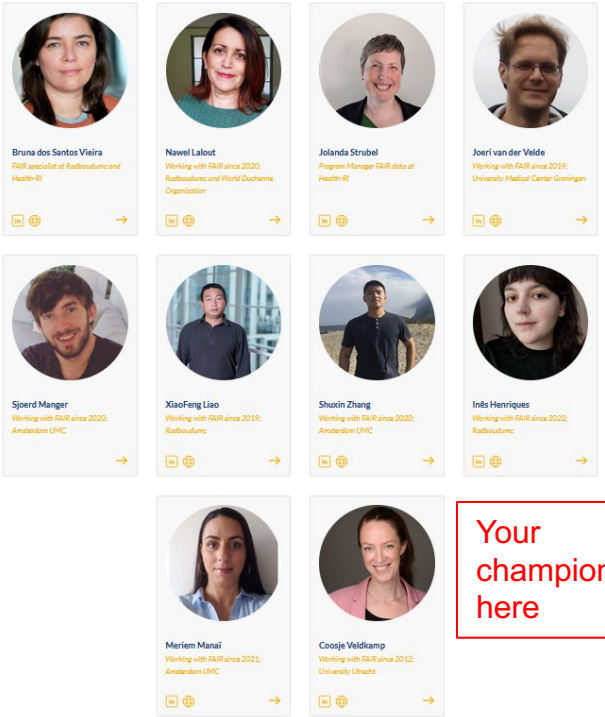
**Vascular Anomalies Registry (VASCA)**
Key facts:
- De novo FAIRification
- Real Time FAIRification upon data collection
- FAIRification at the source installed in electronic data capture system
- Data collected and controlled locally
- Local data from all centers can be queried in real time

**CovidPredict**
Key facts:
- largest high granular covid database of admitted patients in the Netherlands
- ongoing inclusions and scientific projects
- ongoing scientific output
- societal impact in many national newspapers

**X-omics**
Key facts
- A National Roadmap Large-Scale Research Infrastructure
- Multi-omics data analysis integration & stewardship

**The YOUth Cohort Study**
Key facts
- YOUth has been awarded the Dutch Data Prize at the FAIR Data Day 2022
- More than 4000 children from the general population and their parents participate in YOUth
- Data are of high quality: rigorous measurements protocols and data quality control

Your project here




Your champion here

# Research Data Life Cycle

- Quick overview of the different stages
- Activities related to the different stages
- Course topics according to the research data life cycle

# Research data life cycle


Data life cycle

## Planning

- What is data management planning?
- Why is data management planning important?
- What should be considered for data management planning?
- Related pages
- More information

https://rdmkit.elixir-europe.org/data_life_cycle

## Planning data
Design research; plan data management; plan consent for sharing; plan data collection, processing protocols and templates; explore existing data resources

## Collecting data
Collect data; capture data with metadata; acquire existing third party data

## Processing and analysing data
Enter, digitize, transcribe and translate data; check, validate, clean, anonymize; derive data; describe; manage and store data; analyse and interpret data; produce research output; cite data sources

## Publishing and sharing data
Establish copyright; create user documentation; create discovery metadata; select appropriate access to data; publish/share data; promote data

## Preserving data
Migrate data to best format/media; store and backup data; create preservation documentation; preserve and curate data

## Re-using data
Conduct secondary analyses; undertake follow-up research; conduct research reviews; scrutinize fundings; use data for teaching and learning

# The Research Data Life Cycle in this course

Best practices

FAIRification workflows

Policy

DMP's

ELSI

Health-RI (meta) data portal

FAIR data point

iCRF

Metadata

Software sustainability

Data organisation in spreadsheets

Data archiving

# FAIR

Findable, Accessible, Interoperable, Reusable

Wilkinson, M., Dumontier, M., Aalbersberg, I. *et al.* The FAIR Guiding Principles for scientific data management and stewardship. *Sci Data* **3**, 160018 (2016). https://doi.org/10.1038/sdata.2016.18

# The FAIR data principles

## Findable

To identify data for both humans and computers by computersing metadata that facilitate searching for specific datasets.

## Accessible

Data is stored properly -for long term- so that it can easily be accessed and/or downloaded with well-defined access conditions. These could be access to the metadata (only) or getting access to the actual data.

## Interoperable

The ability to combine different datasets either by humans or by computers. Therefore multiple agreements have to be made with respect to the terminology used to prevent ambiguities of the meanings of these terms.

## Reusable

Data should be ready to be used for future research and to be further processed using computational methods. This requires adequate information about how the data were obtained and processed (provenance), and an appropriate license.

https://www.dtls.nl/fair-data/data-stewardship/

# FAIR principles

https://www.go-fair.org/fair-principles/
https://www.go-fair.org/how-to-go-fair/

## Refer to data (or any digital object), metadata (information about that digital object), and infrastructure

### Findable

- The data must be findable. It should be possible to find a suitable data set for a research project based on what it contains

- The first step in (re)using data is to find them. Metadata and data should be easy to find for both humans and computers

- Machine-readable metadata are essential for automatic discovery of datasets and services

- F1. (Meta)data are assigned a globally unique and persistent identifier
  F2. Data are described with rich metadata (defined by R1)
  F3. Metadata clearly and explicitly include the identifier of the data they describe
  F4. (Meta)data are registered or indexed in a searchable resource

# Accessible

- The data must be accessible. A description should exist of how the data can be obtained. And there should be guarantees that this will still work after years.

- Once the user finds the required data, she/he needs to know how they can be accessed, possibly including authentication and authorisation

- A1. (Meta)data are retrievable by their identifier using a standardised communications protocol
  A1.1 The protocol is open, free, and universally implementable
  A1.2 The protocol allows for an authentication and authorisation procedure, where necessary
  A2. Metadata are accessible, even when the data are no longer available

# Interoperable

- The data should be interoperable. It should be structured in a way that is well described, maybe even self-described. References to values and methods (SOPs) should be unambiguous

- The data usually need to be integrated with other data. In addition, the data needs to interoperate with applications or workflows for analysis, storage, and processing

- I1. (Meta)data use a formal, accessible, shared, and broadly applicable language for knowledge representation
  I2. (Meta)data use vocabularies that follow FAIR principles
  I3. (Meta)data include qualified references to other (meta)data

# Reusable

- Obviously, we want to ultimately make the data reusable. This requires that the data is well enough described so that it is clear how it was obtained. Also, it requires that the licensing actually permits the reuse

- The ultimate goal of FAIR is to optimise the reuse of data. To achieve this, metadata and data should be well-described so that they can be replicated and/or combined in different settings

- R1. (Meta)data are richly described with a plurality of accurate and relevant attributes
  R1.1. (Meta)data are released with a clear and accessible data usage license
  R1.2. (Meta)data are associated with detailed provenance
  R1.3. (Meta)data meet domain-relevant community standards

FAIR for human beings, for machines and taking into account legal requirements (such as privacy)

# The data problem

# Resources on FAIR principles in health

- Webinars:
  - FAIR principles in practice for health data: Personalized Health Informatics group, SIB Swiss Institute of Bioinformatics: https://youtu.be/fXCR8lkxcw8
  - FAIR training from the World Duchenne Organization (March 2023)
    - Programme: https://www.worldduchenne.org/wp-content/uploads/fds_fair_training_programme_2023_final-.pdf
    - Slides: https://drive.google.com/drive/folders/142ayXVAU8DpXesaMdXTwxEqJgPD6kYlw
    - Videos: https://www.youtube.com/playlist?list=PLi4jXxW5UG9hozZIkeodQGxQGkNH9JYio
- FAIR cookbook: https://faircookbook.elixir-europe.org/content/home.html
- Tess training portal on FAIR data: https://tess.elixir-europe.org/materials?scientific_topics=FAIR+data

# DAY 1 | Data stewardship, Policy and Planning

**11.00 - 11.30**

## Demonstrator project: Duchenne Data Platform

**Nawel Lalout**
**Project manager Duchenne FAIR data**

### Learning outcomes

- Recognize steps in FAIR implementation in an example project (patient registry)

# DAY 1 | Data stewardship, Policy and Planning

**11.45 - 12.30**

## Data stewardship: introduction to profiles and competencies

**Fieke & Mijke**

### Learning outcomes

- Recognise the data steward competency framework in the learning outcomes of the course
- Apply data stewards profiles and competency framework to own tasks and role
- Define learning goal

# Agenda

- Introduction into the competence and task areas  of a data steward
- Discuss in groups which are most important / prioritise
- Sketch individual profile
- Identify gaps in knowledge / skills / abilities and define individual learning goal(s)

**These competence areas are very important in my role as a data steward**

# FAIR Data stewardship and the need for skills and capacity building

**Data Stewardship** is the responsible planning and executing of all actions on digital data before, during and after a research project, with the aim of optimizing the usability, reusability and reproducibility of the resulting data

Data stewardship and data management skills are **essential in research**

| Role | Task | FTEs needed per 1000 researchers |
|---|---|---|
| Data Steward | Assisting researchers with effective management of research data | 26 |
| Trainer on data stewardship | Training researchers on data management skills | 4 |

https://doi.org/10.5281/zenodo.4769514

WORLD VIEW · 25 FEBRUARY 2020

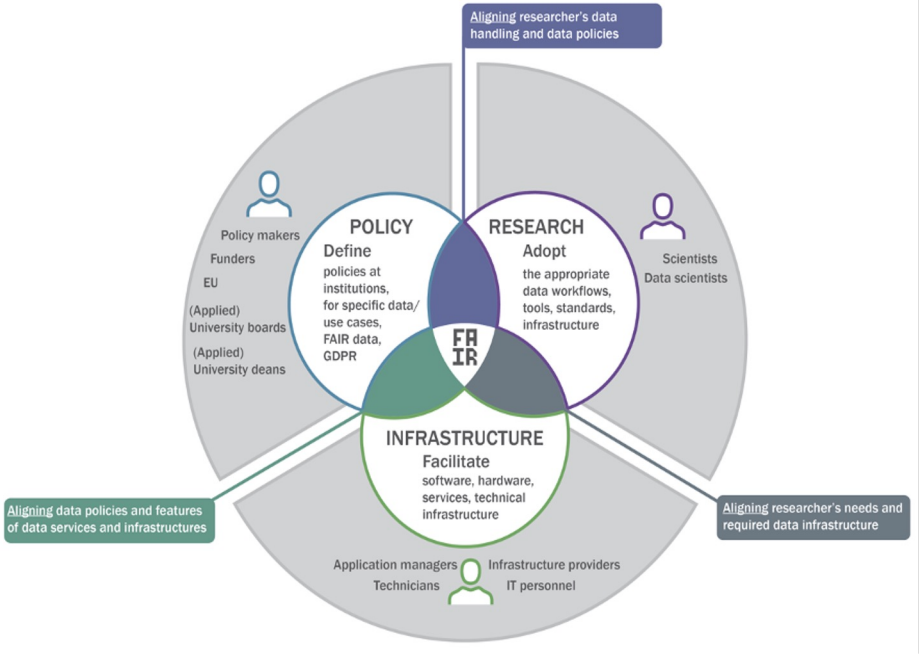
**Invest 5% of research funds in ensuring data are reusable**

It is irresponsible to support research but not data stewardship, says Barend Mons.

Barend Mons

https://doi.org/10.1038/d41586-020-00505-7

# FAIR Data stewardship task areas




ZonMw/ELIXIR data stewardship roles in the data stewardship landscape (2018 /2019)
http://doi.org/10.5281/zenodo.3474789
https://doi.org/10.5281/zenodo.3243909


Professionalising data stewardship in the Netherlands. Competences, training and education. Dutch roadmap towards national implementation of FAIR data stewardship
https://doi.org/10.5281/zenodo.4320504

# How about you?

- Browse the eight competence areas in the Competence Hub for data steward: https://competency.ebi.ac.uk/framework/datasteward/1.0
- Answer the questions in the form: https://forms.office.com/e/EEpkZjWUKc


- Write down your learning goal for this course in the shared notes: Shared notes & links - Day 1 - Health-RI FAIR data stewards basics course.docx

# DAY 1 | Data stewardship, Policy and Planning

**13.15 - 14.00**

## Perspective on FAIR data stewardship from funder

**Ellen Carbo**
**Project lead FAIR data & Open Access, ZonMW**

### Learning outcomes

- Understanding the role of the funder
- Realizing the benefits of FAIR data
- Understanding the role of machine actionable metadata for a funder

# DAY 1 | Data stewardship, Policy and Planning

**14.15 - 15.30**

## Data Management Planning

**Petra Overveld, LUMC**

### Learning outcomes

- After this hour, you can:
- Describe what a data management plan is
- Describe the relevance and benefits of writing a data management plan
- Explain why writing a data management plan is part of FAIR
- Develop questions for a data management plan
- Provide researchers with advice and feedback on a data management plan
-

# DAY 1 | Data stewardship, Policy and Planning

**15.30 - 16.30**

## Ethical, Legal and Societal Implications of FAIR data

**Elize Vlainic AUMC**
**Miriam Beusink, Health-RI**

**Learning outcomes**

By participating in this part of the course, you will:

- Gain understanding how legislation such as the AVG/GDPR affect requirements within the Informed Consent Form
- Understand how the ICF (and IC-withdrawal) may impact future use and related procedures defined in your DMP
- Increase knowledge on how to find and contribute to new policies
- Be up to date on current (national) developments regarding digital consent
- Apply ELSI questions to real life examples

# DAY 1 | Data stewardship, Policy and Planning

**16.30 - 16.45**

## Wrap-up

**Please take 5 minutes to write down today's tips and tops in the shared document!**