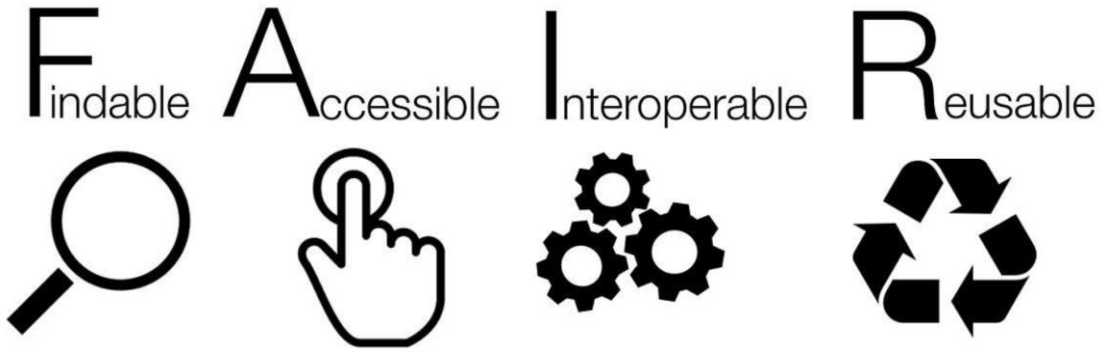
Utilizing Personas to Create Infrastructures for Research Data and Software Management

Jan Bernoth, Firas Al Laban and Ulrike Lucke

Motivation Research Data and Software Management

Goal: Open, Trustworthy, Reproducible Research

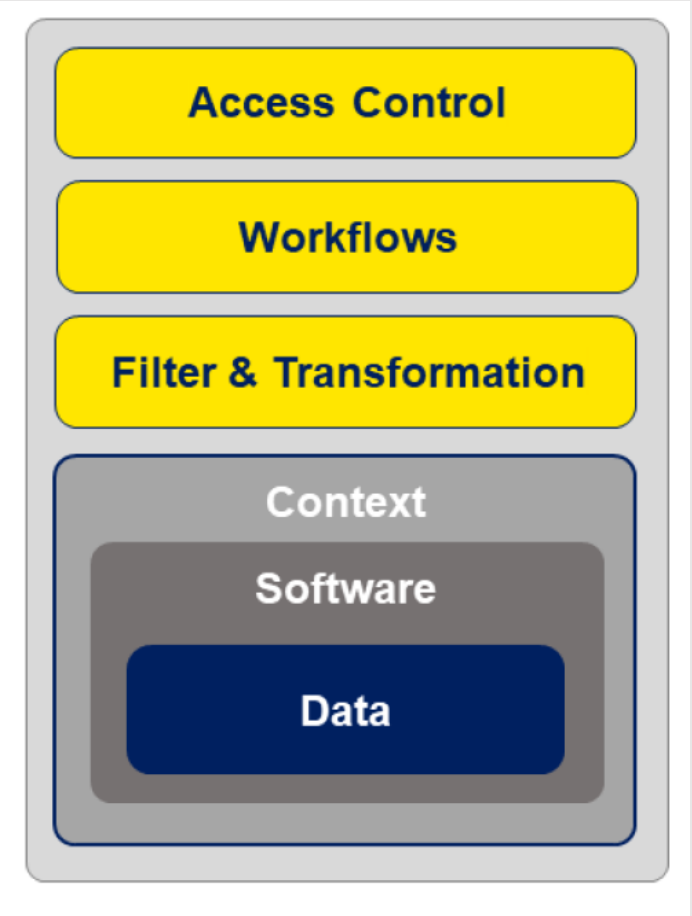


[1]

FAIR Research Data [Wi16]	FAIR Research Software [CH22]

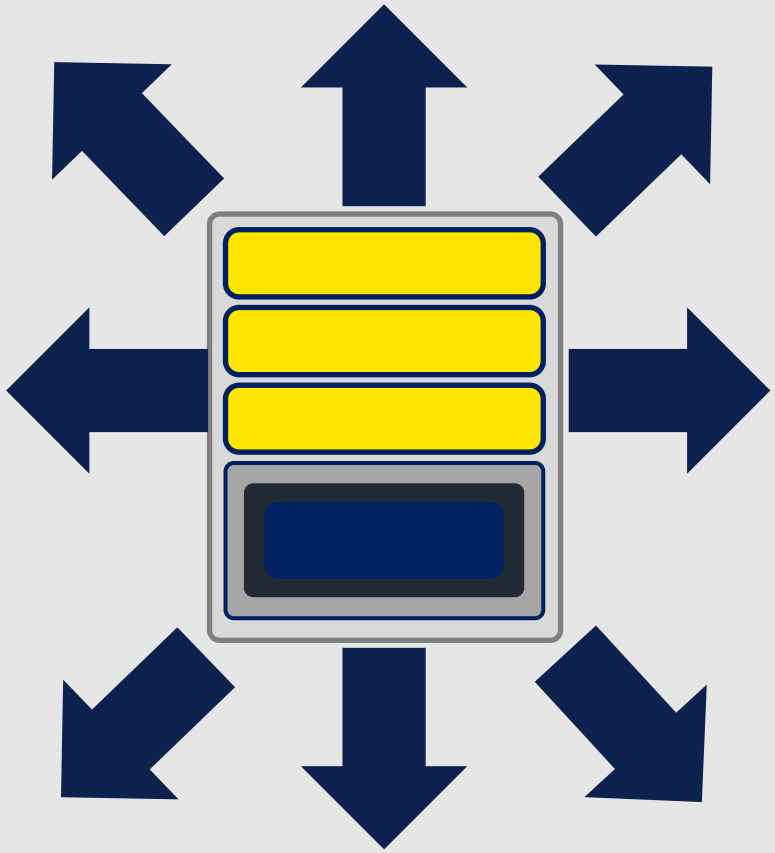
Research Data Management Container (RDMC)

- Central Hypothesis of NFDIxCS:
  - Research Data and Research Software are not the same but it is linked together with its research context
- Solution Concept:
  - Design a **Research Data Management Containers (RDMC)** as a time capsule for research data and software
    - Digital, referencable object
    - Describable with Metadata
    - Manage access and workflow
  - Additionally design and implement a hosting platform RDMCs

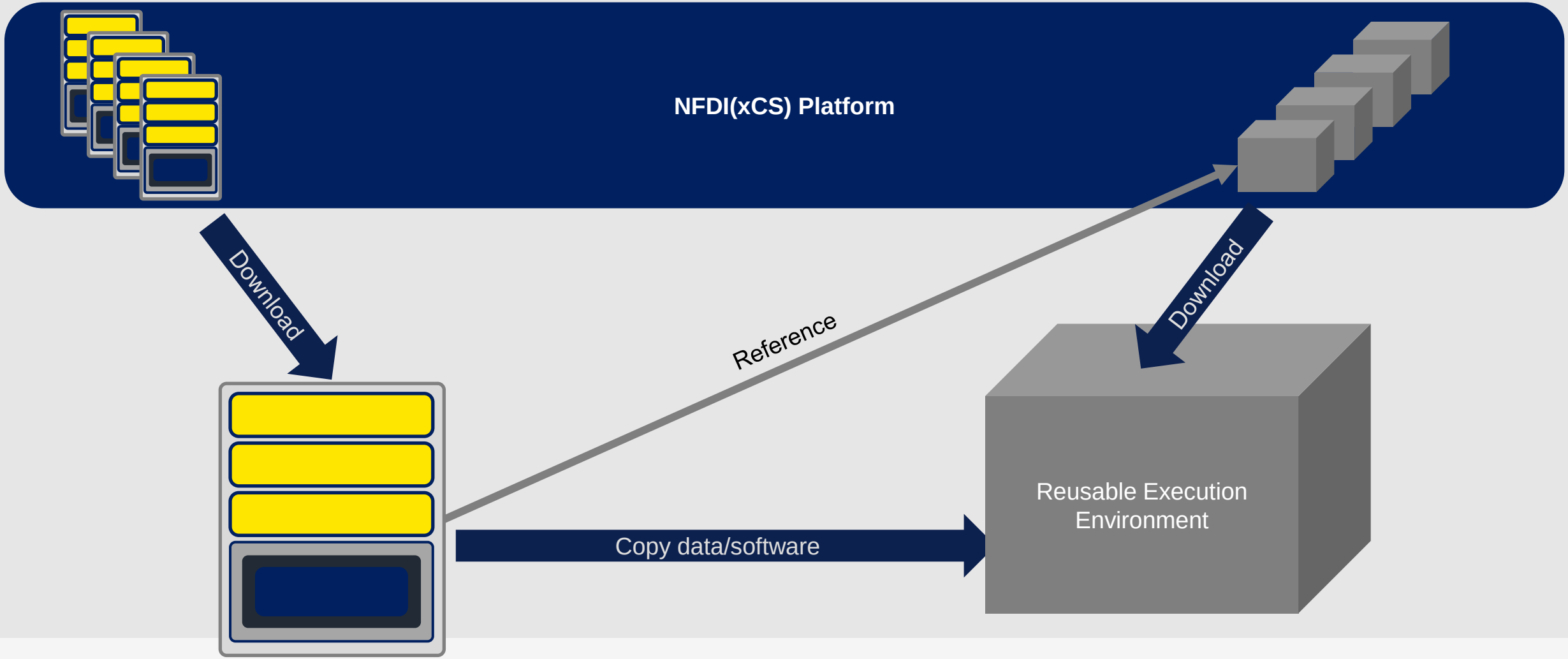


Connecting Active Containers: Integration with Services and Infrastructure

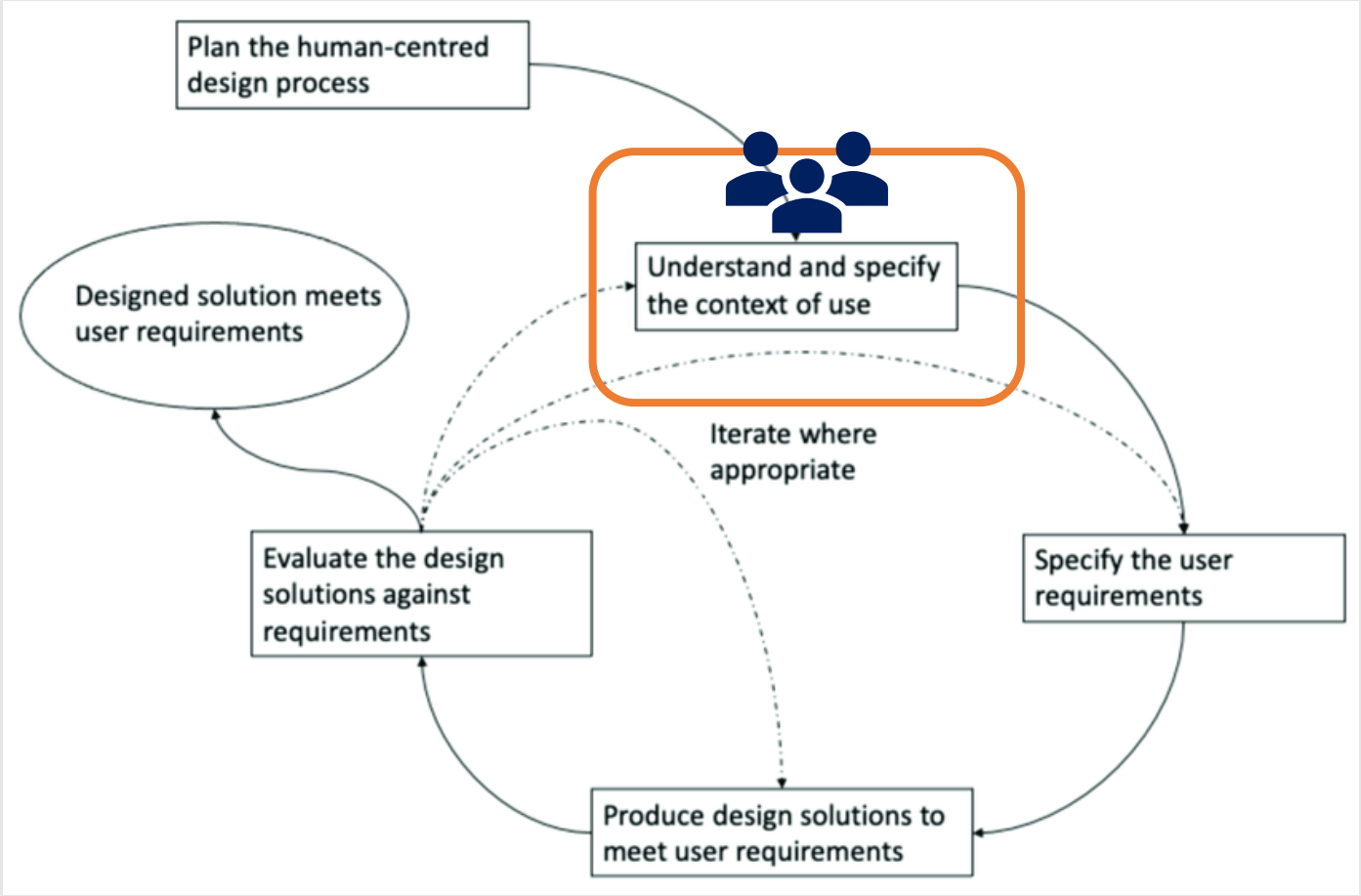
- Interact with platform for e.g. artifact review processes
- Use metadata to connect to knowledge graphs
- Integrate quality metrics by providing guarantee levels:
  - Long-term availability
  - Meta Data Quality
  - Creation Process
  - Privacy Options
- Create an execution environment to run the software with its data.



RDMC braucht eine Laufzeitumgebung



Understanding the requirements with persona



Based on ISO 9241-210

[2]

Personas Creation

Phase 1: Gather Stakeholder

Phase 2: Design Personas

Phase 3: Categorize Personas

Cluster Name: Support Structures

NFDI CS

Personas of Persons in Academia

Imagine being part of your Stakeholder cluster. In the following questionnaire you can create a fictional character. Please be as detailed as possible to create realistic impression of a person which belongs to your cluster. This persona will be utilized to develop and evaluate activities for our consortia. So, any detail or well written description will help to have a better understanding of the requirements.

Background information

Name	Jenny Wong	Gender	female
Field of Study	Computational Biology	Degree	Dr.
Research Disc.	Eco-system development	Position	Team Lead
Affiliation	RWTH Aachen		

Hair	black
Skin	pale
Fashion Style	casual business
Glasses/contact lenses	glasses
Jewellery	ear rings
Wearables	fitbit
Quote about RDM/RSM	This ensures/creates legal certainty

What does the person do in their free time? What are the interests of the person?

spending time in nature / hiking

Jogging

Growing vegetables on balcony

What are the goals for the work/academic life?

Becoming professor

Memberships (associations, society, advisory boards)

Advisory Board Eifel, Nominee Board

ISCB (Intl. Society for Computational Biology) Student Chapter

List at least 3 of the most recent professional positions

From ... to ...	Job Description	Affiliation
2022 - now	PostDoc	RWTH Aachen
2018 - 2021	Ph. D.	Univ. of Cologne
2015 - 2017	Master	Fudan Univ. Shanghai

Personas for RDM/RSM – Workshop Göttingen (2024-02-20)

Intersection with RD/SM

Reread your quote: Which experiences in RD/SM led your person to say this? Are these experiences success (✓) or failure(✗) stories?

Artifact creation: publication of data + analysis SW for nature journal ✓ ✗

Integration of data from GIS ✓ ✗

What is the person trying to do with RD/RSM? Integrating good practices into his/her daily life, teach people about, create services,...?

Convincing politicians in her role as advisor Eifel National Park

What could help to address this person in his RD/SM?

Version management of GIS data

Established meta data formats for GIS data

Anything else to say about the persona?

Persona Jenny Wong

- Short Bio:
  - Holds a Ph.D. in Computational Biology
  - Team Lead for Ecosystem Development at the RWTH Aachen Institute
  - Active member of the International Society for Computational Biology (ISCB) and involved with Eifel National Park
- Advisory board member with the goal of:
  - Efficiently accessing research data to inform local politics
  - Utilizing trustworthy services to support data-based arguments
- As a post-doc she wants to publish research data along her paper publications.

Using Personas

- Personas is chance to understand the field and gather requirements
  - Discuss and fine tune about specific attributes
  - Use a persona to argument about service structures or features
- Biases can be mitigated through group work by fostering intersubjectivity
- Possibility to have blind spots

Categorization Models

- RISE-DE [HJW19] is a reference model for conducting strategic processes in institutional Research Data Management.
- DIAMANT-Modell 2.0 [Ge20] presents a process model to build and maintain an information architecture for Research Data Management.
- FAIR Ecosystem Components [HSB22] interacting with infrastructure created for Research Software, Digital Objects, Services, Repositories, and Training.

Roles in a FAIR Ecosystem

	Users	Creators	Curators	Publishers	Policy Makers	Decision Makers
Services						
Training & Skills						
Research Software (RS)						
Digital Objects (DO)						

Roles

Tab. 1: Roles in a FAIR Ecosystem.
Baseline Stakeholders are in columns and FAIR Ecosystem Components are in rows.

[SFG99]

Categorize Jenny Wong

discussable

Could be relevant

	Users	Creators	Curators	Publishers	Policy Makers	Decision Makers
Services	Service Users	Service Providers	Service Managers	Service Disseminators	Service Standards Bodies	Service Funding Bodies
Training & Skills	Trainees	Trainers	Training Material Curators	Certification Providers	Skills & Training Evaluator	Curricula Creators
Research Software (RS)	RS Users	RS Engineers	RS Maintainers	RS Publishers	RS Standards Bodies	Research Funding Bodies
Digital Objects (DO)	DO Users	DO Producers	DO Curators	DO Publishers	DO Standards Bodies	Digital Objects Manager

Tab. 1: Roles in a FAIR Ecosystem.
Baseline Stakeholders are in columns and FAIR Ecosystem Components are in rows.

Distribution of Roles

	Users	Creators	Curators	Publishers	Policy Makers	Decision Makers
Services	7	0	0	0	**1**	1
Training & Skills	**4**	1	0	0	**0**	0
Research Software	**4**	**4**	0	0	**0**	0
Digital Objects	**5**	**5**	0	0	**1**	0

Tab. 2: Distribution of the roles among the personas.
The structure of table is based on Tab. 1.

Summary and Vision

Main Output:

	Users	Creators	Curators	Publishers	Policy Makers	Decision Makers
Services	Service Users	Service Providers	Service Managers	Service Disseminators	Service Standards Bodies	Service Funding Bodies
Training & Skills	Trainees	Trainers	Training Material Curators	Certification Providers	Skills & Training Evaluator	Curricula Creators
Research Software (RS)	RS Users	RS Engineers	RS Maintainers	RS Publishers	RS Standards Bodies	Research Funding Bodies
Digital Objects (DO)	DO Users	DO Producers	DO Curators	DO Publishers	DO Standards Bodies	Digital Objects Manager

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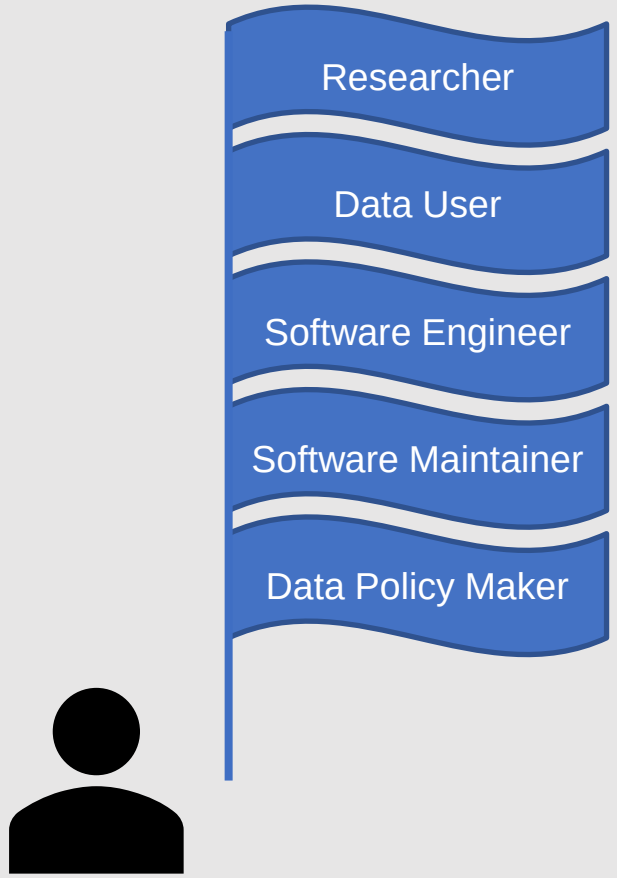

Assign different roles to various people, ensuring that individuals also have distinct responsibilities.

Thank you for your attention!

Jan Bernoth **Firas Al Laban** **Ulrike Lucke**

Firstname.Lastname@uni-potsdam.de

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Images

1. https://de.wikipedia.org/wiki/FAIR-Prinzipien#/media/Datei:FAIR_data_principles.jpg
2. https://www.researchgate.net/figure/Human-centred-design-process-based-on-ISO-9241-210-Ergonomics-of-human-system_fig1_359825162