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| IALA Guideline |

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Producing an e-Navigation operational service description

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Revisions to this IALA Document are to be noted in the table prior to the issue of a revised document.

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# INTRODUCTION

This guideline is aimed to assist members and/or other international organisations in the development of an Operational Service Description (OSD) for the provision of IMO defined Maritime Services(MS). The Maritime Services are described in an IALA Guideline. An OSD is the interconnection between the high level description of the Maritime Services and the Technical Services to be developed.

## The overarching e-Navigation Architecture

G-1113 e.d. 1 described the overarching e-Navigation Architecture. There the foundation is described regarding the notion of Maritime Service Portfolio’s (MSP), which later evolved to Maritime Services(MS) and it envisaged that it would consist of operational and technical services. Most MS depend on the exchange of data and for that purpose it is essential that a common understanding of the data is described in standardized data models and stored at a central locations. This is wat is done by a S-200 based product specification. There are already a number of product specification available either in the S-200 and S-100 domain. They are a product from a transition from an existing data set to a S-200 product specification with the intend to harmonize and exchange data at an given point in time. This is however not possible for new services such as the envisaged Maritime Services.

As stated in recommendation E-NAV 140 and in G1113 the development of e-Navigation related services should be based on user (information) needs. This means that the objective of the maritime service, the user need, the information need, user requirements, etc is described in a way that it later can be translated in a technical service specification and a technical design by engineers. This is what the purpose is of an Operation Service Description.

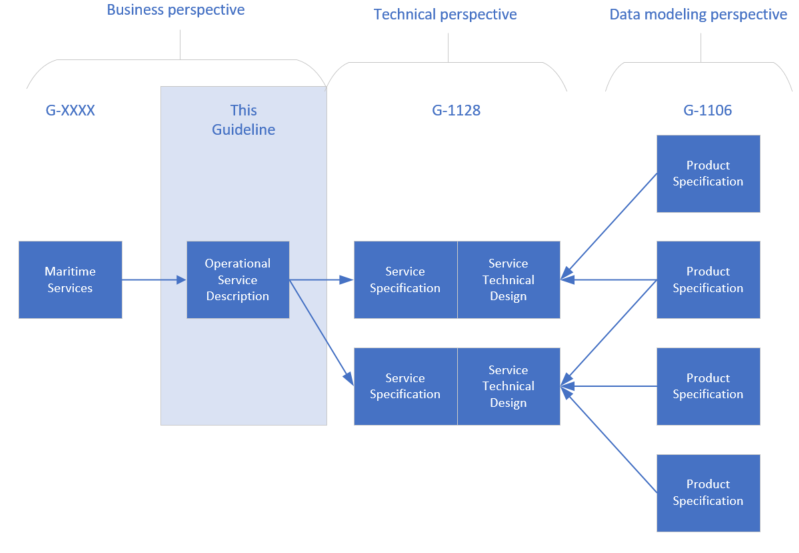
# SCOPE

This guideline is intended for business consultant in the maritime domain, information managers, domain architects etc. This guideline is intended to assist them in challenging the providers of the operational services to specify their needs and intended goals so that the can be realised by technical services.

The scope is limited to the production of an OSD.

# E-navigation service Development process

For the development of IT based services an Agile approach is commonly used. In an Agile organization business and IT are working together on the development of the service. They interactively discuss information and user needs etc. and develop the software solution in an iterative way where the usability is frequently demonstrate d to the end user. Information exchange between business and IT is done in an informal setting where teams work together on a daily basis. In the case of the development of e-Navigation Maritime Services this is not possible. Since the information transfer regarding the MS is a pan committee and even a pan organization activity. Therefore it is necessary to follow a more top-down way of working where information about an MS is well documented and a defined process is followed. The relation between the different required documents is also leading for the development process. The relation between the documents is represented in figure 1.



1. Relationship between Maritime Services, Operation Service Description, Technical Services and product specifications.

## Requirement traceability

For the development of MS information is transferred between different stakeholders. In the case op information transfer there is a risk that information gets lost. Resulting in loss of functionality at the end of the development process . To mitigate this it is necessary that requirement traceability is a part of the process. IALA G-1133 gives guidance on this topic and should be used for this purpose. Information needs, user needs and requirements should be made explicit and in every step in de the development process it should be made clear how the requirement is fulfilled.

# Operational Service description

The Operational Service Description should provide all the information needed to make a G1128 based Service Specification and technical service design. The operational service description should i.e. describe a full information need analysis and the derived data needs. The operational service description should consist the following main components:

* Context and goal of the operational service
* Relation with MS
* User needs, Information needs, Epic’s, high level Functional and non-Functional requirements
* Requirements traceability matrix

## Context and goal of the operational service

An OSD should give a clear view what is to be achieved by the service. It should give the reader an clear description what the goal is of the operational service. It provides information about what this service must provide from the different users perspectives. I.e. users at the shore side (authorities, service providers etc) and the users of the service at the ships side.

## Relation with Maritime Service

An OSD is directly related to a Maritime Service. It’s possible that an MS is provided by one or more Operational Services. It should be made clear what part of the MS is covered by the OSD.

## Describing the service

e-Navigation is about the sharing of information between ship and shore. Therefore it is essential that the information needs which have to be fulfilled by the service are unambiguous. An information needs analyses can be helpful in case this is not yet clear. The analyses makes the information need explicit and provides context for the quality of the information and is a reference for the data needed to provide the information. The OSD does not have to contain information about the data. The data needed for the provision if the information is a part of the technical perspective of the service.

After the information analyses is complete the OSD should provide information about the intended usage of the service and fulfilment of the information needs. It can be difficult for people at the business side of the service to explain their intended business need. To aid in this process there are different proven methodologies which can be used. The most common methodology is to make use of epics and user stories. Epics are the description of a collection of features of a part of the service. User stories are detailed descriptions of parts of the service described from the users perspective. Epics lead to user stories which can be further designed and programmed by software engineers.

In figure 2 a small example of the relation between a service, epics and user stories are represented.

As shown the service is dived in main features or functionality. This feature or functionality described in the epic can be broken down to user stories. The user story describes the desired part of the feature from the point of view of the user. It does so by providing an answer on the question “As a user .. I want to .. So that… “, and it provides criteria to determine if the user story is fulfilled.

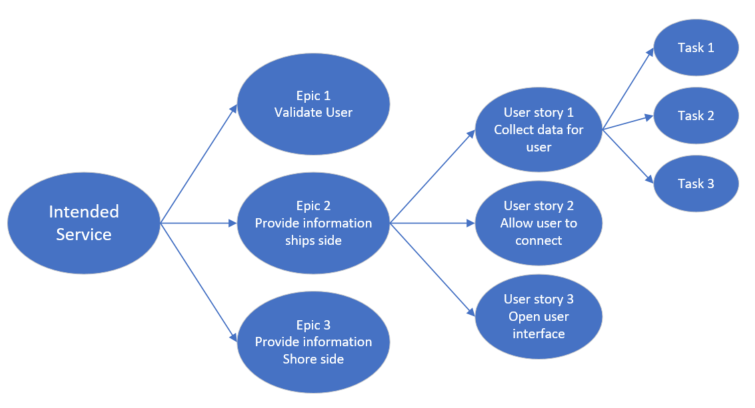


Figure 2, Example of the relation between epics and user stories.

For an OSD it is sufficient to describe the operational service at an epic level.

An epic consists mainly of the following items:

* Introduction which describes what you want to achieve with this epic. What feature do you want to build and why. **Example:** This feature will allow shore side authorities to send weather warning to all ships in a given area at a certain time. Early warning of ships who are predicted to be in the given area at a certain time can contribute to the decision making in board and a decrease of ships getting into trouble due to bad weather.
* Product requirement. The user requirements which are relevant for this epic. **Example:** the user can initiate a warning, the user can get an overview of the predicted shipping in the area, the user can add an image etc.
* Technical and Design requirement. The non-functional requirements and other Technical and design requirements if any. **Example:** a desired message protocol, cybersecurity consideration relating to the hosting of the service etc.

Annex A; The Operational Service Description Template can assist members with the creation of a OSD. This template is based on the items described in chapter 4.

When the template is complete it will contain sufficient information to be translated to a service specification and technical design document.

# DEFINITIONS

The definition of terms used in this Guideline can be found in the International Dictionary of Marine Aids to Navigation (IALA Dictionary) at <http://www.iala-aism.org/wiki/dictionary>.

# ACRONYMS

# REFERENCES

1. IALA Guideline G-1128
2. IALA Guideline G-1113
3. IALA Guideline G-1133
4. IALA Rec E-NAV 140