

**ATON INFORMATION - Service Specification**

# Introduction

## Purpose

This specification documents the key aspects of the Aids to Navigation (AtoN) Information Service at the logical level.

The purpose of the service specification is to provide a holistic overview of a particular service and its building blocks at logical level. Intended readership: software architects, service designers, developers etc.

## Inputs from other projects

The core of the specification is the S-201 Product Specification on AtoN Information, which originated from a spread sheet application developed by the Australian Maritime Safety Authority in conjunction with the Australian Hydrographic Office.

# Service Identification

|  |  |
| --- | --- |
| **Name** | ATON INFORMATION (?) |
| **ID** | urn:mrn:etc:etc:etc |
| **Version** | 0.1 |
| **Description** | The Aids to Navigation (AtoN) Information Service provides a common structure for the exchange of information about AtoNs between the organisations responsible for their installation and maintenance and hydrographic offices and other producers or distributors of AtoN information to end users and downstream distributors. This includes buoys, beacons, racons, lights, sound signals and AIS. The service includes the positions, properties, operational status and general comments related to the AtoNs. |
| **Keywords** | Keywords that can be used to find the service in the service catalogue and taxonomy |
| **Architect(s)** | Name of service architects and their organisation |
| **Status** | Provisional |

# Operational Context

The operational context of the service is the exchange of information on AtoN between organisations, for example between a lighthouse authority and a hydrographic office.

Related operations supported by the service would include the issuing of navigational warnings and corrections to electronic charts associated with changes in AtoNs.

Other related services would include exchange of information on radio AtoNs, for example DGNSS almanacs.

## Requirements

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| Requirement ID: REQ1 |
| Name: Reliable exchange |
| Text: The service shall provide accurate, reliable and verifiable exchange of information on all types of physical AtoN between agencies responsible for maintaining the AtoNs and the immediate downstream recipients of this AtoN information. |
| Rationale: Core requirement |
| Author: |

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| Requirement ID: REQ2 |
| Name: Transfer in data sets |
| Text: The service shall provide the means to transfer data in sets, rather than individually. |
| Rationale: Core requirement |
| Author: |

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| Requirement ID: REQ3 |
| Name: Frequency of transfer |
| Text: The service shall provide for transfer on demand. There should be no limitation on the frequency of transferring data. |
| Rationale: Core requirement |
| Author: |

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| --- |
| Requirement ID: REQ4 |
| Name: Size of data sets |
| Text: There should be no limit on the size of data sets, other than that imposed by the transmission medium. |
| Rationale: Core requirement |
| Author: |

## Nodes

Nodes involved in providing and consuming the service would include lighthouse authority operations centres and hydrographic office information centres.

1. Lighthouse Authority (LA) operations centres: operations personnel create AtoN Information items using an online form. These would be passed to the LA Navigation Section for verification and onward transmission to the Hydrographic Office (HO).
2. Hydrographic office chart and publication production teams: HO data reception personnel would download the information and formulate it for onward transmission to the production teams.
3. Dataset creation site: the LA Navigation Section may create the dataset for onward transmission to the HO.

## Operational activities

Information is entered on a web application by the producer (e.g. lighthouse authority). Data is transferred from producer to consumer via e-mail. Information is downloaded by the consumer (e.g. hydrographic office) from the web application.

# Service Overview

The Aids to Navigation (AtoN) Information Service and associated product specification provide a common structure for the exchange of information about AtoNs. This includes buoys, beacons, racons, lights, sound signals and AIS.

The information transferred contains the positions, properties, operational status and general comments related to an AtoN.

## Service Architecture

The architecture of the service would initially be client-server, but could develop into hub and spoke, or peer-to-peer. For example, the main application envisaged is the transfer of AtoN Information from lighthouse authorities to hydrographic offices. This could be a client-server application, but it could become hub and spoke, if one LA provided data to several hydrographic agencies. It could also be peer to peer, between LAs.

Transactions could be request-response (like a browser and Web server), or message-based (like e-mail), depending on whether the LA initiates the data transfer, or makes new data available on its website. The hydrographic agency could also initiate the transaction, by requesting data.

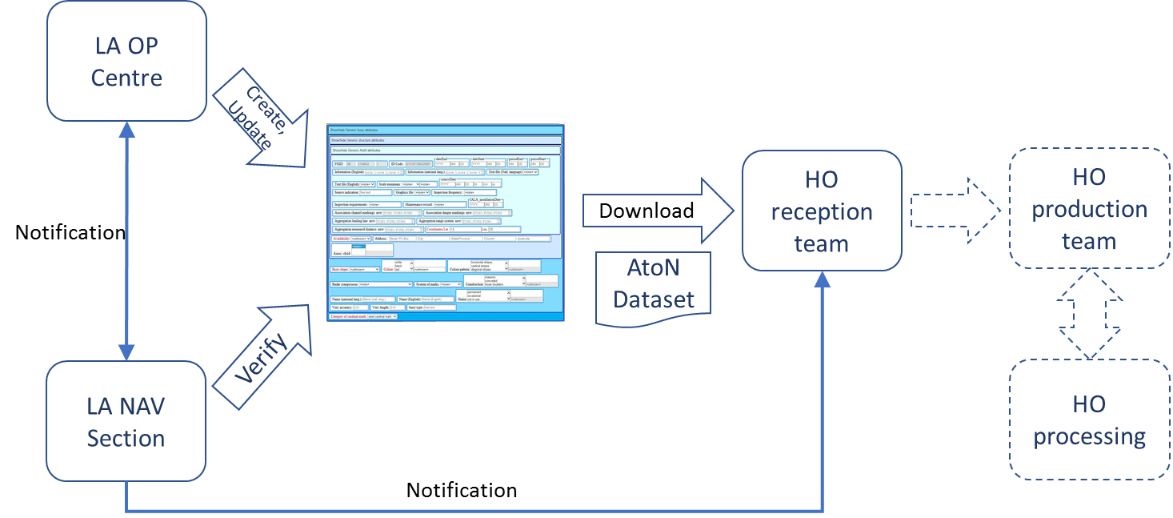


Figure 1. Architecture block diagram (to be replaced by an UML diagram)

## Service interfaces

Service interfaces would be by web applications for input and output, or by data upload/download from/to a database.

Service interface operation would be carried out by human operators in the case of web applications or machine in the case of database uploads/downloads. The service interfaces are the web applications (URL) for input and output of data and the logical operations to access the service will be described in the on-line documentation for these applications.

A service interface supports one or several service operations. Service operations can be implemented by the service provider or query operations can be provided – the service consumer submits query requests to the service provider, or the service provider submits publications to the service consumer. These Message Exchange Patterns (MEP) will be set out in the on-line documentation for the web applications.

Producer interface: The producer (LA) will initially distribute data on new AtoNs or updates of existing AtoN information by e-mail to recognised recipients, but data may be made available on an ftp server as the application develops.

Consumer interface: the consumer (HO in the initial stages) would receive updates and new AtoN information from the producer by e-mail in the format set out in the product specification (S-201). Any required metadata is also described in that specification.

[Detailed specifications and interface diagrams to be developed later as necessary.]

# Service Data Model

The AtoN Information Product Specification S-201 follows the format set out in the IHO Standard S-100 for geo-spatial information. This describes the scope, data content and structure, specifies procedures for data maintenance and quality and details the encoding of the data.

The data model in S-201 shows the structure of information to be exchanged between service providers and consumers. The data model provides enough information to implement the data exchange, but describes the data structures at a sufficient level of abstraction to allow visualisation, by means of UML diagrams.

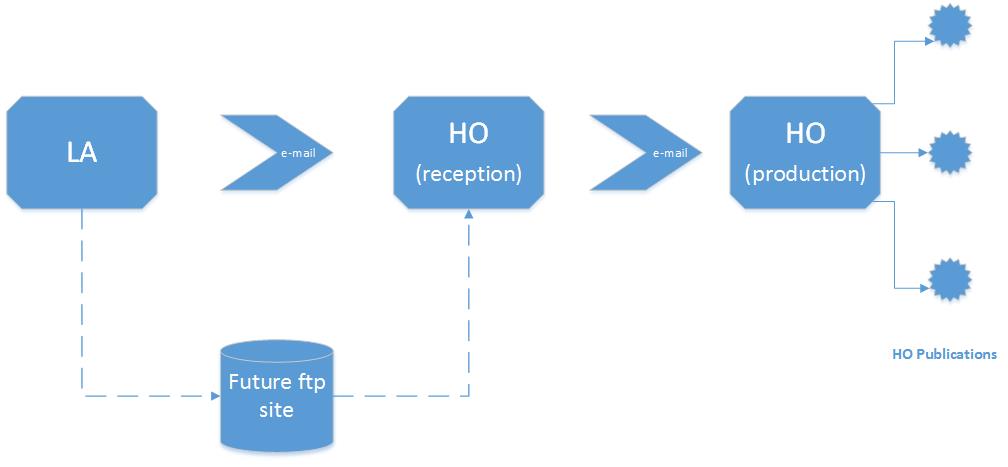
A GML schema description of the service data model is included in the product specification and specifies the format to be used for data exchange.

# Service Interface Specification

The details of each service interface are specified in the on-line documentation, in terms of their purpose, message exchange pattern and architecture and this information is accessed via the web applications.

The transfer of datasets would be human-initiated and carried out by e-mail, although alternative methods may be introduced at a later stage. This would be LA initiated, when AtoN information is updated, but could be ‘on-request’ by the HO from an ftp site, in the future.

# Service Dynamic Behaviour

The flow diagram below depicts the Service Dynamic Behaviour

*Fig 2 Service Dynamic Behaviour (to be replaced by a UML diagram)*

# References

IALA S-201 Product Specification, Draft 0.0.6 – January 2017

IALA ENAV20 14.1.11, Draft Guideline on Specification of e-Navigation Technical Services

ISO 19115-1:2014: Geographic information -- Metadata -- Part 1: Fundamentals

ISO 19119:2016: Geographic information – Services.