CV Data Use

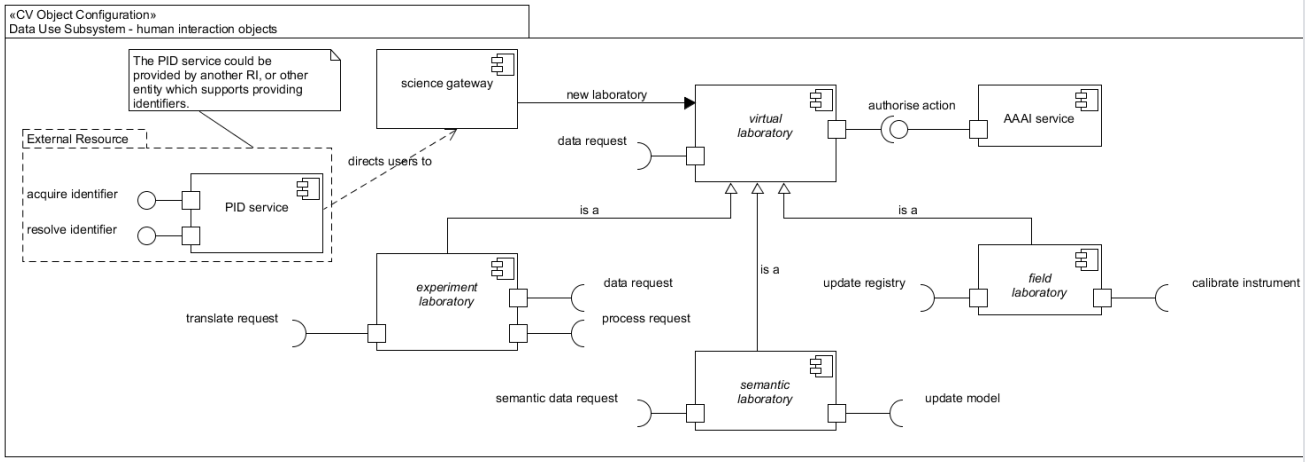
A research infrastructure is not an isolated entity, a research infrastructure aims to interact with the broader scientific community. In the ENVRI RM, a **science gateway** (Also known as *virtual research environment*) is assumed to be the main interaction platform for end users (in essence a scientific community portal). The **science gateway** is usually web-based and provides a number of services both for human users and for remote procedure invocation. These services may range from fundamental (data discovery and retrieval) to more interactive (user contribution and dataset annotation) to more 'social' (concerning user profiling, reputation mechanisms and workflow sharing).

The data use components are part of the **Presentation Object** and **Service Object** layers. The **Presentation Object** **Layer** includes different types of human interfaces aimed at providing access to the internal RI resources and services. The **CV Service Object Layer** encapsulates services provided for outside entities that require programmatic interaction with the RI.

In this sense, the data use subsystem can be subdivided in two object categories: **human interaction objects** and **service objects**.

Human Interaction Objects

Data Use Subsystem - human interaction objects



Notation

In the ENVRI RM, more complex interactions between the components facilitating data use and other components are mediated by **virtual laboratory** ; these objects are deployed by **science gateway** in order to provide a persistent context for such interactions between certain groups of users and particular components within the RI. The Reference Model recognises the following specific sub-classes of laboratory:

- **field aboratory** (so-named because they interact with raw data sources 'in the field') are used to interact with the **Data Acquisition** components, allowing researchers to deploy, calibrate and un-deploy instruments as part of the integrated data acquisition network used by an infrastructure to collect its primary 'raw' data. Field laboratories have the ability to instantiate new **instrument controller** from the data acquisition set.
- **experiment laboratory** are used to interact both with curated data and data processing facilities, allowing researchers to deploy datasets for processing and acquire results from computational experimentation.
- **semantic laboratory** are used to interact with the semantic models used by a research infrastructure to interpret datasets and characteristic (meta)data.

Regardless of provenance, all laboratories must interact with an **AAAI ervice** in order to authorise requests and authenticate users of the laboratory before they can proceed with any privileged activities.

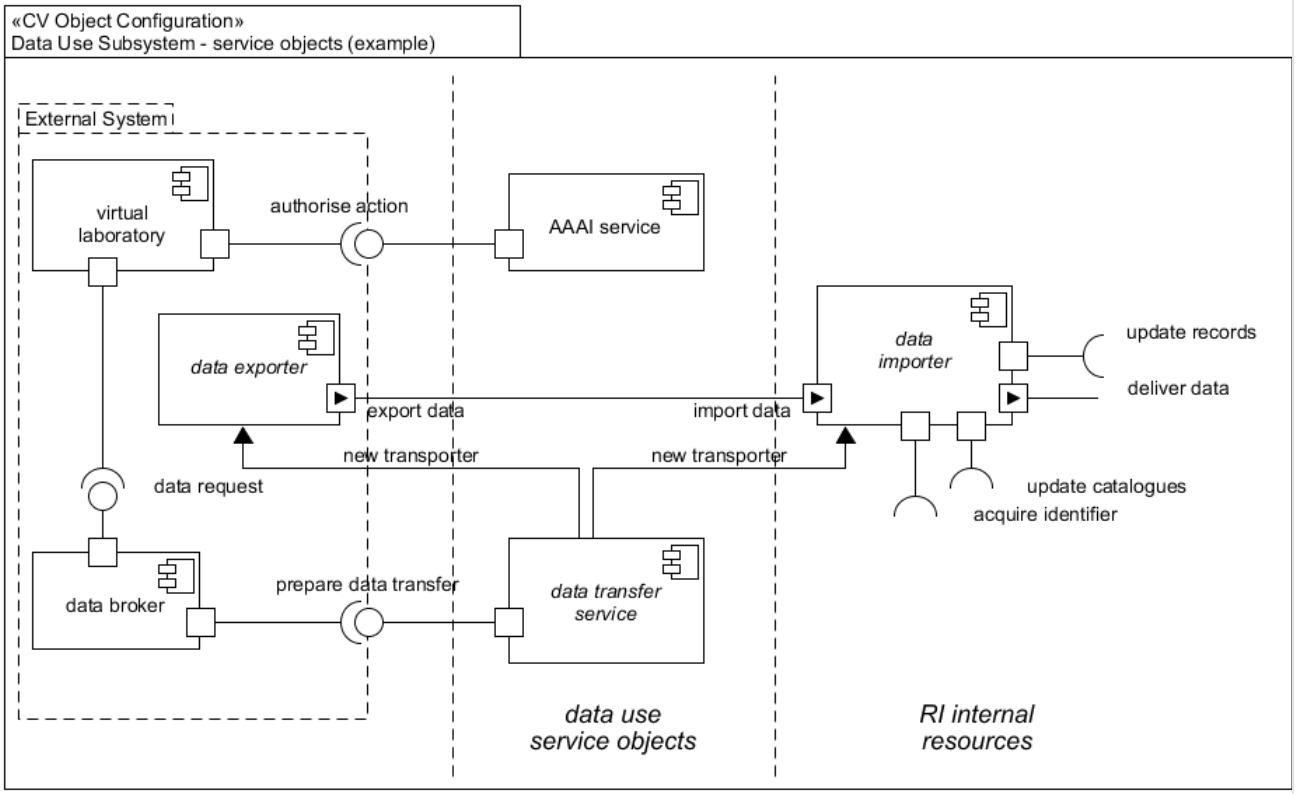
A **PID service** provides globally-readable persistent identifiers (PIDs) to infrastructure entities, mainly datasets, that may be cited by the community. PI Ds can also be assigned to processes, services and data sources. This service is assumed to be provided by an external party, and is expected to direct agents attempting to read citations to one of the infrastructure's science gateways.

Service Objects

A constantly increasing portion of the interactions with an RIs are expected to be carried out by external systems interacting with data and other resources. In this case, the **Service Objects** becomes relevant, services are meant to provide access to external systems. In this case, external systems can include other RIs, universities, government agencies, industry applications, or other research groups which need to exploit the RIs data resources using client programs and the internet as a means to get to those data resources. In this form of integration, external systems are expected to implement **Presentation Objects** and **broker** objects which communicate with the RI services using public interfaces.

The following diagram shows an example of the use of service objects to connect an external system which will supply data to an RI. The components of the diagram are the same of those used internally for **acquisition from external source**, the difference is that the **virtual laboratory** , **data broker**, and **data exporter** objects are all part of an external system. These components interact with the **AAAI service** and **data transfer service** services. The **AAAI service** will authorise the requested action and provide the required credentials. The **data transfer service** will establish the data interchange channel between the external **data exporter** and the internal **data importer** objects.

Data Use Subsystem - service objects example



Notation