e-Infrastructure Catalogue of Services

Document Information

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Abstract: This document outlines a framework for creating a Catalogue of Services (CoS), primarily intended for e-Infrastructure services. It describes services at a high level and makes them discoverable. It can also be used to identify overlapping efforts or gaps in the catalogued service landscape.

The goal of this document is to define a framework that can be used to specify and implement a concrete catalogue. It is not a catalogue itself and does not list or describe services.

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Goal

This document outlines a framework for creating a Catalogue of Services (CoS), primarily intended for e-Infrastructure services. It is supposed to describe services at a high level and to make them findable. It can also be used to identify overlapping efforts or gaps in the catalogued service landscape.

The goal of this document is to define a framework that can be used to specify and implement a concrete catalogue. It is not a catalogue itself and does not list or describe services.

Methodology

The framework was developed in an exploratory fashion to include a choice of key concepts, balancing information coverage and maintainability of the CoS. It reuses the existing conceptualisations in FitSM, ISO 20000 (requirements for an information technology service management (ITSM) system), and the UK Government Service Design Manual. The framework was validated with examples[1] from the projects BlueBridge, EGI, EUDAT, GEANT, OpenAIRE, and THOR.

The presentation of the framework is implementation independent. It does not imply how a CoS should be implemented. The implemented system could take the form of a list of services, or be implemented as a database. This depends of the intended functions that the CoS will need to support.

What is a CoS?

Because of the way the task was assigned to this working group we refer to a **catalogue of services**. However, the conceptual model in this framework rather describes a **service portfolio**[2], which can also capture pre- and post-production services; a catalogue of services, in contrast, by definition, only includes live services. A portfolio supports the use cases of on-going operational as well as prototype services, both of which are intended in the next e-Infrastructure work programme. The service development phase can be specified with the *service phase* field[3]. The basic underlying conceptual model is the same for both. Although, in a portfolio some of the concepts in the framework are not applicable as they are still developing.

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[1] Andreozzi, Sergio, Dappert, Angela, Reetz, Johannes, & Steijaert, Andres. (2016). Example Instantiations of the e-Infrastructure Catalogue of Services [Data set]. Zenodo. http://doi.org/10.5281/zenodo.165466

[2] https://blog.samanage.com/it-service-management/service-catalogs-vs-service-portfolios-whats-the-difference/

[3] https://www.gov.uk/service-manual/phases

A **service** supports defined functions, for defined purposes, for defined stakeholders, under certain policies, under certain cost models. This is captured in the framework's concept model. The service area and types are taken from the IT life-cycle: they may range from low-level functions, such as *storage provision*, to high-level functions, such as *visualisation*.

The framework does **not** define
- specific software (the product) that implements and provides the service.
- projects that produce a service. Services are described from a customer perspective instead. One project can offer multiple services.
- Service Level Agreements (SLA). Several different SLAs can be associated with a service.

The CoS and the Service Providers

The framework assumes that the CoS is not necessarily owned and maintained by the service providers. The CoS may cover services from multiple service providers.

The owner of the CoS may, for example, be
- a funding agency.
- a current and prospective service provider (ESFRI RIs, e-Infrastructures, VRE projects…).
- a research community.

It assumes that the CoS owner may hold only high level, core information about the service: in particular, information needed to identify whether the service would likely be relevant for a given service user. It will then hold all information to access more detailed information about the service at the service provider's website. The CoS should hold enough information to enable finding the relevant services with a good specificity, but not so much that it would be unrealistic to keep the service descriptions up-to-date.

How to use the framework

When the framework is used to create a CoS it needs to be tailored to the specific **requirements** of the CoS. The framework introduces a range of relevant concepts that describe a generic CoS. It makes a proposal of which concepts would most likely be desirable for a CoS instance, but the final decision on the level of detail remains with the creator of the CoS instance. In particular, the chosen features will vary with

- the declared **purpose**: For example, cost/benefit information should only be included if the user is expected to use it in the CoS.

- the declared **stakeholder target groups**: this may include the CoS users, managers, and owners. The specific implementation may also vary based on the covered domain / research area or organisation types.

- the scope and **types of services** that are covered by it: additional information may be needed that is specific to particular types of services.

- the **policies** that apply to the CoS: policies in the broadest sense may vary for service types, departments, organisations, sectors, regions, resulting in different information needs;

- the **systems** in which the CoS is embedded: For example, cost/benefit information should only be included if the CoS system is expected to be able to obtain and maintain this information.

Requirements and policies that need to be fulfilled should be explicitly stated, so that the **relevant subset of the framework** can be selected to meet them. Depending on the identified requirements,

- **fields** and **data types** should be selected.

- it should be specified which information should be **applicable** and **mandatory**. In order to keep the framework simple we allowed for some imprecision. For example, the general framework would allow a user to assign a cost to any service, even one that has not yet been deployed or has been taken out of service. Rather, it is up to the user to specify which fields are applicable or mandatory under what condition for a specific CoS.

- **controlled vocabularies** should be defined for each field. For example the field *Service Area* may benefit from a limited controlled vocabulary that is tailored to the types of services covered by the CoS.

- it is possible to **extend the general framework** with more specific or technical detail, possibly domain-specific.

Additionally, **guidelines** should explicitly state any constraints that apply so that users of the CoS can create service entries that fall within the guidelines. They may include constraints on

- the geographic scope (such as organisational, regional, European).
- the nature of the included services (such as training, IT services, consultancy).
- other constraint, such as who funded the service.

The CoS should also impose usage limitations. For example, it is advisable that there are limits to the size of the information that can be provided for each field, in order to keep service descriptions useful and comparable.

The presentation of the framework is implementation independent. It does not imply how a CoS should be implemented. The implemented system could take the form of a list of services, or be implemented as a database. This depends of the intended functions that the CoS will need to support.

Definitions

Term	Definition	Notes
Service	**Means of delivering value for the customer** by facilitating results the customer wants to achieve	**Source**: ISO 20000 **Additional info**: A service is generally intangible; a service usually provides value when taken on its own
Service catalogue	**User / customer facing list of all services** available publicly offered along with relevant information about these services	**Source**: adapted from FitSM vocabulary **Format**: List of services **Additional info**: The service catalogue can be regarded as a filtered version of and customers' view on the service portfolio; different service catalogues can exist for different customer groups
Service portfolio	**Internal list that details all the services** offered by a service provider in all different *service phases*	**Source**: adapted from FitSM vocabulary **Format**: List of services **Additional info**:

Term	Definition	Notes
Service name	Name of a specific service as assigned by the service provider	**Source**: FitSM template for service portfolio **Format**: Free text

Term	Definition	Notes
Service ID	Global unique and persistent identifier of a specific service	**Format**: DOI or any other relevant standard; it should contain information about the identifier type and value. **Additional info**: A PID can be used ideally resolvable to a landing page or a machine readable data typed metadata page. It should be assigned by the CoS owner.
Service description	High-level description of what the service does in terms of functionalities it provides and the resources it enables access to	**Format**: Free text **Additional info**: It may provide also information related to the offered capacity, number of installations, underlying data that is offered
Value	**The benefit to a customer** and their users delivered by a service	**Additional info**: Benefits are usually related to alleviating pains (e.g., eliminate undesired outcomes, obstacles or risks) or producing gains (e.g. increased performance, social gains, positive emotions or cost saving).
Service provider	Organisation or federation or part of an organisation or federation that **manages and delivers a service or services to customers**	**Source**: FitSM vocabulary **Format**: Free text **Additional info**: The entity with whom the customer signs the SLA; this entity will be able to give information about other contributors to the service

Term	Definition	Notes
Service contact	E-mail contact to ask more information to the service provider about this service	**Format**: e-mail address
Service webpage	URL to a webpage providing more information about the service	**Format**: URL **Additional info**: This webpage is usually hosted and maintained by the service provider. It contains fresh and additional information, such as what APIs are supported or links to the documentation.
Service phase	Phase of the service design selected among: 1) discovery: researching user's needs, exploring technological or policy constraints; 2) alpha: prototype available for closed set of users; 3) beta: service being developed while available for testing publicly; 4) production: service available in the live environment meeting security/performance requirements; 5) retired: the service is not anymore offered	**Source**: UK Gov Service Design Manual **Format**: Closed enumeration
Service function	Ability of a service to carry out an activity	**Format**: list of terms from an open enumeration **Additional info**: It supports searching of services by abilities; the open enumeration can be periodically updated based on the recurring terms used
Service area	A named group of services that offer access to the same type of resource	**Format**: open enumeration **Values**: storage, computing, communication, data **Additional info**:

Term	Definition	Notes
Service type	A named group of capabilities that can be offered by one or more services	**Format**: open enumeration **Additional info**: It can be used to group similar services together that can be provided by different service providers under different names and with additional capabilities or different approaches to deliver them
Customer group	Type of customers who are allowed to commission this service. Restrictions may apply according to various criteria like the location (e.g. country) or type of activity (e.g. research, commercial).	**Format**: List of values **Additional info**: By customer, we mean an organisation a service provider to receive one or more services, doing so on behalf of a number of users; customers commission a service but do not necessarily use it; users use the service but do not necessarily commission it
User group	Type of Individuals that primarily benefits from and uses a service	**Source**: FitSM vocabulary **Additional info**:
Service condition	Restriction that applies to this service	**Format**: list of sentences each of them defining a condition **Additional info**:
Payment model	Supported payment models and restrictions that apply to each of them	**Format**: List of sentences each of them stating the type of payment model and the restriction that applies to it **Additional info**: Example of types of payment models are: free, pay-as-you-go, subscription, membership to corporate customers, higher education, etc.

Term	Definition	Notes
Terms of use	URL to a document containing the rules which one must agree to abide by in order to use the service	**Format**: URL
SLA	URL to a document containing information about the levels of performance that a service provider is expected to achieve (service level agreement)	**Format**: list of URLs

Resources

ISO 20000 Concepts: https://www.iso.org/obp/ui/#iso:std:iso-iec:20000:-1:ed-2:v1:en

FitSM vocabulary: http://fitsm.itemo.org/fitsm/0

FitSM templates: http://fitsm.itemo.org/fitsm-templates-samples-guides

UK Government Service Design Manual: https://www.gov.uk/service-manual/phases

EGI services: https://www.egi.eu/services/ and http://go.egi.eu/ServiceCatalogueBrochure