



IALA Technical Service:

Service Design for [service name] using
[technology]

Version 1.0

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1 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].

1.1 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 S-100 product* used as the S-100 series 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 APIs defined in SECOM. For this purpose, we define:

- Why SECOM 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 actually technically implemented.

1.2 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 VTS Traffic Clearance Service using SECOM.

Furthermore, this service specification 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.

1.3 Inputs from Other Sources

If necessary

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

As this design uses SECOM and an understanding of IEC 63173-2 SECOM is recommended.

This design is based on **Erreur ! Source du renvoi introuvable.** and uses text from the template where valid.

2 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	<i>Service name</i>
Implements	Specification name and version specificationMRN
ID	urn:mrn:iala:techsvc:sd: <i>spec prefix:technology:version</i>
Version	<i>x.v</i>
Description	<i>description</i>
Keywords	<i>keywords</i>
Architect(s)	
Status	<i>One of provisional, ready for testing, released, deprecated</i>

3 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).

4 Service Design Overview

See guideline for contents of this section.

4.1 General

4.2 Service interfaces

4.3 Service Discovery

Services implemented according to this design must submit their instance description to a valid service registry that follows the Maritime Service Registry definition [6].

An XML template for the instance description is provided as an annex to this design.
Appendix A.

5 Physical Data Model

The data model of the service is a combination of JSON (SECOM calls) and XML (the S-212 payload). The SECOM JSON is defined in [4] section 5.

The S-212 data that is used by the service is a subset of S-212. The following elements, attributes and enumeration values must be supported by the service and its clients.

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

6 Service Interface Behaviour

See guideline for contents of this section.

7 Service Dynamic Behaviour

See guideline for contents of this section.

7.1 Service discovery

To find a suitable VTS service the vessel will search for a traffic clearance service that implements this design from a service registry, for example one developed according to the Maritime Service Registry (MSR) specification from [6].

The search can be done by supplying a route and design document MRN as parameters and will return the information storing in MSR for the instances along the route that implement this design. The returned information follows the implementation metadata XML as defined in G1128.

Extra sections as needed.

8 References

Nr.		Reference
[1] IALA Guideline G1128		THE SPECIFICATION OF E-NAVIGATION TECHNICAL SERVICES
[2] IALA Recommendation R1023		MARITIME RESOURCE NAMES
[3] 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
[4] IEC 63173-2 SECOM	1.0.0	
[5] Future IALA Guideline on Maritime Identity Registry	<i>TBD</i>	IALA guideline based on work in MCP. In process in DTEC.
[6] Future IALA Guideline on Maritime Service Registry	<i>TBD</i>	IALA guideline based on work in MCP. In process in DTEC.

9 Acronyms and Terminology

1.4 Acronyms

Term	Definition
API	Application Programming Interface
MRN	Maritime Resource Name

1.5 Terminology

Term	Definition
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 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.

Appendix A Service implementation XML template

Location of XML template.

Appendix B Service instance OpenAPI definition template

Location of API doc template