

# OIL-E

In order to realise the convergence of vocabulary at a technical level, it is necessary to identify the shared concepts in various standards and specifications that currently govern the handling of data and tools in the environmental sciences. **Open Information Linking for Environmental RIs (OIL-E)** is a semantic linking framework being developed to help perform this challenging task based on the core concepts of the [ENVRI reference model](#).

## Objectives

OIL-E is a developing framework for addressing the semantic linking requirements of environmental science e-RIs. Specifically, it is intended to provide a machine-readable bridge between the ENVRI Reference Model and other concept models related to research infrastructure, architecture and scientific (meta)data.

The ENVRI Reference Model (E-RM) is constructed using the Open Distributed Process (ODP) for modelling complex distributed systems; ODP requires the modelling of a system from five different viewpoints (enterprise, information, computation, engineering and technology) with the correspondences between the five resulting views ensuring their mutual validity. This viewpoint-based approach provides clarity to each 'facet' of the end model by reducing the number of competing elements to only those that match a particular set of concerns (such as the flow of information through the system), while still retaining the aggregate complexity needed to model any substantive distributed system. At present, E-RM models three of the five views prescribed by ODP: enterprise (renamed science in respect to the subject area), information and computation. These three viewpoints best capture the generic aspects across all e-RIs, with the engineering and technology viewpoints being more e-RI-specific (though there is a plan now within ENVRIplus to generate these views). The E-RM ontology within OIL-E defines all the objects defined in the three existing views and their relations. It is intended that OIL-E will link concepts used in a variety of different standards and specifications to E-RM as a means to harmonise technical developments in RIs; a number of small pilots were carried out in the original ENVRI project to gauge the feasibility of this process.

The purpose of OIL-E is to provide a framework by which the semantics of different controlled vocabularies can be studied in order to allow translation and reasoning over heterogeneous datasets. This entails:

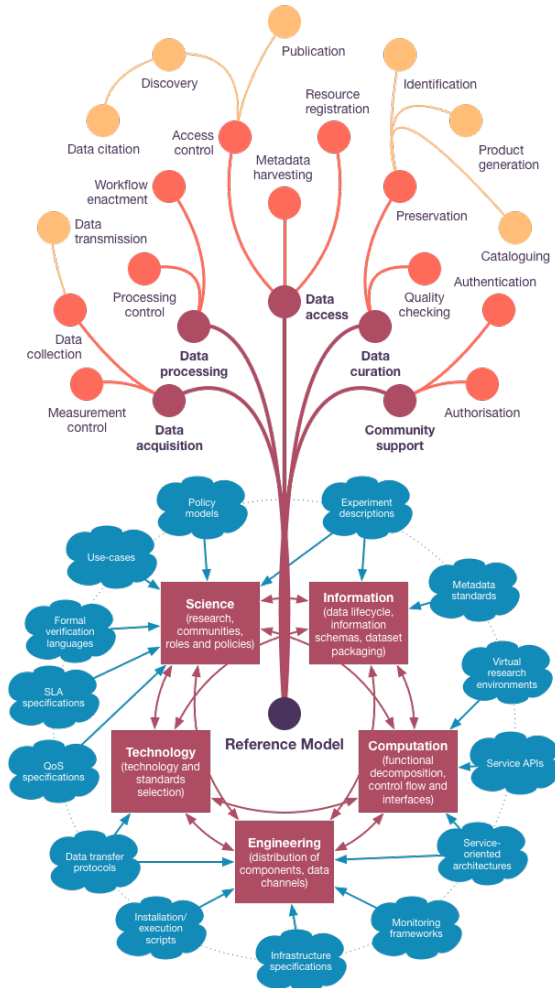
- Comparing different concept models for modelling research assets and data, and identifying commonalities and gaps.
- Building generic tools using existing technologies to handle the search and mapping of models related to e-RI architecture and specification.

The linking component of OIL-E glues concepts both inside E-RM and between E-RM and external vocabularies. In the latter case, external models can be classified in terms of E-RM in order to help map the landscape of e-RI-related standards and models. The E-RM ontology only contains a limited set of vocabularies derived from common e-RI functionality and design patterns, so linking the E-RM ontology with external models will also enable domain-specific extensions to E-RM itself. The internal correspondences between the different E-RM views can potentially be used to indirectly draw associations between concept models with quite different foci (e.g. data versus services or architecture).

The OIL-E ontologies can be found online at <http://oil-e.net/ontology/>.

## Relation to ENVRIplus

Within the ENVRIplus project, Task 5.3 is concerned with the development and expansion of OIL-E, both in order to mirror developments in the [ENVRI reference model](#), and to establish links with selected standards for RI specification, geospatial metadata and research data annotation.



The reference model uses five viewpoints to address the requirements of RIs. OIL-E will link concepts used in a variety of different standards and specifications to the reference model as a means to harmonise technical developments in RIs.

## Resources

Aside from the ontologies at <http://oil-e.net/ontology/>, there exist some introductory resources to the OIL-E concept and work:

- A [flyer](#) has been produced for dissemination at events and other meetings.
- A [slide-set](#) has also been produced, describing some key ideas.

