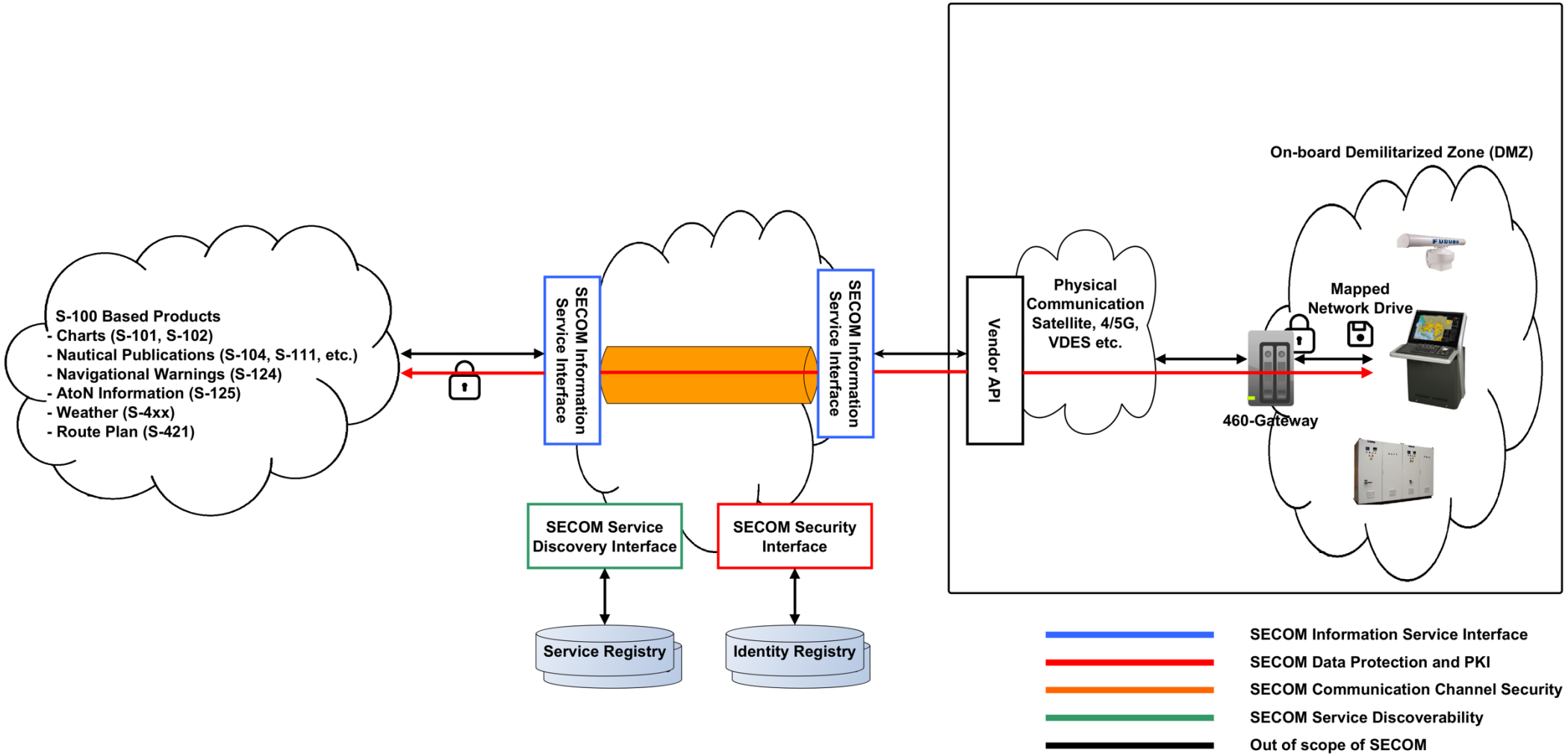
SECOM II

By Nikolaos Vastardis (GRAD)

Outline

- SECOM Context
- SECOM Interfaces
- Important Data Structures
- The SECOMLib library
- The XML Bindings Repo

SECOM Architecture (Refresher)



SECOM Context

SECOM Service Operations

- Get Summary
- Get
- Subscription
- Large Data Transfers

PKI Service Operations

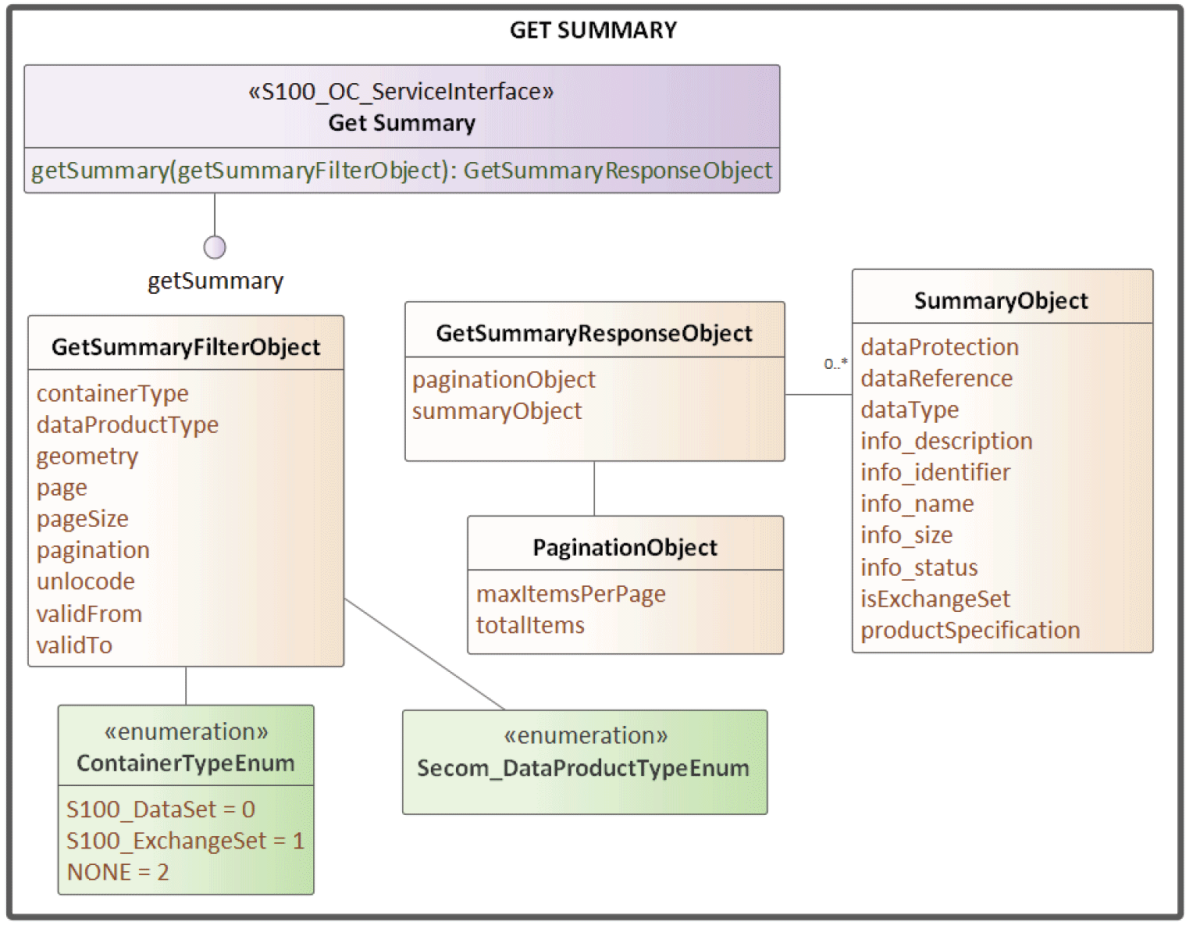
- CSR
- Certificate Status (CRL/OCSP)
- Management (Get Public Key + Revoke)

Search Service Operations

- Search Service

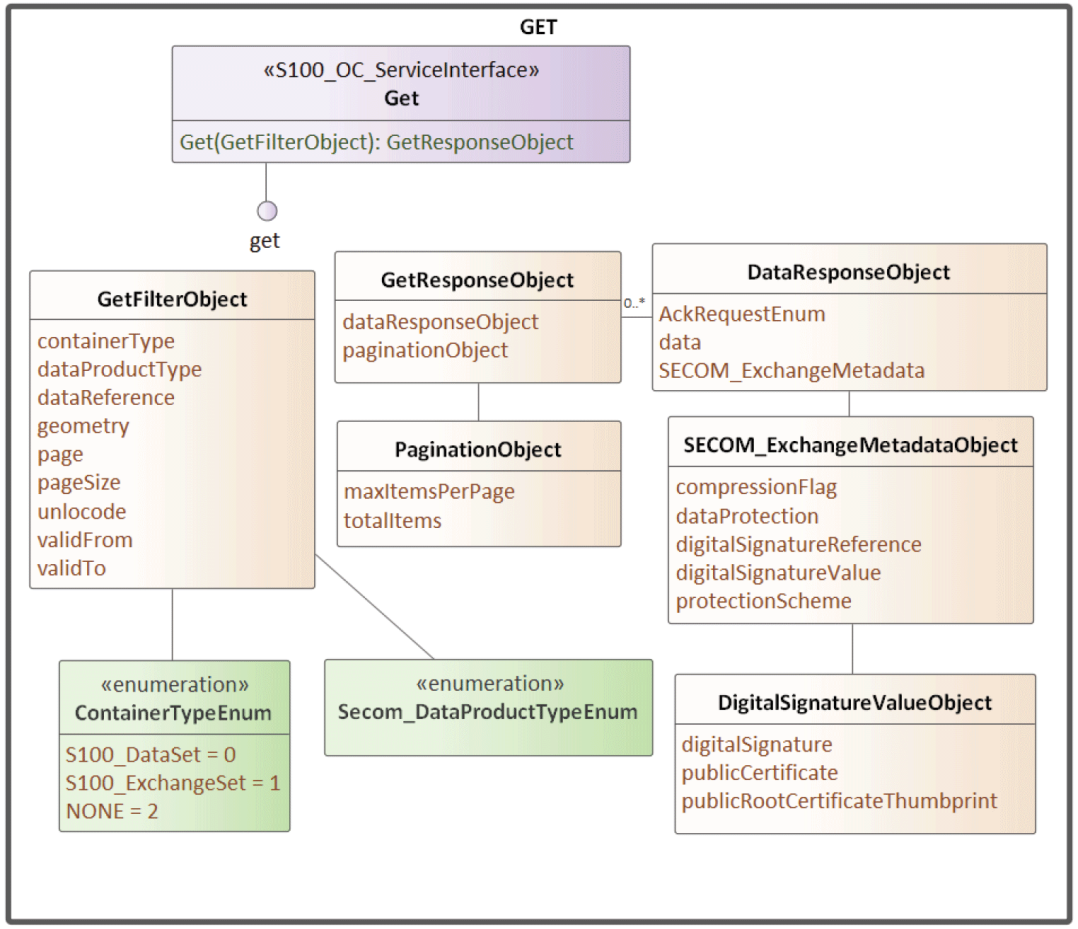
Get Summary Interface

- Provides an outline of the information datasets, currently available by the service.
- Allows for filtering:
  - Container Type (Dataset, Exchange Set)
  - Data Product Type (S-100)
  - Data Product Version
  - Geometry
  - UN/LOCODE
  - Validity Time Duration
  - + Pagination



IEC

Get Interface

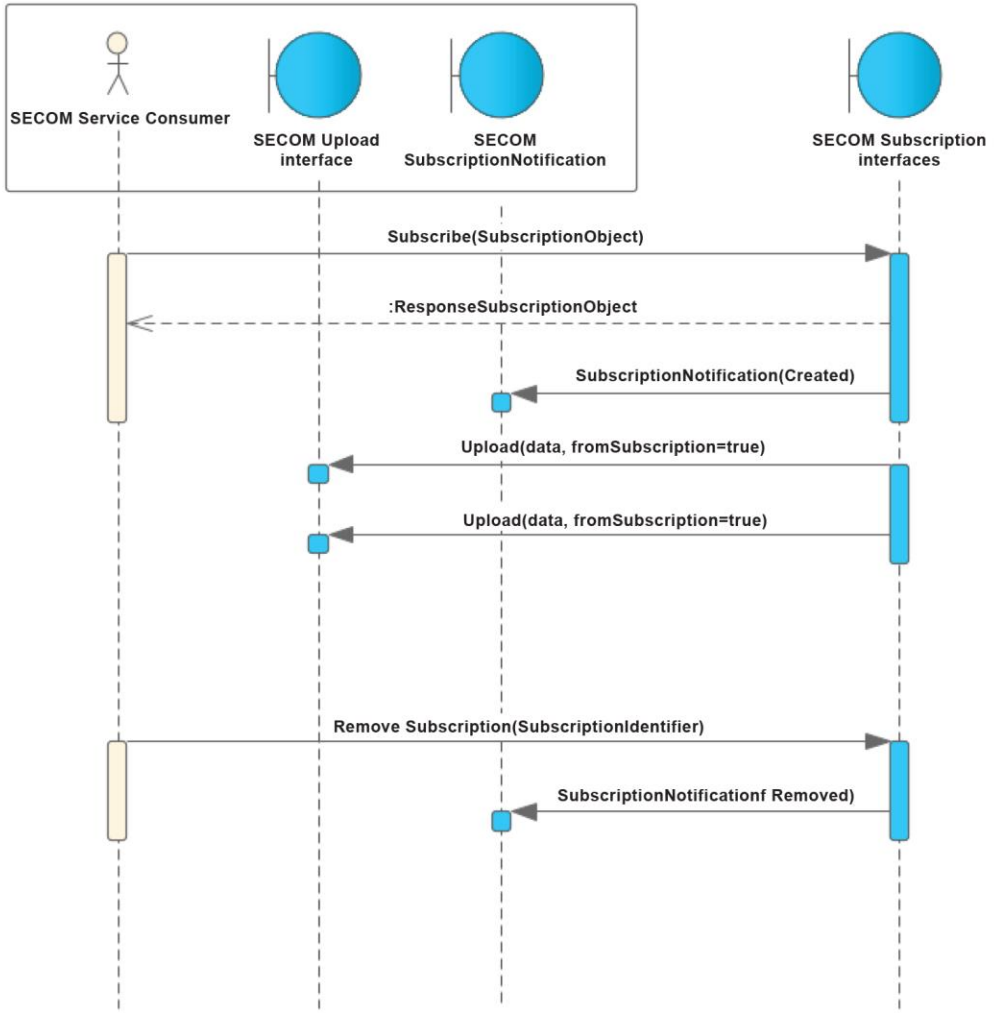


IEC

- Allows direct access to the service datasets.
- Allows for filtering:
  - Data Reference
  - Container Type (Dataset, Exchange Set)
  - Data Product Type (S-100)
  - Data Product Version
  - Geometry
  - UN/LOCODE
  - Validity Time Duration
  - + Pagination

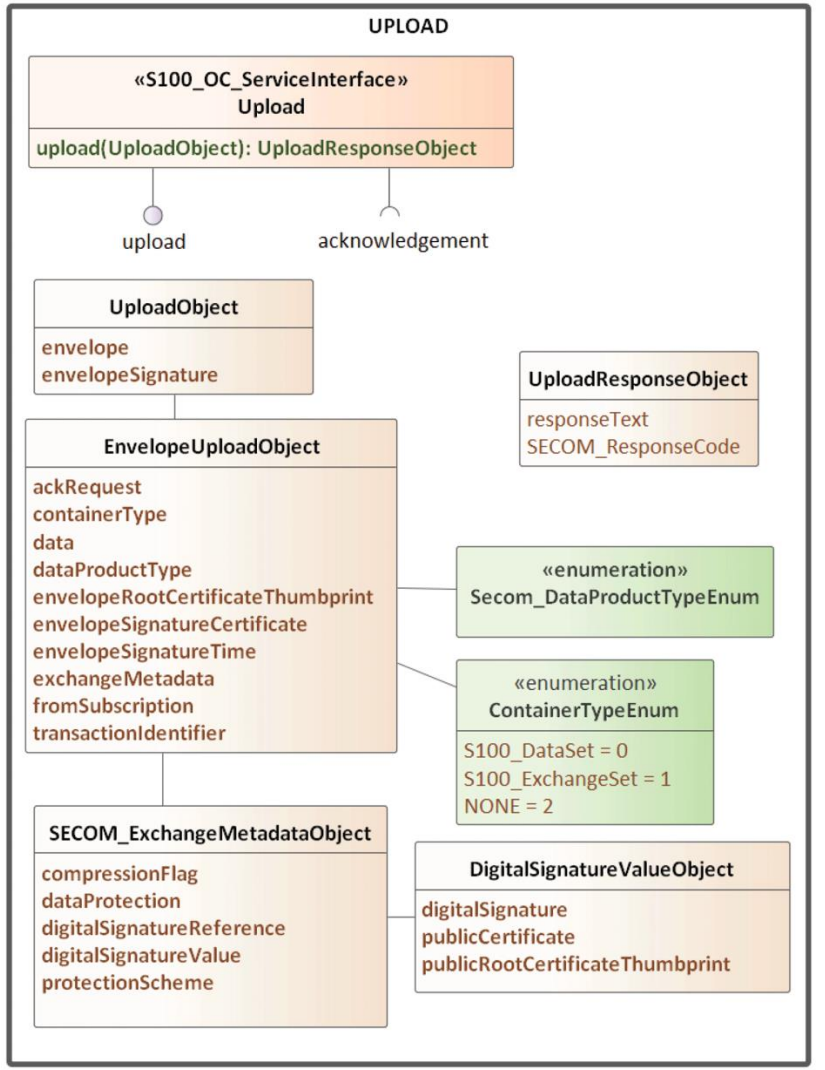
Subscription Interface

- Allows users to request to be notified upon changes on the information datasets.
- Allows for filtering, similar to the Get/Get Summary operations.
- The service will upload the available data directly to the consumer.
- Updates on the subscription status will be made available through the notification interface.

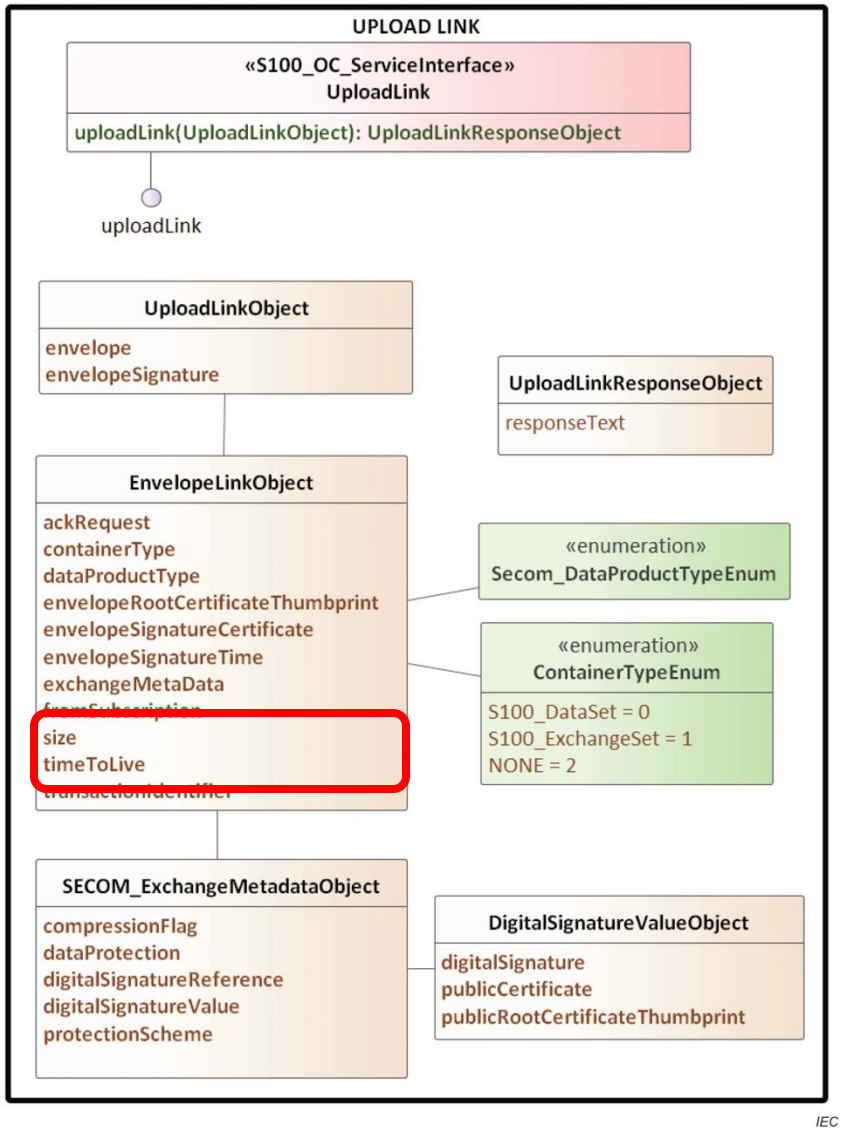


Upload Interface

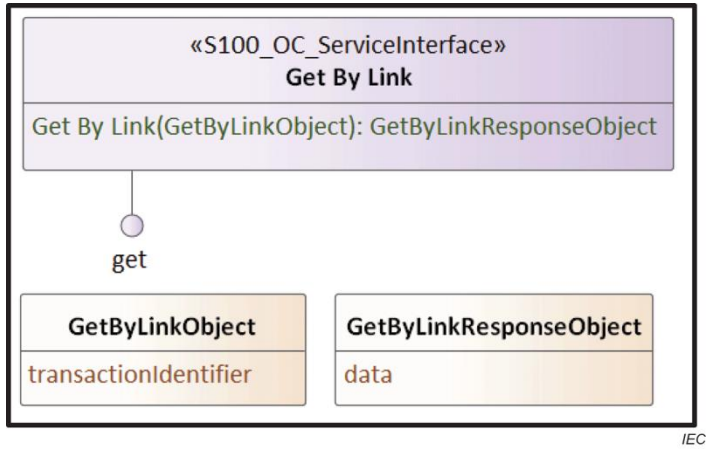
- Allows to push information to a consumer.
- The upload object is encapsulated in an upload envelop, signed separately.
- The envelop contains relevant metadata.
- Acknowledgment request supported.
- The file size for a direct upload is set to 350KB or Base64 encoded data.
- Over that limit, the large data transfer operation should be used.



Upload/Get by Link Interface

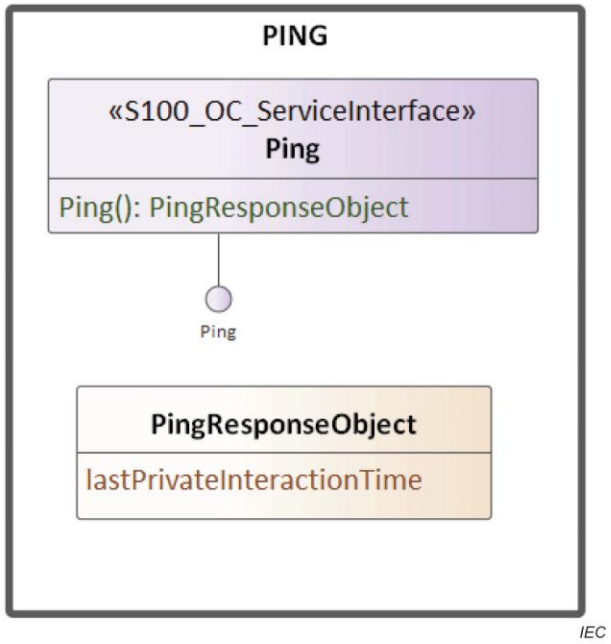


- Practically identical to the Upload Interface.
- Includes the size of the data to be uploaded.
- Requests that the consumer download the data through the “Get By Link” interface.



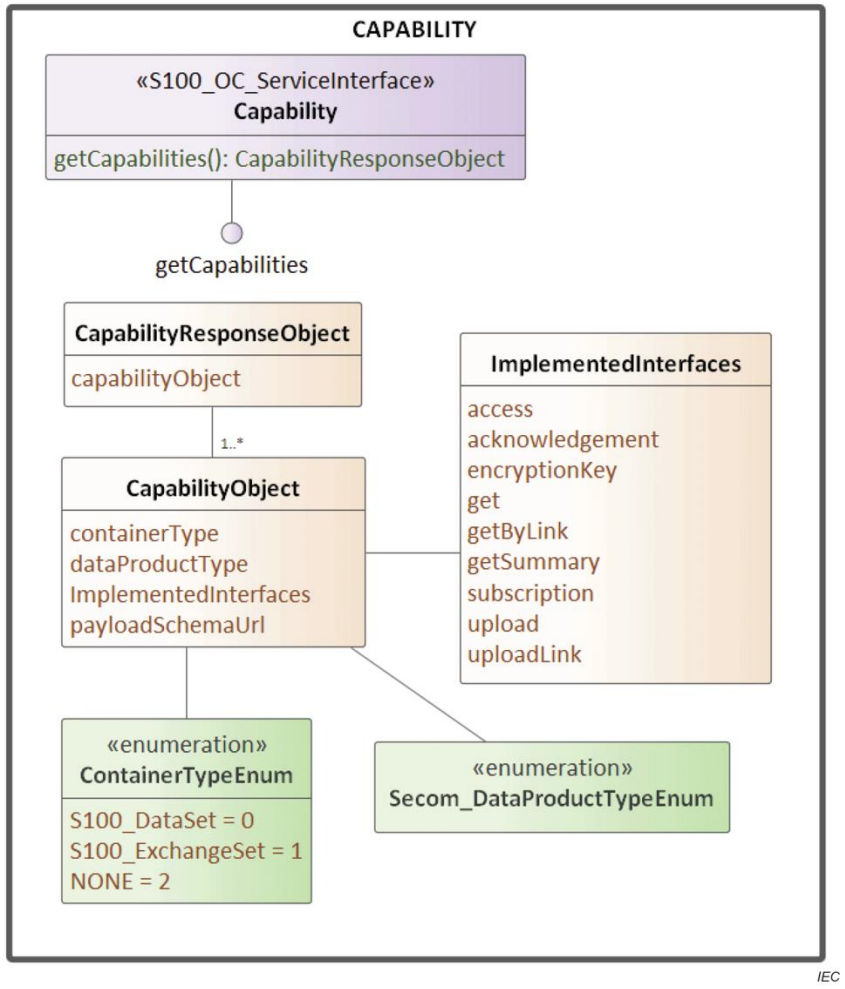
Ping Interface

- Simple interaction to test responsiveness.
- Simple datetime response if successful.



IEC

Capability Interface



- Identifies the supported functionality of the service.
- Identifies the available data format.
- In SECOM v1 only one data product type is supported per service.
- Multiple data product types supported in SECOM v2.

Important Data Structures

Date/Time

Dates give values for year, month and day according to the Gregorian Calendar

Time is preferably expressed as Universal Time Coordinated (UTC)

SECOM v1 using the S-100 format:
→ 19850412T101530

*SECOM v2 uses the ISO **8601** format:*
→ 1985-04-12T10:15:30Z

Exchange Metadata

Data Protection Flag (unencrypted/encrypted)

Protection Scheme (e.g. SECOM)

Digital Signature Algorithm (e.g. ECDSA)

Digital Signature

Public Certificate

Compression Flag

UUID

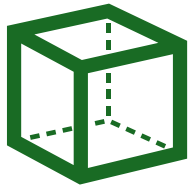
UUIDs are used as data references and as transaction identifiers.

Created by the information owner in the OEM system.

Need to be mapped to the dataset identifiers, potentially IALA MRNs.

Use is assumed to be service-specific.

Important Data Structures



Geometry - WKT

Human readable representation for spatial objects like points.

Supports Points, Lines, Polygons, Geometry Collections etc.

URL-safe

No coordinate system, 4326 – WGS 84 by default:
→ MULTIPOLYGON (((30 20, 45 40, 10 40, 30 20)), ((15 5, 40 10, 10 20, 5 10, 15 5)))

SECOM v2 – GeoJSON?

Better support for web-mapping applications.

Easier to parse in simple clients.

Works well with REST.

Not really a priority for SECOM.

UNLOCODE

United Nations Code for Trade and Transport Locations.

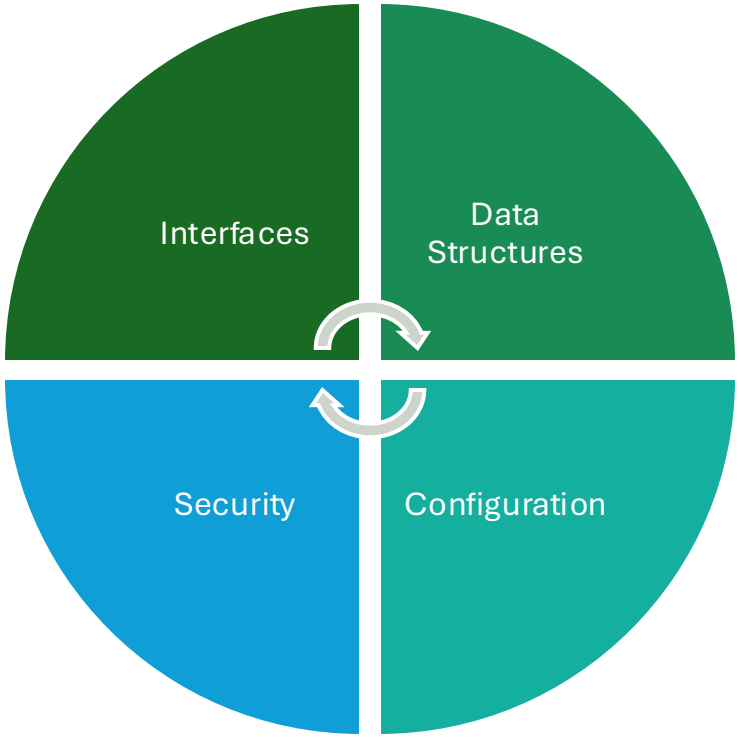
Maintained by UNECE.

Not all locations have assigned geometries.

Mainly for identifying ports and other land-based locations.

Examples:
→ SEGOT, USAA7

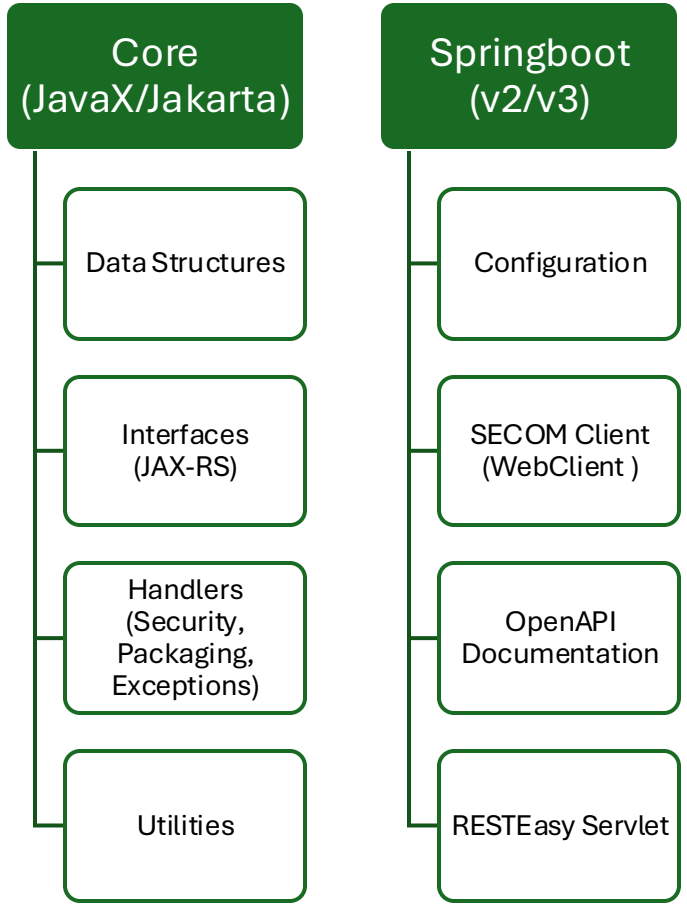
That’s a bit much – Innit?



- SECOM as a standard is quite extensive and very thorough.
- Might appear complex.
- Same components/structures reused over and over again.
- Security is the same for all interfaces.
- Ideal for re-usable libraries:
  - https://github.com/gla-rad/SECOMLib

The SECOMLib Java Library

- SECOM full functionality right out-of-the-box
- Direct integration with Springboot applications.
- Support for both v1 and v2 of SECOM.
- Both versions can run simultaneously.
- Functionality covers all security, packaging, exceptions and logging operations.
- Maven packages available under:
  - https://rnavlab.gla-rad.org/mvn/



SECOMLib

Public

Edit Pins | Unwatch 1 | Fork 4 | Star 14

master | 5 Branches | 3 Tags | Go to file t | Add file | Code

nvasta Fixing the reader interpreter to only the right SECOM version ✓ feeeb0b · 3 weeks ago 282 Commits

.github/workflows	And another try using the environment	4 months ago
.mvn	Adding the basic project implementation	3 years ago
secom-core-jakarta	Fixing the reader interpreter to only the right SECOM version	3 weeks ago
secom-core	Fixing the reader interpreter to only the right SECOM version	3 weeks ago
secom-springboot2	Renaming the exception mapper with the version	3 months ago
secom-springboot3	Renaming the exception mapper with the version	3 months ago
.gitignore	Adding the basic project implementation	3 years ago
LICENSE	Initial commit	3 years ago
README.md	Updating the README file	3 months ago
pom.xml	Updating the library version	3 months ago

README | Apache-2.0 license

SECOMLib

A Java library facilitating the development of SECOM-compliant web interfaces. The implementation is based on the final IEC 63173-2 ED1 SECOM draft with circulation date 2022-03-11.

About

A Java library facilitating the development of SECOM-compliant web interfaces

Readme
Apache-2.0 license
Activity
Custom properties
14 stars
1 watching
4 forks
Report repository

Releases 3

SECOM v1.0 Latest
on Jun 5

+ 2 releases

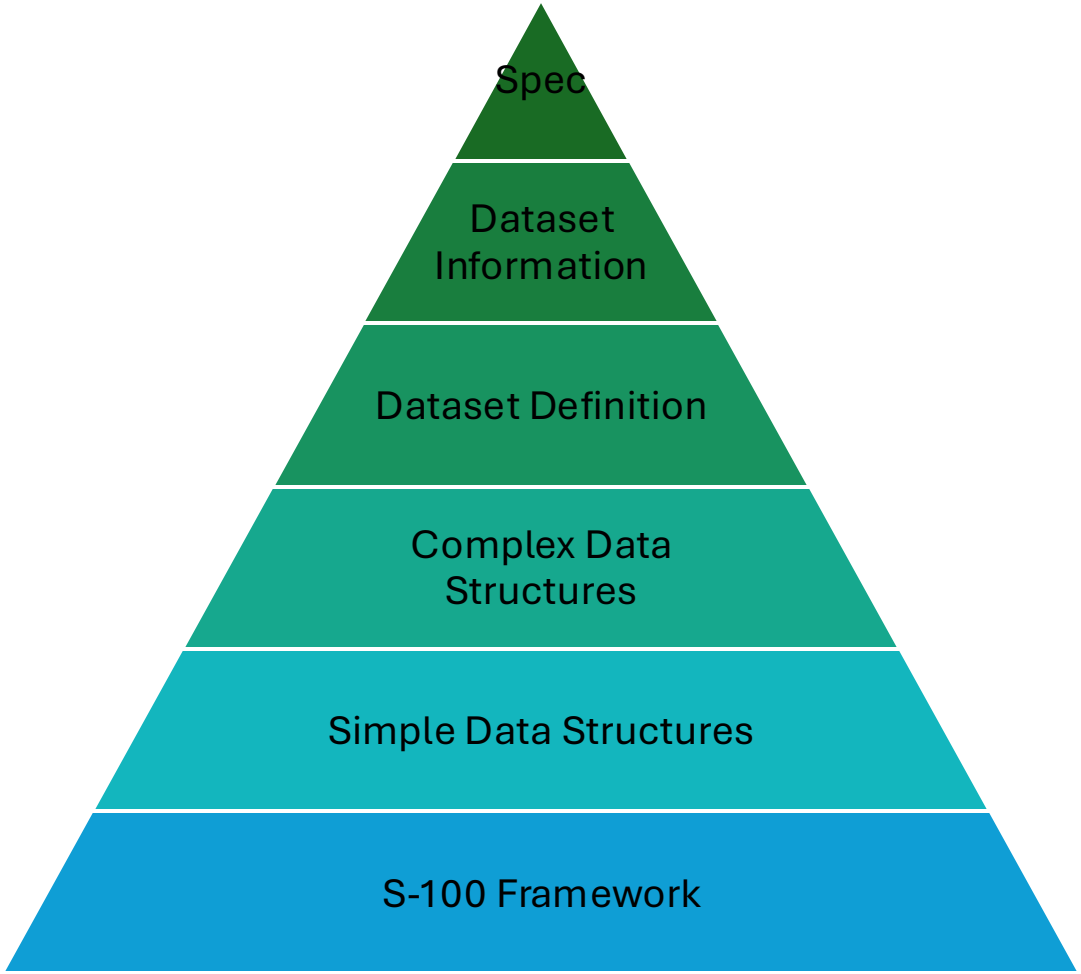
Packages

No packages published
Publish your first package

Contributors 4

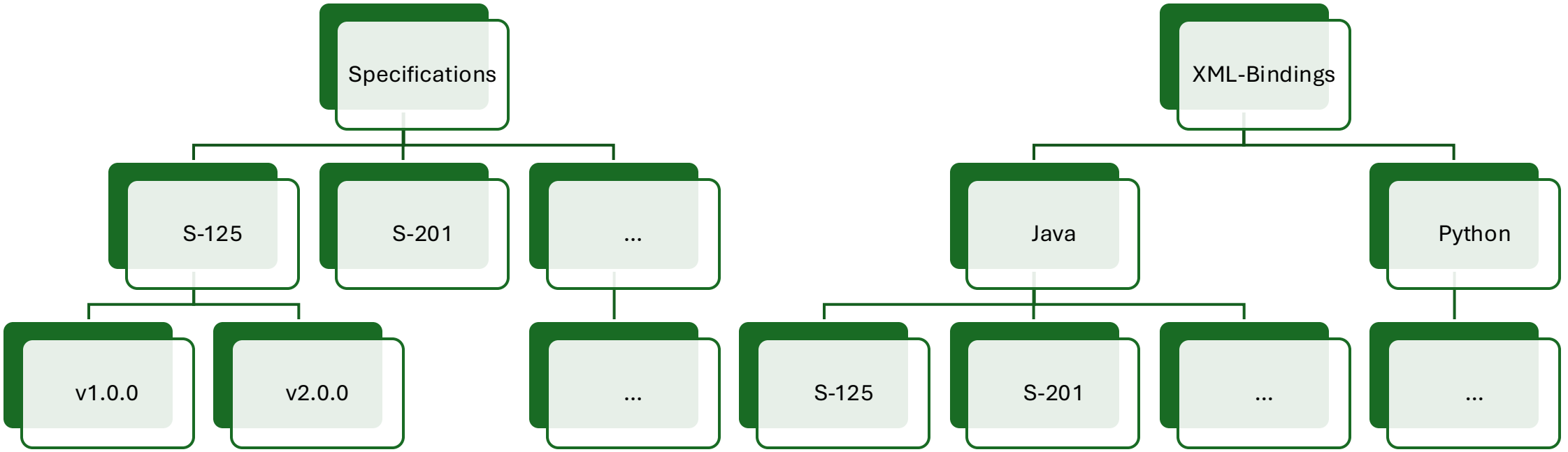
nvasta Nikolaos Vastardis
kaspernielsen Kasper Nielsen

What about the S-100 Data?



- SECOM is primarily intended for S-100 exchange.
- Embedded "*Data Product Type*" attribute.
- S-100 data product specifications historically parsed through Feature Catalogues.
- XSDs are also provided.
- Ideal for XML binding:
  - https://github.com/iho-ohi/S-100-xmlbindings

The NIPWG XML-Bindings Repo



- Using primarily JAXB for parsing the S-100 data products XSDs.
- XSDs available from staging.s100dev.net are picked up remotely.
- Missing XSDs (e.g. S-125/S-201) can be included with versioning.

S-100-xmlbindings

Public

Unwatch 3 Fork 3 Starred 7

main 1 Branch 0 Tags Go to file t Add file Code

jenssc Update README.md a660129 · 2 weeks ago 38 Commits

specifications	Removing S-100 schema files	2 weeks ago
xml-bindings	Removing hardcoded schemas	2 weeks ago
.gitignore	Updating the repository structure	2 months ago
README.md	Update README.md	2 weeks ago

README

S-100-xmlbindings

The purpose of the repository is to provide xml-bindings for S-100 standards in various programming languages

⚠️ Disclaimer: The current implementation of the XML bindings is intended only for testing and analysis. NIPWG will review the usability of these XML bindings at VTC3'25 and, hopefully, approve a way forward. In the meantime, everyone is welcome to experiment with the files in the repository and provide feedback via GitHub issues.

Overview

This repository provides language bindings for the S-100 standard, making it easier for developers to work with S-100 datasets across different programming languages. These bindings allow you to programmatically interact with S-100-compliant datasets and data models, supporting the creation of applications that need to process, validate, and manipulate S-100 data.

About

The purpose of the repository is to provide xml-bindings for S-100 standards in various programming languages

Readme
Activity
7 stars
3 watching
3 forks
Report repository

Releases

No releases published

Packages

No packages published

Contributors 3

nvasta Nikolaos Vastardis
iho-ohi International Hydrographic Org...
jenssc Jens Søe Christiansen

Languages

Questions?

References

IEC 63173-2 - Maritime navigation and radiocommunication equipment and systems – Data interface – Part 2: Secure communication between ship and shore (SECOM)

https://https://webstore.iec.ch/en/publication/64543/

GRAD SECOMLib Repository - Github

https://github.com/gla-rad/SECOMLib

IHO NIPWG XML Bindings Repository - Github

https://github.com/iho-ohi/S-100-xmlbindings