

Goal-models to support communication, planning and guiding of FAIRification

FAIR Principles

Implementing the FAIR principles [1] makes data more **F**indable, **A**ccessible, **I**nteroperable, and **R**eusable for humans and computers, and **ready-to-reuse for efficient analysis with other data**. Workflows for the process of making data FAIR ('FAIRification') describe how the principles can be realised [2]. The use of FAIR data reduces the time spent by researchers on integrating and curating data.

identify FAIRification objective



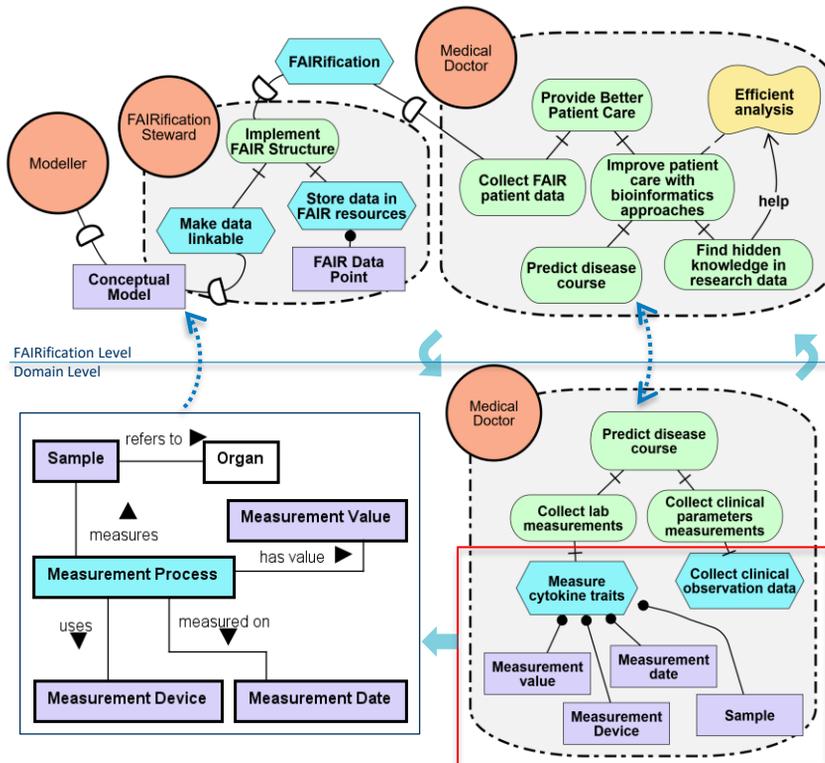
define semantic (meta)data model

FAIRification Planning

Context: As a multidisciplinary activity, FAIRification needs to be **well-planned, communicated and guided** among the **different expertise** involved (e.g., software developers, medical doctors). However, FAIRification workflows do not specify methods to meet this need.

Proposal: Goal-modelling techniques for FAIRification management, which introduces a **'Thinking Paradigm' shift** - to work out **"what"** needs to be done by asking **"why"** and **"how"** questions instead.

Goal-models are easy-to-communicate artefacts for identifying the research goals within FAIRification, collaboration between experts, activities that should be performed and prioritized, data concepts that should be modelled and requirements constraints that should be met.



Goal-Models for FAIRification objective identification

In this FAIRification step: Goal-Modelling techniques are used to plan, communicate and guide FAIRification.

Results: the motivations for the need of FAIR data, the needed **expertise** (and how they should collaborate), which **tasks** should be performed to achieve the objectives, the **resources** used and produced by tasks and the desired **qualities** (and how they are impacted by goals).

Goal-Models for FAIRification Conceptual Modelling

In this FAIRification step: focus on the (meta)data Conceptual Modelling activity. Goal-Models are created specifically for the researcher question. Here, guidelines for the conceptual modelling activity, adapted from "Goal-Based Ontology Engineering" methodologies [3] and the use of Foundational Ontologies [4] will be provided. The latter are used to label concepts extracted from goal-models with high-level and well-founded ontological concepts, thus improving **interoperability**.

Results: domain relevant concepts that must be defined in the FAIRified data, which are identified by analysing the tasks that must be performed to answer the question, and the resources used or produced by them. The domain goal-model should be aligned with FAIRification goals to guarantee an efficient FAIR implementation.

Expectations

Improvement of FAIRification procedures, based on clear and easier communication of constraints and intentions among everyone involved in the project.

Enhanced interoperability of FAIRified data, based on the expected improvement of the data models that are built following the proposed method.

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References

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