

# RDM Reference Architecture (Framework)

## Goals

We distinguish between the *RDM Reference Architecture Framework* (hereafter: Framework) and the *RDM Reference architecture* itself.

### Goal Framework

- The Framework consists of a set of viewpoints and enumerations types for each architectural layer relevant for Research Data Management (RDM). The Framework conforms to the Archimate structure and language.
- Main goal: The main goal of the Framework is to offer a common structure and language for architectures. This is essential to be able to compare architectures, and do analysis or assessments in a consistent transparent and efficient way.

### Goal RDM Reference Architecture

- The RDM Reference Architecture consists of a set common denominators (viewpoints and relations between them, enumerations) distracted from SOLL architectures which are developed for certain (groups of) disciplines or for institutions.
- Main goal: The main goal of the RDM Reference architecture is to support the implementation (and development) of RDM policy, in an efficient and effective way.

## Subgoals

### Filling the Service Catalogue

Important subgoal of the RDM Reference architecture and Framework is that they can be used for (self) assessment of vendor solutions prior to adding them to the RDM service catalogue<sup>1</sup>; to assess the value of vendor solutions and to position them in the RDM service landscape.

- *Assessment of vendor solutions*. To determine whether the solutions (/products) can be incorporated in the service catalogue and how they are positioned. The (vendor) solutions building blocks can be assessed by deriving the other viewpoints from the solutions viewpoint. Especially important is here the RDM policy viewpoint of the Reference architecture; to which RDM policy requirements does the solution adhere.
- *Self-assessment*. Vendors can use the RDM Reference architecture and Framework to do self-assessment of their solutions (/products), to determine the value for research. One can even imagine this self-assessment will be part of the application process a vendor has to go through in order to have their product included in the service catalogue.

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<sup>1</sup> Note that ideally an easy to use wizard lays on top of the architecture to guide the user through the architecture for assessment purposes. The architecture in Archimate being only the back-end.

## Bringing the Glossary to live

The Framework gives the opportunity to guarantee, maintain and use the common ontology with respect to RDM in the Reference Architecture, in such a way, that the ontology is actually used, and improved and complemented in an agile way in time by simply using the Reference Architecture.

- The Framework consists of a set of enumerations of all main entity types at each architecture layer. For example, among others set of policies, actors, business processes at the business layer, a set of RDM services at the application layer, etcetera. Using the common ontology in these enumerations facilitates usage and conformation to the ontology.
- The Reference architecture includes interrelationships of entities and therefore not only secures semantics of the ontology but also the interrelationship/ context part of the ontology.

## Making comparisons

The RDM Reference Architecture and Framework will help to make comparisons. Think of:

- *Baseline-Target comparisons.* Getting insight in the gap between the baseline (IST) and the target (SOLL) architecture.
- *Common denominators extraction.* The Framework facilitates comparisons between SOLL architectures to extract common denominators -working towards (an update of the) RDM Reference Architecture.
- *Other comparisons.* For example comparisons between universities in the Netherlands, or between Research Infrastructure (RI) service providers chain architectures (e.g. CNET). The Framework could be used to align individual architectures, to make them compatible, interoperable.

## Analysis

The RDM Reference Architecture and Framework will help to do analyses. Think of:

- *Gap analysis.* Getting insight in the situations where in the data life cycle RDM policy or shared values are not met or are insufficiently facilitated by IT<sup>2</sup>. Also 'gap analysis' in the form of an audit trail to detect intolerable violations of RDM policy.
- *Impact and feasibility analysis.* Impact analysis on (new) proposed RDM policy and assess the feasibility. And priority setting derived from this.

## Starting point for architecture deliverables

Acceleration in setting up goal architectures for specific disciplines, user stories, Project Start architectures (PSA). The enumerations, the matrices, the views are all input material for this.

## Approach

### *Approach RDM Framework*

Following the architecture layers as defined by the Archimate Framework, we selected a set of most relevant viewpoints for our goals mentioned above at each architectural layer, including enumerations-, matrices-, and building blocks types. This will be the Framework vs1.0 we will use to make a first version

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<sup>2</sup> Note: Insufficiently in the context of the perceived risk (impact x chance violating RDM policy) of giving full responsibility to the researcher instead of more or less directing to use IT facilities which unburden the researcher with RDM.

of the RDM Reference Architecture and validate the Framework itself by doing that. After validation we have the possibility to improve the Framework.

#### *Approach RDM Reference Architecture*

In order to realize the RDM Reference Architecture vs1.0 we start with a common denominators extraction on the basis of a comparison of a set of SOLL architectures and using the RDM Framework<sup>3</sup>. We fill the views on the basis of existing documentation.

- Note that we aim to work out user stories in SOLL architectures, that is, architectures which are developed or embraced by bodies at the (inter)national level. Think of architectures developed / embraced by D4LS, NFU, SURF, ELIXER, EUDAT. Domain architectures of individual institutions can be SOLL architectures for the national RDM reference architecture, only when at the (inter)national level embraced.
- Note that in order to be able to fill the views it is important to have sufficient information, among others about the business model, the RDM policies and governance issues, the business process, the IT architecture etcetera. In order to prepare on the common denominators extraction, we will develop a template to give practical assistance to the collection of the documentation which is needed to fill in the architectural views of the Framework for a particular user story.

#### *Validation of Framework and RDM Reference Architecture*

After the common denominator exercition we do a validation of the value of both the Framework and the Reference Architecture.

- Evaluate the problems with the Framework we encountered while using it. Do a suggestion for improvement of the Framework. Validate the value of the Framework in terms of contribution to the perceived goals.
- Validate the usefulness of the resulting first version of the RDM Reference Architecture in terms of the perceived goals. For example, by doing an assessment, an impact analysis, a baseline-target comparison. Do a suggestion for continued development.

## **RDM Reference architecture framework**

The latest version of the Framework can be found here < insert link to the Framework >

The latest version of the RDM Reference Architecture can be found here < insert link to the RDM Reference Architecture >

Note that the RDM reference architecture is dynamic; enumerations should be updated/ complemented constantly on the basis of the actual practice like new policy, solutions, use cases.

Note that this framework includes the content of the LCRDM poster (our work in 2016) in among others the RDM policy view in the form of the '*Dutch shared RDM architectural principles*' .

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<sup>3</sup> Note that we have already candidates for doing this exercition.