



Service Instance Description for the xxx Service

<Service Instance Name>

IALA working document*

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1 Introduction

The bulk of work on this document, has been made as a deliverable for the EfficienSea2 project co-funded by the European Commission.

1.1 Purpose of the Document

This template shall support the software architects and implementers in creating a description of the service implementation and instantiation (put down in writing), following the guidelines given in [1]. The template provides for each section descriptive instructions for the intended content. Formally, such instructions are written in blue italic font – they shall be deleted when writing the actual service instance description document. In addition, some parts of this template provide suggested text fragments that may be directly re-used in the service instance description document. Such proposed text fragments are given in black normal font.

The purpose of the service instance description document is to provide a detailed description of how a service is actually realised in software and hardware. In most cases, this document will be rather short, since it is expected that the implementation follows the technical design and it is not supposed to replicate any information from the service design description document. The service instance description document contains

- *identification and summary of the service instance*
 - *reference to the service design description*
 - *reference to the service specification*
 - *identification of the service instance*
- *service implementation and instantiation details*
 - *internal design decisions*
 - *configuration data*
 - *deployment information*
- *release notes*
 - *feature list*
 - *bug list*.

This section should be replaced by a suitable description of the purpose. For instance:

The purpose of this service instance description document is to provide a documentation of the implementation and instantiation of the *<XYZ>* service (see [3]), realized by using the *<ABC>* technology as described in [4], according to the guidelines given in [1]. It describes a well-defined baseline of the service implementation by clearly identifying the service implementation version.

The aim is to document the key aspects of the *XYZ* service instantiation. This includes:

- *identification and summary of the service instance*
 - *reference to the service design description*

- reference to the service specification
- identification of the service instance
- service implementation and instantiation details
 - internal design decisions
 - configuration data
 - deployment information
- release notes
 - feature list
 - bug list.

1.2 Intended Readership

This service instance description template is intended to be read by software architects, designers and implementers who shall produce service implementation and instance description.

This section shall describe the intended readers of the service instance description document. E.g.:

This service instance description document is intended to be read by service providers, system engineers and developers in charge of deploying and operating an instance of the **XYZ** service.

2 Service Instance Identification

The purpose of this chapter is to provide a unique identification of the service instance and describe where the service is in terms of the engineering lifecycle.

The table below shall be completed.

Name	<i>Service instance name</i>
ID	<i>Unique identity of service instance</i>
Version	<i>Version of the XYZ service instance</i>
Technology	<i>Indication of the technology used and supported by this instance (for example REST or SOAP).</i>
Service Specification ID	<i>Reference to the service specification</i>
Service Specification Version	<i>Reference to the service specification</i>
Service Design ID	<i>Reference to the service design</i>
Service Design Version	<i>Reference to the service design</i>
Description	<i>Short description of the XYZ service instance. The description shall contain an abstract of what a service implementation actually does and what the service consumer should know about how the service implementation works in this instance.</i>
Keywords	<i>Keywords that can be used to find the service instance in the service registry</i>
Supplier	<i>Identification of organisation supplying this service implementation/instance</i>
Status	<p><i>Status of the service implementation/instance in the engineering lifecycle – either "Provisional", "Released", "Deprecated" or "Deleted".</i></p> <p><i>"Provisional": the service instance is (partly) available, but not yet officially released.</i></p> <p><i>"Released": the full service instance is ready.</i></p> <p><i>"Deprecated": service instance is announced to become invalid in near future.</i></p> <p><i>"Deleted": service instance is not valid any more.</i></p>



3 Service Implementation and Instantiation Details

This section describes any information that appears useful for the understanding of the service implementation in general and of the actual service instance in particular. This may include internal design decisions, required configuration data, deployment pre-requisites, etc.

The template does not provide further details for the structure of this section. The actual structure is left to the author's choice.

4 Release Notes

This section describes the release notes of the service instance. It shall contain at least the following set of information:

- *Release identification and date*
- *Feature list*
 - *added features*
 - *changed features*
 - *removed features*
- *Bug list*
 - *known open bugs*
 - *resolved bugs.*

The template does not provide further details for the structure of this section. The actual structure is left to the author's choice.

5 References

This chapter shall include all references used in the service instance description. Specifically, the service specification document as well as the applicable service design description shall be listed.

Nr.	Version	Reference
[1] Service Documentation Guidelines	01.00	SG_Annex_A_Service_Documentation_Guidelines
[3] XYZ Service Specification	xx.yy	<i>Service Specification for the XYZ service.</i>
[4] XYZ Service Design	xx.yy	<i>Service Design Description for the XYZ service.</i>

6 Acronyms and Terminology

6.1 Acronyms

Term	Definition
API	Application Programming Interface
MC	Maritime Cloud
MEP	Message Exchange Pattern
NAF	NATO Architectural Framework
REST	Representational State Transfer
SOAP	Simple Object Access Protocol
SSD	Service Specification Document
UML	Unified Modelling Language
URL	Uniform Resource Locator
VTS	Vessel Traffic Service
WSDL	Web Service Definition Language
XML	Extensible Markup Language
XSD	XML Schema Definition

6.2 Terminology

Term	Definition
External Data Model	Describes the semantics of the “maritime world” (or a significant part thereof) by defining data structures and their relations. This could be at logical level (e.g., in UML) or at physical level (e.g., in XSD schema definitions), as for example standard data models, or S-100 based data produce specifications.
Message Exchange Pattern	Describes the principles two different parts of a message passing system (in our case: the service provider and the service consumer) interact and communicate with each other. Examples: In the Request/Response MEP, the service consumer sends a request to the service provider in order to obtain certain information; the service provider provides the requested information in a dedicated response. In the Publish/Subscribe MEP, the service consumer establishes a subscription with the service provider in order to obtain certain information; the service provider publishes information (either in regular intervals or upon change) to all subscribed service consumers.
Operational Activity	An activity performed by an operational node. Examples of operational activities in the maritime context are: Route Planning, Route Optimization, Logistics, Safety, Weather Forecast Provision, ...
Operational Model	A structure of operational nodes and associated operational activities and their inter-relations in a process model.
Operational Node	A logical entity that performs activities. Note: nodes are specified independently of any physical realisation. Examples of operational nodes in the maritime context are: Maritime Control Center, Maritime Authority, Ship, Port, Weather Information Provider, ...
Service	The provision of something (a non-physical object), by one, for the use

	of one or more others, regulated by formal definitions and mutual agreements. Services involve interactions between providers and consumers, which may be performed in a digital form (data exchanges) or through voice communication or written processes and procedures.
Service Consumer	A service consumer uses service instances provided by service providers. All users within the maritime domain can be service customers, e.g., ships and their crew, authorities, VTS stations, organizations (e.g., meteorological), commercial service providers, etc.
Service Data Model	Formal description of one dedicated service at logical level. The service data model is part of the service specification. Is typically defined in UML and/or XSD. If an external data model exists (e.g., a standard data model), then the service data model shall refer to it: each data item of the service data model shall be mapped to a data item defined in the external data model.
Service Design Description	Documents the details of a service technical design (most likely documented by the service implementer). The service design description includes (but is not limited to) a service physical data model and describes the used technology, transport mechanism, quality of service, etc.
Service Implementation	The provider side implementation of a dedicated service technical design (i.e., implementation of a dedicated service in a dedicated technology).
Service Implementer	Implementers of services from the service provider side and/or the service consumer side. Anybody can be a service implementer but mainly this will be commercial companies implementing solutions for shore and ship.
Service Instance	One service implementation may be deployed at several places by same or different service providers; each such deployment represents a different service instance, being accessible via different URLs.
Service Instance Description	Documents the details of a service implementation (most likely documented by the service implementer) and deployment (most likely documented by the service provider). The service instance description includes (but is not limited to) service technical design reference, service provider reference, service access information, service coverage information, etc.
Service Interface	The communication mechanism of the service, i.e., interaction mechanism between service provider and service consumer. A service interface is characterised by a message exchange pattern and consists of service operations that are either allocated to the provider or the consumer of the service.
Service Operation	Functions or procedure which enables programmatic communication with a service via a service interface.
Service Physical Data Model	Describes the realisation of a dedicated service data model in a dedicated technology. This includes a detailed description of the data payload to be exchanged using the chosen technology. The actual format of the service physical data model depends on the chosen technology. Examples may be WSDL and XSD files (e.g., for SOAP services) or swagger (Open API) specifications (e.g., for REST services). If an external data model exists (e.g., a standard data model), then the service physical data model shall refer to it: each data item of the service physical data model shall be mapped to a data item defined in the external data model.

	In order to prove correct implementation of the service specification, there shall exist a mapping between the service physical data model and the service data model. This means, each data item used in the service physical data model shall be mapped to a corresponding data item of the service data model. (In case of existing mappings to a common external (standard) data model from both the service data model and the service physical data model, such a mapping is implicitly given.)
Service Provider	A service provider provides instances of services according to a service specification and service instance description. All users within the maritime domain can be service providers, e.g., authorities, VTS stations, organizations (e.g., meteorological), commercial service providers, etc.
Service Specification	Describes one dedicated service at logical level. The Service Specification is technology-agnostic. The Service Specification includes (but is not limited to) a description of the Service Interfaces and Service Operations with their data payload. The data payload description may be formally defined by a Service Data Model.
Service Specification Producer	Producers of service specifications in accordance with the service documentation guidelines.
Service Technical Design	The technical design of a dedicated service in a dedicated technology. One service specification may result in several technical service designs, realising the service with different or same technologies.
Service Technology Catalogue	List and specifications of allowed technologies for service implementations. Currently, SOAP and REST are envisaged to be allowed service technologies. The service technology catalogue shall describe in detail the allowed service profiles, e.g., by listing communication standards, security standards, stacks, bindings, etc.
Spatial Exclusiveness	A service specification is characterised as “spatially exclusive”, if in any geographical region just one service instance of that specification is allowed to be registered per technology. The decision, which service instance (out of a number of available spatially exclusive services) shall be registered for a certain geographical region, is a governance issue.