IALA Technical Service:

Service Design for [service name] using [technology]

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# Introduction

*Blue italic text is meant to be replaced by those producing the specification. Non-italic text in blue is meant to be example text that may be kept.*

*Where was this document specification designed and approved.* The document is structured according to the IALA Guideline *G1128 The Specification of e-Navigation Technical Services* [1].

## Purpose of the Document

The purpose of this service design is to provide a design for the implementation of the digital service of *service name, technology and the data model* for the actual message payload.

The aim is to document the key aspects of the *service name* so that implementers know how the specification is to be implemented in an interoperable way and how the interaction between the actors defined in the specification is implemented using the technology defined in the service design. For this purpose, we define:

* Why the chosen technology was chosen to facilitate the implementation.
* The main elements of the service:
  + the components it is composed of,
  + interfaces provided,
  + the operations of the service,
  + and the parameters in the operations.
* The data model of the service
* The dynamic behaviour of the service, i.e. how the use cases defined in the specification are technically implemented.

## Intended Readership

This service specification is intended to be read by service architects, system engineers and developers in charge of designing and developing an instance of the [service].

Furthermore, this Service Design is intended to be read by enterprise architects, service architects, information architects, system engineers and developers in pursuing architecting, designing and development activities of other related services.

## Inputs from Other Sources

*If necessary*

Reading this design document requires a thorough understanding of the related Service Specification.

This design is based on [reference to template used] and uses text from the template where valid.

# Service Identification

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

|  |  |
| --- | --- |
| Name | Service name |
| Implements | Specification name and version  specificationMRN |
| ID | urn:mrn:<oid>:techsvc:design:<serviceName>:<version> |
| Version | x.v |
| Description | description |
| Keywords | keywords |
| Architect(s) |  |
| Status | One of provisional, ready for testing, released, deprecated |

# Technology Introduction

*See guideline for contents of this section. Also, if a template exists (e.g. template on service design using SECOM, use it as basis).*

# Service Design Overview

*See guideline for contents of this section.*

## General

## Service interfaces

## Service Discovery

Services implemented according to this design must submit their instance description to a valid service registry.

An XSD schema for the instance description is provided as an annex to this design Appendix A. The service design must include a template of the instance description XML following the schema file published at: IALA website along this template (search for G1128) to reduce duplicate work by instance implementors.

# Physical Data Model

*Describe the actual data model and how it maps to logical data model in specification.*

# Service Interface Behaviour

*See guideline for contents of this section.*

# Service Dynamic Behaviour

*See guideline for contents of this section.*

## Service discovery

To find a suitable service, the service consumer will search in a service registry for a [service] that implements this design.

The search can be done by supplying a route and design document MRN as parameters and will return the information stored in MSR for the instances along the route that implement this design.

*The text above can be used is written. Amend extra sections as needed.*

# References

| Nr. |  | Reference |
| --- | --- | --- |
| 1. IALA Guideline G1128 |  | THE SPECIFICATION OF E-NAVIGATION TECHNICAL SERVICES |
| 1. IALA Recommendation R1023 |  | MARITIME RESOURCE NAMES |
| 1. IHO Standard S-100 | 5.2.0 | IHO Universal Hydrographic Data Model https://registry.iho.int/productspec/view.do?idx=197&product\_ID=S-100 |
| 1. G1183 The Provision of Maritime Connectivity Platform (MCP) Identities | *1.1* | IALA guideline based on work in MCP. |

# Acronyms and Terminology

## Acronyms

|  |  |
| --- | --- |
| Term | Definition |
| API | Application Programming Interface |
| MRN | Maritime Resource Name |

## Terminology

|  |  |
| --- | --- |
| Term | Definition |
| 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 centres, 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 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 S-212 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 centres, organizations (e.g., meteorological), commercial service providers, etc. |