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Review

Name	Organisation

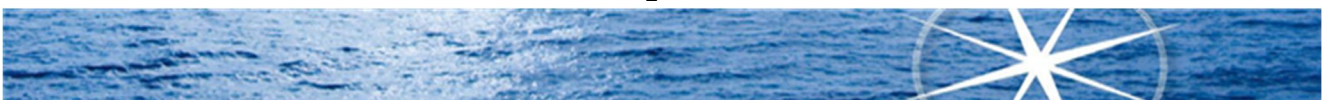


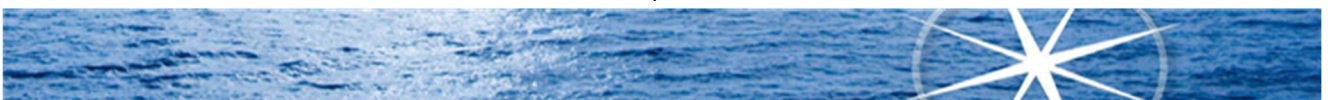
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1 Introduction

1.1 Purpose of the document

The purpose of this service specification document is to provide a holistic overview of the Voyage Information service and its building blocks in a technology-independent way, according to the guidelines. It describes a well-defined baseline of the service by clearly identifying the service version.

The aim is to document the key aspects of the Information service at the logical level:

- the operational and business context of the service
 - requirements for the service (e.g., information exchange requirements)
 - involved nodes: which operational components provide/consume the service
 - operational activities supported by the service
 - relation of the service to other services
- the service description
 - service interface definitions
 - service interface operations
 - service payload definition
 - service dynamic behaviour description
- service provision and validation aspects

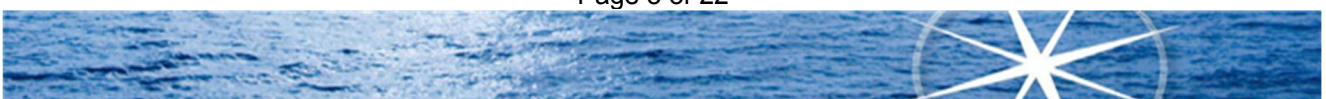
1.2 Intended readership

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 Information service.

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

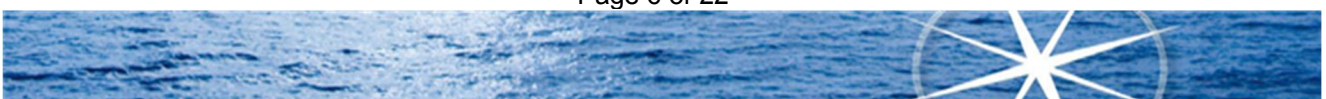
1.3 Inputs from other projects

This section provides an overview of projects, which are dealing with similar topics and lists already finished ones that provided inputs to this activity.



2 Service identification

Name	SeaSWIM Connector Service
Id	urn:mrx:stm:service:specification:SSC
Version	0.1
Description	Service encapsulating functionality to connect to SeaSWIM.
Keywords	SSC,SeaSWIM,Connector,SeaSWIM Connector
Architect(s)	Fabio Renda, CIMNE frenda@cimne.upc.edu
Status	Provisional -> Released



3 Operational context

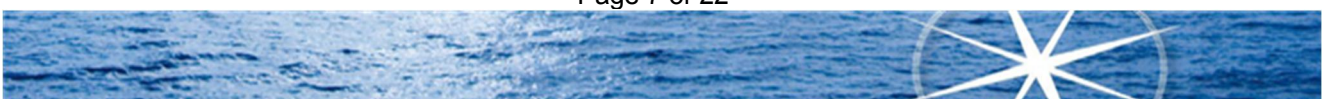
3.1 Functional and non-functional Requirements

3.2 Other Constraints

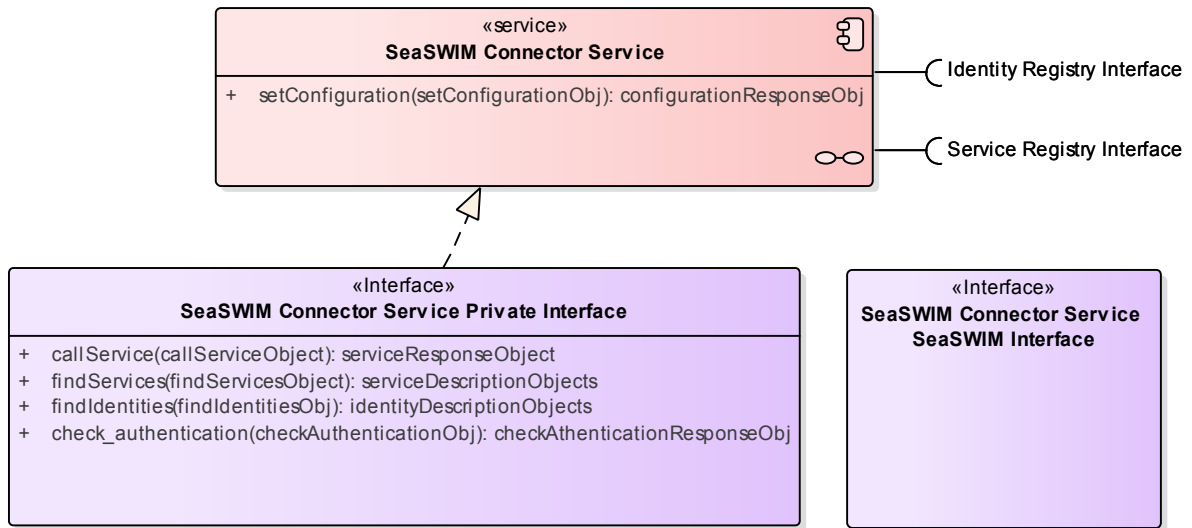
3.2.1 Relevant Industrial Standards

3.3 Operational Nodes

3.4 Operational Activities

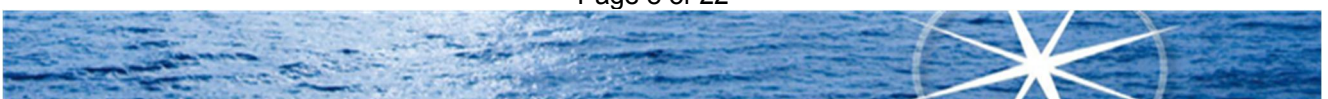


4 Service Overview



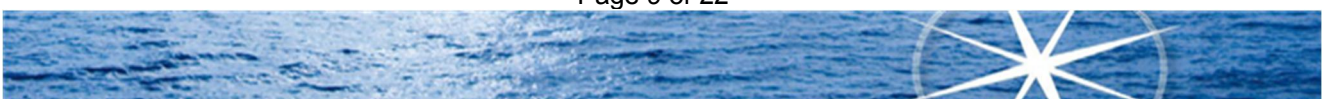
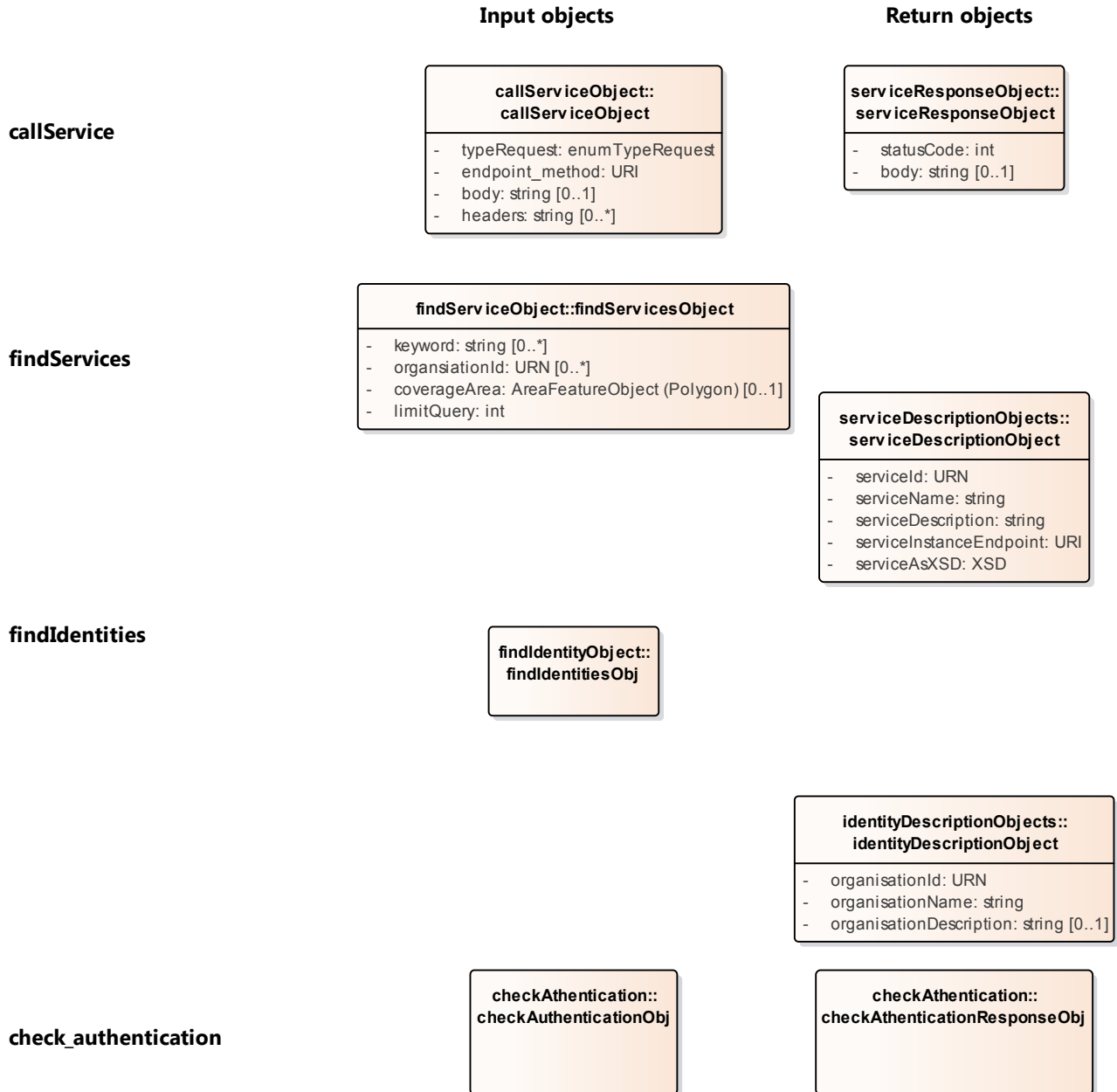
4.1 Service Interfaces

Service Interface	Role	Service Operation
SeaSWIM Connector Service Private Interface		callService findServices findIdentities check_authentication



5 Service Data Model

5.1 Service Data Exchange Model



5.1.1 callServiceObject

Relations to:

Relations from:

Element Name	Attributes		
callServiceObject	Name	Type	Description
	typeRequest	enumType Request	
	endpoint_method	URI	Where URL contains <ip-address>:<port>/<request> ip-address e.g. https:\\urn.mrnx.stm.sma port request e.g. GET POST DELETE
	body	string	
	headers	string	Input parameters and body

5.1.2 serviceResponseObject

Relations to:

Relations from:

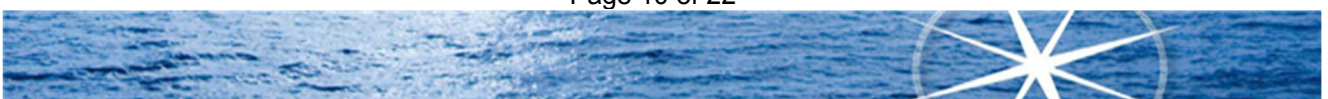
Element Name	Attributes		
serviceResponseObject	Name	Type	Description
	statusCode	int	
	body	string	

5.1.3 findServicesObject

Relations to:

Relations from:

Element Name	Attributes		
findServicesObject	Name	Type	Description



	keyword	string	
	organsiationId	URN	
	coverageArea	AreaFeatureObject (Polygon)	
	limitQuery	int	Limit the number of

5.1.4 serviceDescriptionObject

Relations to:

Relations from:

Element Name	Attributes		
serviceDescriptionObject	Name	Type	Description
	serviceId	URN	Unique service id in URN format. The prefix is matched with the registered organisationId in Identity Registry
	serviceName	string	Human readable name
	serviceDescription	string	Human readable description of the service
	serviceInstanceEndpoint	URI	
	serviceAsXSD	XSD	

5.1.5 checkAuthenticationObj

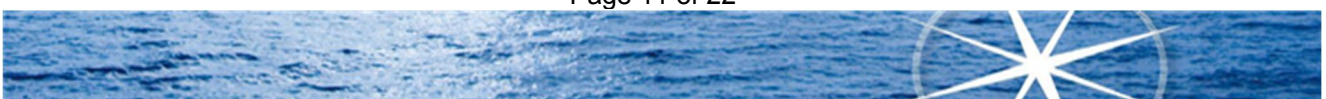
Relations to:

Relations from:

Element Name	Attributes		
checkAuthenticationObj	Name	Type	Description

5.1.6 checkAuthenticationResponseObj

Relations to:



Relations from:

Element Name	Attributes		
checkAuthenticationResponseObj	Name	Type	Description

5.1.7 findIdentitiesObj

Relations to:

Relations from:

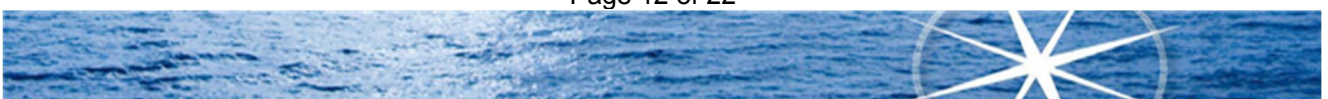
Element Name	Attributes		
findIdentitiesObj	Name	Type	Description

5.1.8 identityDescriptionObject

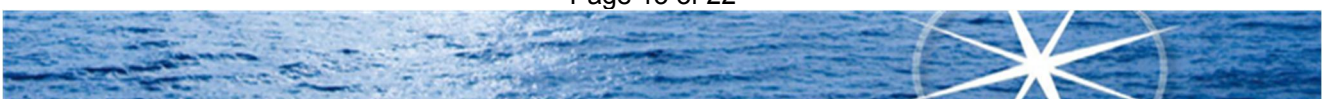
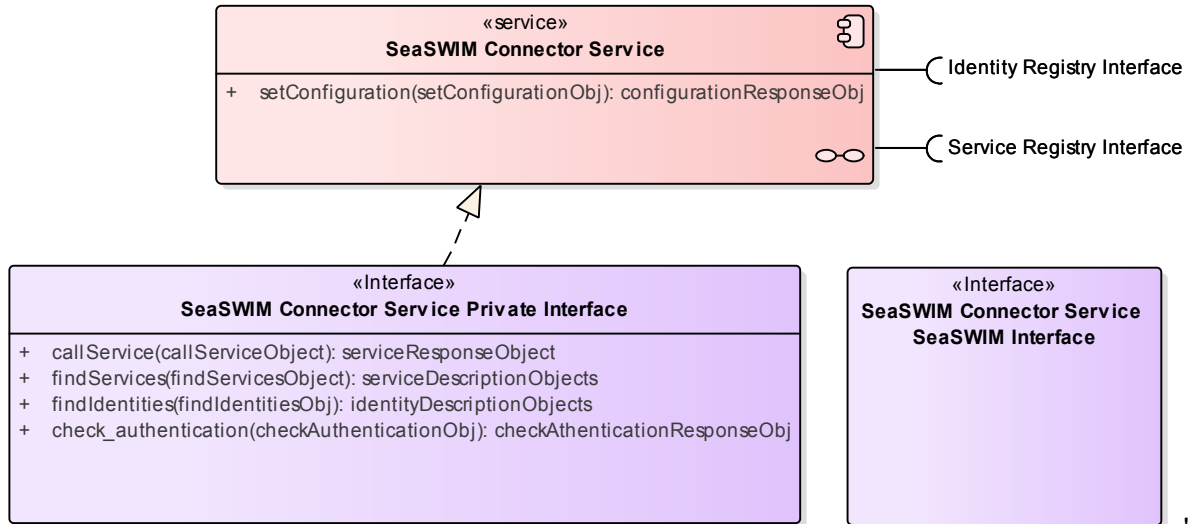
Relations to:

Relations from:

Element Name	Attributes		
identityDescriptionObject	Name	Type	Description
	organisationId	URN	
	organisationName	string	
	organisationDescription	string	



6 Service Interface Specification



6.1 SeaSWIM Connector Service

6.1.1.1 setConfiguration()

Operation functionality

Operation Parameters

Parameter Name	Direction	Data Type	Description
congObj	Input	setConfigurationObj	

Return	Direction	Data Type	Description
	Return	configurationResponseObj	

6.1.2 SeaSWIM Connector Service Private Interface

6.1.2.1.1 callService()

Operation functionality

Operation Parameters

Parameter Name	Direction	Data Type	Description
callServiceObj	Input	callServiceObject	

Return	Direction	Data Type	Description
	Return	serviceResponseObject	

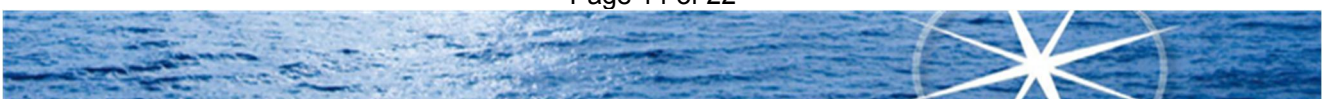
6.1.2.1.2 findServices()

Operation functionality

Operation Parameters

Parameter Name	Direction	Data Type	Description
findServiceObj	Input	findServicesObject	

Return	Direction	Data Type	Description
	Return	serviceDescriptionObjects	



6.1.2.1.3 findIdentities()

Operation functionality

Operation Parameters

Parameter Name	Direction	Data Type	Description
findIdentityObj	Input	findIdentitiesObj	

Return	Direction	Data Type	Description
	Return	identityDescriptionObjects	

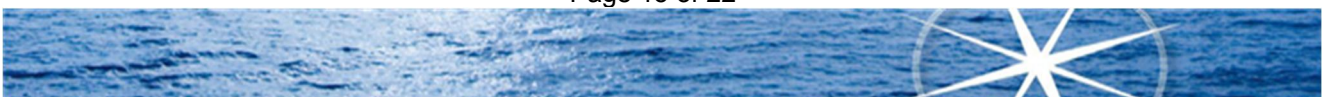
6.1.2.1.4 check_authentication()

Operation functionality

Operation Parameters

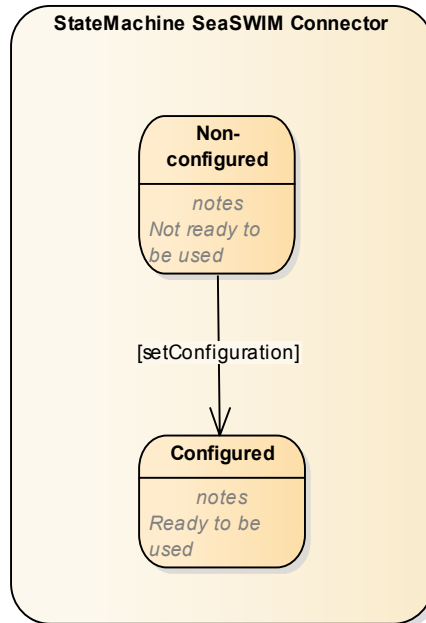
Parameter Name	Direction	Data Type	Description
authObj	Input	checkAuthenticationObj	

Return	Direction	Data Type	Description
	Return	checkAuthenticationResponseObj	



7 Service Dynamic Behaviour

7.1 Service State Model



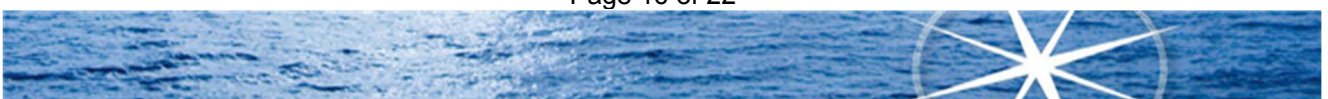
7.1.1 StateMachine SeaSWIM Connector

7.1.1.1 Configured

Ready to be used

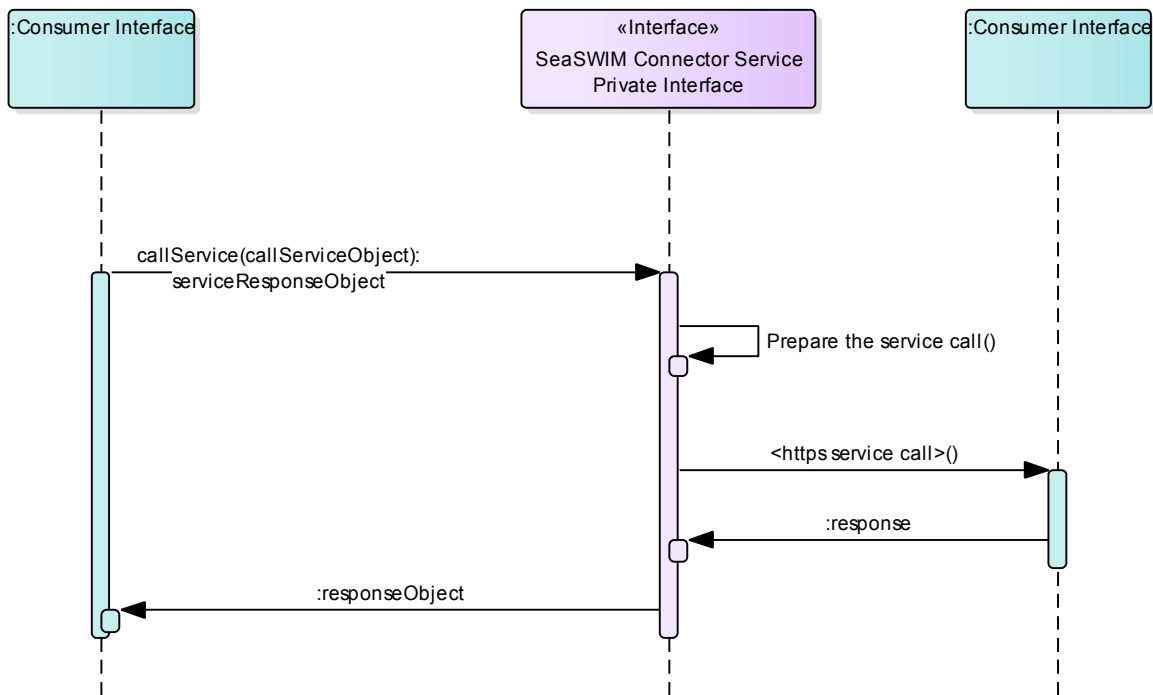
7.1.1.2 Non-configured

Not ready to be used

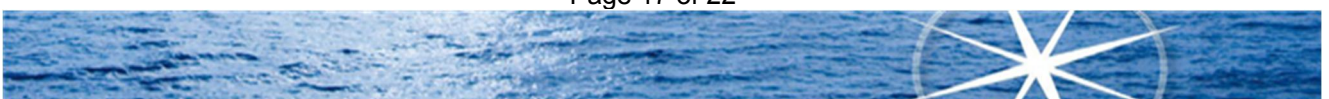
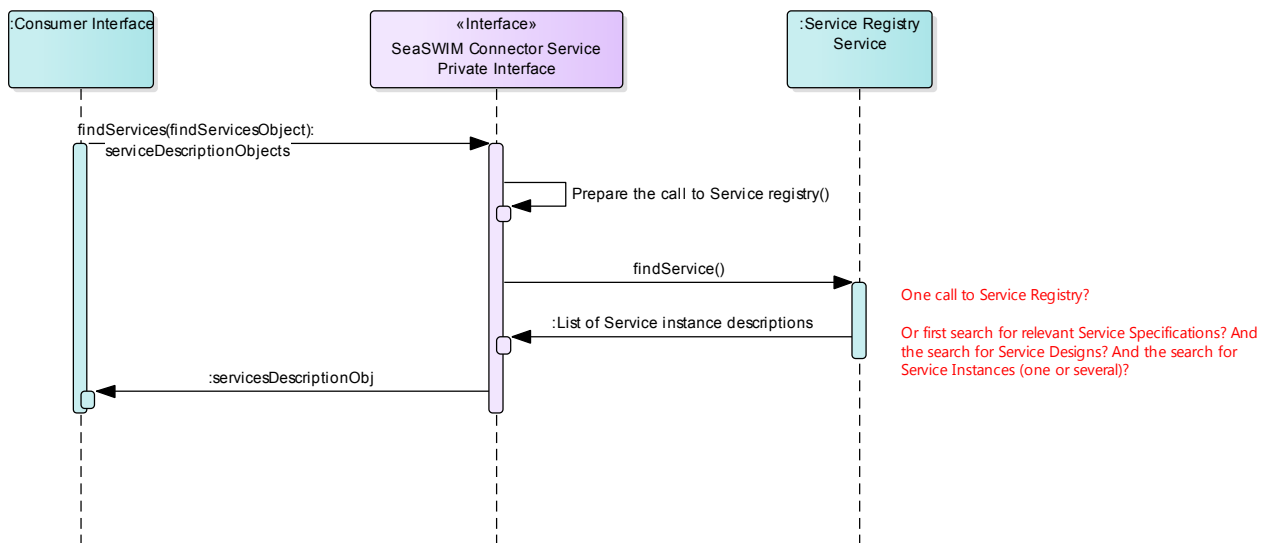


7.2 Interaction

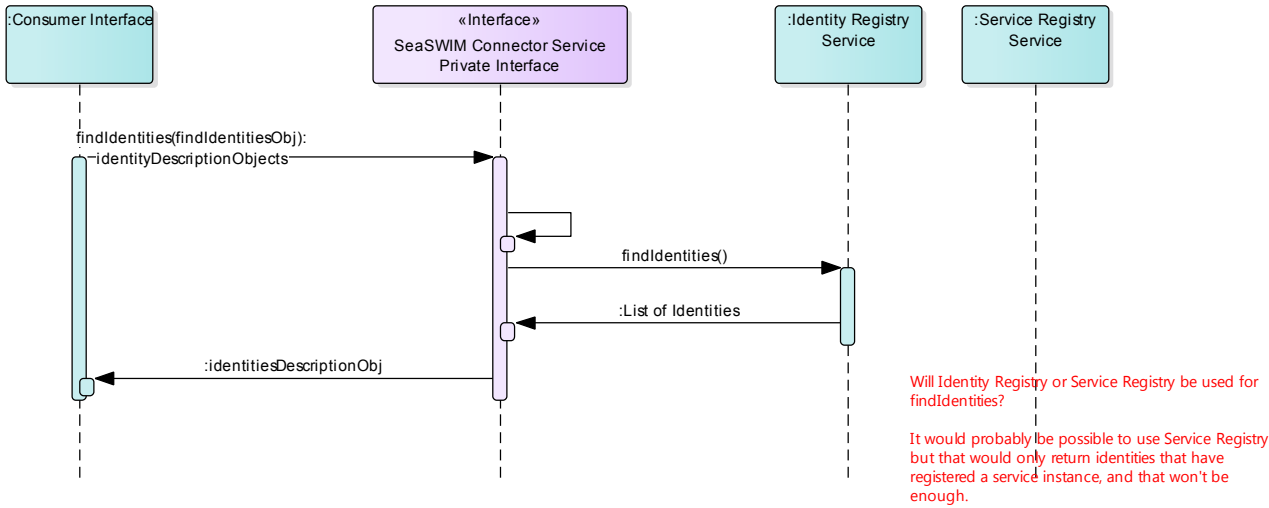
7.2.1 Interaction - callService



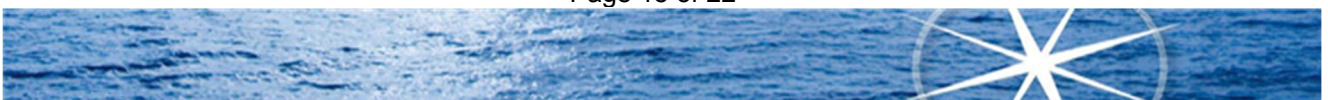
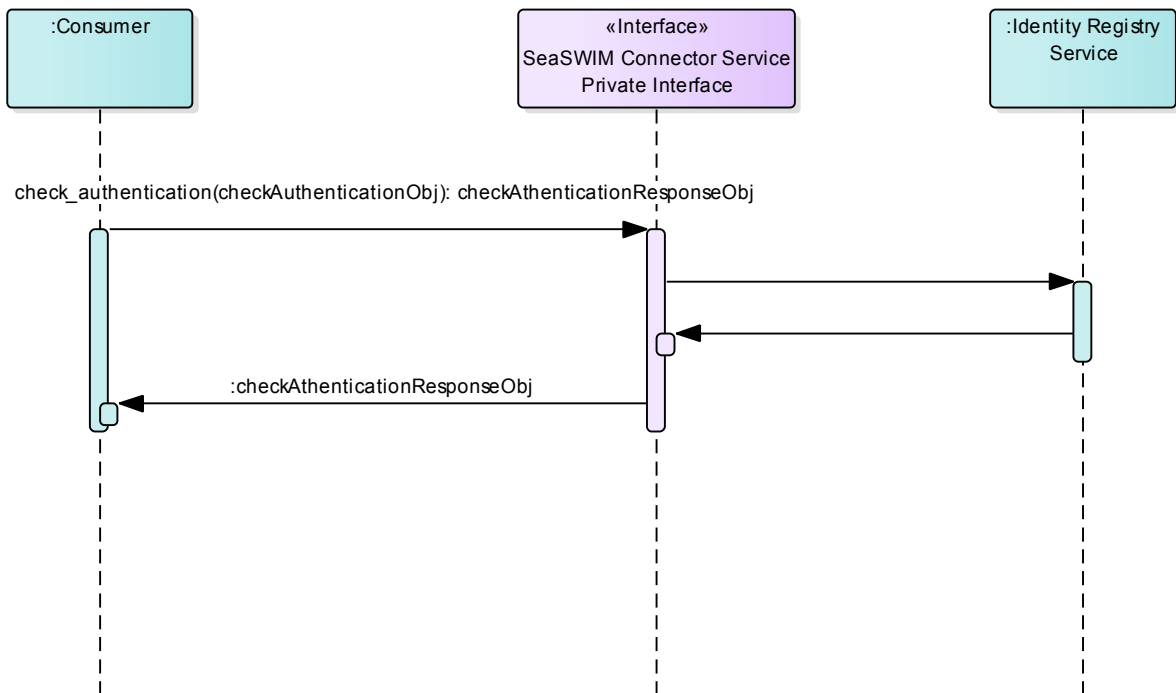
7.2.2 Interaction - findServices



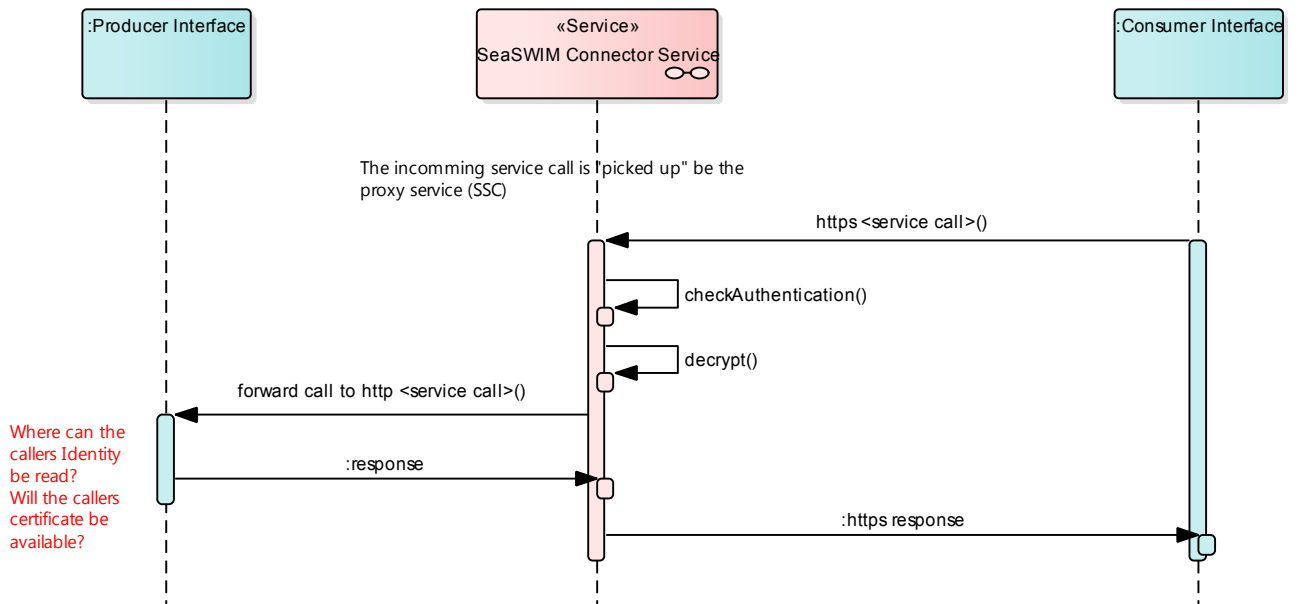
7.2.3 Interaction - findIdentities



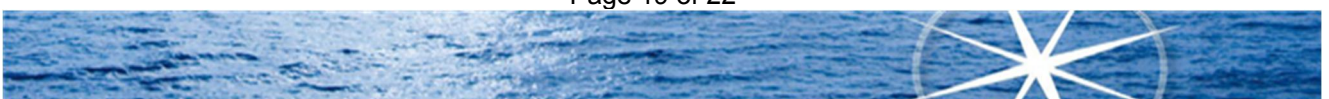
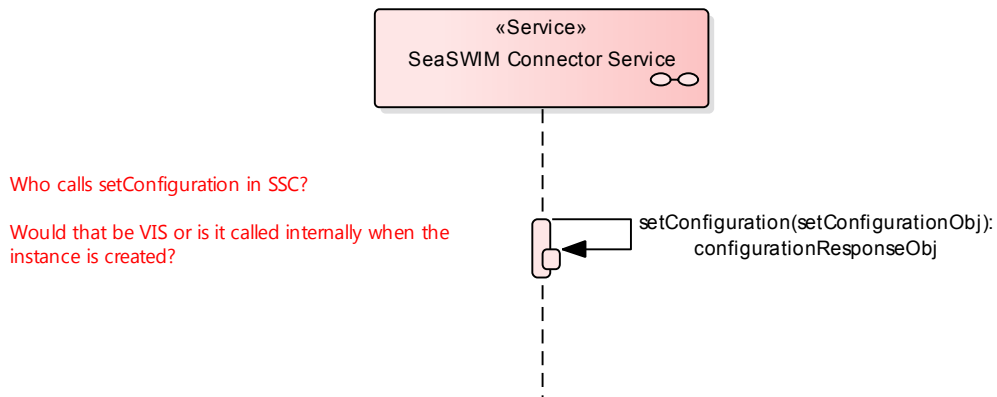
7.2.4 Interaction - check_authentication



7.2.5 Interaction - <incoming call>



7.2.6 Interaction - <start-up>



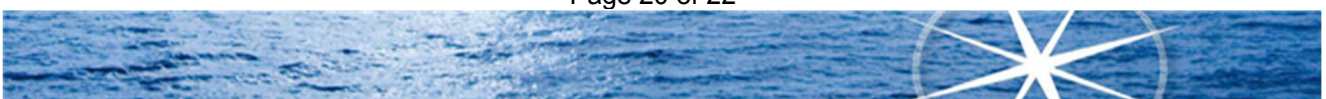
8 Service Provision

9 References

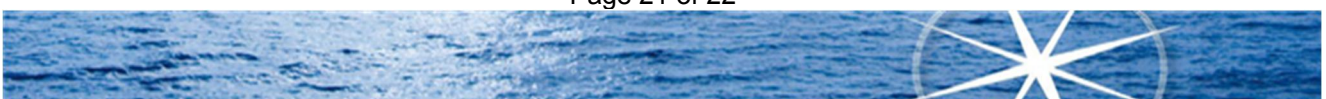
Nr	Version	Reference

10 Acronyms and Terminology

Type	Term	Definition/Description
Acronym	API	Application Programming Interface
Architectural	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.
General	LoST	Location-to-Service Translation Protocol [https://tools.ietf.org/html/rfc5222]
Acronym	MC	Maritime Cloud
Acronym	MEP	Message Exchange Pattern
Architectural	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, ...
Architectural	Operational Model	A structure of operational nodes and associated operational activities and their inter-relations in a process model.
Architectural	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, ...
Acronym	PIS	Port Information Service
Maritime	Port Information service	Service supporting the ship in communication with port.
Acronym	REST	Representational State Transfer
Acronym	RTA	Recommended Time of Arrival
Acronym	SC	Shore Center
Acronym	SeaSWIM	Sea System Wide Information Management
Service Orientation	Service	The contractual provision of something (a non-physical object), by one, for the use of one or more others. 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 Orientation	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 Orientation	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 Orientation	Service Implementer	Implementers of services from the service provider side and/or the service consumer side. Everybody can be a service implementer but mainly this will be commercial companies implementing solutions for shore and ship.
Service Orientation	Service Instance	The implementation of a dedicated service in a dedicated technology. One service specification may result in several service instances, being implemented with different or same technologies.
Service Orientation	Service Instance Description	Documents the details of a service instance (most likely documented by the service implementer). The service instance description includes (but is not limited to) a service instance model and describes the used technology, transport mechanism, quality of service, etc.
Service Orientation	Service Instance Model	Describes the implementation of a dedicated service instance in a dedicated technology. This includes a detailed description of the data payload to be exchanged by this service instance. The actual format of the service instance 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 instance model shall refer to it: each data item of the service instance 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 instance model and the service data model. This means, each data item used in the service instance 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 instance model, such a mapping is implicitly given.)
Service Orientation	Service Interface	The mechanism by which a service communicates.
Service Orientation	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 Orientation	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 Orientation	Service Specification Producer	Producers of service specifications in accordance with the service description guidelines.
Service Orientation	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.
Acronym	SOAP	Simple Object Access Protocol
Acronym	UML	Unified Modelling Language
Maritime	Unique Port Call ID	Unique identifier within PortCDM
Acronym	UPCID	Unique Port Call ID
Acronym	URL	Uniform Resource Locator
Acronym	UVID	Unique Voyage Plan Identity
Maritime	Voyage Information Service	
Acronym	VTS	Vessel Traffic Service
Acronym	WSDL	Web Service Definition Language
Acronym	XML	Extendible Mark-up Language
Acronym	XSD	XML Schema Definition

