Engineering Viewpoint (Draft)

The Engineering Viewpoint is concerned with transparently distributing the objects defined in the computational viewpoint (**Computational Viewpoint**) over nodes, either physical and/or virtual. It is concerned with the structure of the nodes. The definition of the engineering viewpoint includes the description of structures needed to supporting information viewpoint objects objects (**IV objects**), and for the specification of the communicating channels between nodes. The Engineering Viewpoint is also concerned with supporting non-functional requirements relating to performance, reliability, load-balancing, and other similar, which correspond to the objectives and policies defined in the **SV Communities** [01]

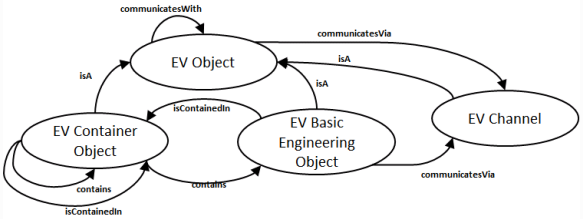
In specifying the Engineering viewpoint (EV) in the ENVRI RM, the main aim is to control and constrain the architectural style to be adopted at interaction points between RIs to improve the interoperability between RIs; without the need of investment in expensive peer-to-peer transformation/interworking/gateway functionalities. The aim is NOT to control the internal engineering of individual RIs, and thus less emphasis will be given to these aspects when specifying the EV.

This engineering viewpoint specification is designed to research data management functionalities which are commonly shared among more than one RI (Identification and Citation, Curation, Cataloguing, Processing, and Provenance).

The presentation of the Engineering Viewpoint is divided in three parts: container structure, engineering objects, and object configuration.

- **Container Structure** provides the detailed description of the recommended of structure to be used for distributing the engineering objects .
- **Engineering Objects** describes the main objects to be modelled in the EV.
- **Object Configuration** illustrates how the services are used for supporting a set of functionalities which are commonly exposed and used by RIs

The engineering viewpoint defines four types of objects: engineering object (EV object) basic engineering object (EV BEO) container object (EV container) and channel object (EV Channel). EV objects enable distribution among container objects, they provide functions that control the deployment of basic engineering objects such as instantiating, starting, pausing, restarting and stopping services. Basic engineering objects map one to one to Computational Objects and they are designed to implement the functionalities described in the Computational Viewpoint. Container objects provide an organisational structure that can be used to distribute the computational functionalities (provided by BEO). Container objects can be further classified as Node, Capsule and Cluster. Finally, channel objects define the communication structures to pass messages between node objects.



Engineering Viewpoint components and their relationships

Note

Before proceeding, the reader may wish to study the pages on **RM ODP Background** that describe the theory used to support the definition of the engineering viewpoint.

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[01] For an introduction to the Engineering and other viewpoints of ODP, refer to Linington et.al. [37].