

## Paper for Consideration by NIPWG

### Light information UML model for the LoL

<b>Submitted by:</b>	SHOM
<b>Executive Summary:</b>	Lights Model for list of lights (LoL)
<b>Related Documents:</b>	SNPWG 18-16.2
<b>Related Projects:</b>	Action Item 11/18 from SNPWG 19-.3

## Introduction / Background

Lights information is required to be encoded and stored in paper charts, ENC's and List of Lights publications (LoL). In most Hydrographic Offices (HO), the data source for light information put in the LoL publications are different from the data source used to populate ENC's or paper charts.

This paper proposes a model for lights information used in the List of Lights (LoL) documents. The model relies as much as possible on the current S-57 lights model (that is, the information already used in ENC's), with additional information wherever needed. The annex provides UML diagrams modelling the information released in the LoL.

## Analysis/Discussion

A UML model of the information released in the lights 'table within the LoL publication is proposed in annex.

This model is based on the following:

- a basic information (e.g. a line in the LoL table) corresponds to an equipment associated to a support
- a support can have one or several equipment
- an equipment can be a light, a fog signal, a mark or a radio signal (ex: racon)
- the attributes common to several object class are gathered in an abstract class from which feature class inherit: For example, the attributes NATION and OBJNAM are common to all object class of type "support", and are thus listed in the abstract class "support" from which beacons, buoys and other support inherit
- for each feature class, only the attributes useful for the LoL are mentioned.
- The attributes can be :
  - o enum = enumeration, only one possible value within a list of values
  - o list = list, several values are possible within a list of values
  - o char = character, free text
  - o int = integer
  - o float
  - o complex = complex attribute

For instance, for a lateral beacon (BCNLAT) supporting a light, the attributes relevant for the LoL are (assuming a list of light table with 8 columns in accordance with S-12) :

- o ADDOBN (additional object name) → issued in col2 of LoL
- o Nation (NATION) → can be used for the light number col1
- o LITNUM (international number) → col1 of LoL
- o OBJNAM (toponym) → col2 of LoL
- o HEIGHT → col5 of LoL
- o MARSYS
- o BCNSHP, COLOUR, COLPAT → col7 (support description)
- o CATCAM → col7 (support description)

New attributes (not existing in the current S-57 specifications) are proposed to fully detail the information needed in the LoL: they can be identified with “NEW” in the UML diagrams. The new attributes proposed are:

- Attributes already proposed within SNPWG (wiki):
  - **ADDOBN** (char): additional object name.  
This attribute could be used to bring additional localisation information (different from the toponym stored in OBNAM) released in column 2 of the LoL. For instance: “Eastern jetty”, “Western End of the jetty”, etc. This attributes is coded on the support.
  - **LITNUM** (complex): the international light number, coded on the support. It currently corresponds to the admiralty list of lights (ALL).
  - **NLTNUM** (char): the national light number, coded on the support.  
*Nota: in case a unique light identifier is agreed, the national light number may become the international number as well.*
  - **ADDBLD** (char): additional building or landmark description  
This text can be used to describe any support information released in column 7 of the LoL which cannot be coded with the current S-57 attributes. It concerns any support other than beacons or buoys (“other supports” in the UML schema in annex).
  - **ADDLIT** (char): additional light information  
This text can be used to describe any signal information released in column 8 of the LoL which cannot be coded with the current S-57 attributes. It concerns lights and fog signal, and possibly other equipment such as AIS and RACON to be confirmed).
- New attributes proposed for consideration:
  - **buityp** (enum): to detail the nature of a building support coded with BUISGL. The values proposed are:
    - 1 Shelter, cabin, hut
    - 2 House
    - 3 Building, block of flats
    - 4 Wall

A possibility could be to use CATLMK for object class BUISGL with the additional values above.
  - **STATYR** (int): year related to the status mentioned in column 8 of the LoL. For example, if a fog signal is extinguished since 2010, the FOGSIG object will have STATUS=11 (extinguished) and STATYR=2010, and it will be written in column 8 of the LoL: “extinguished(2010)”
  - **ADDMAR** (char): additional day mark description, attribute attached to TOPMAR and DAYMAR to add any information on the visual mark in column 7 of the LoL that is complementary to TOPSHP, COLOUR and COLPAT
  - **MORLET** (char): to store the morse letter produced by the Racon equipment (mentioned in column 4 or 8 of the LoL)
  - **rsxref** (char): to store the reference of the radio signal in the RSX publication (for example: RSX 91 AA.10100)
- A **new class** for AIS equipment is proposed as well: this is the feature class “**aisatn**” with the following attributes (to be completed if relevant):
  - **aistyp** (enum)=[real, virtual]
  - **mmsico** (char): to store the MMSI code (Ex: 995031014)

Besides, it is proposed **to complete the attribute STATUS with an additional value 519= “on trial”** characterizing fog signals or radio signal (Racon and AIS) which are under a validation process.

### **Conclusions**

The S-57 model already contains much information released in the LoL. With few additional class/attributes (as detailed above), all the relevant information needed for the LoL can be coded. Thus, the navaid data model proposed in annex can be used for ENC's and LoL publications.

### **Recommendations**

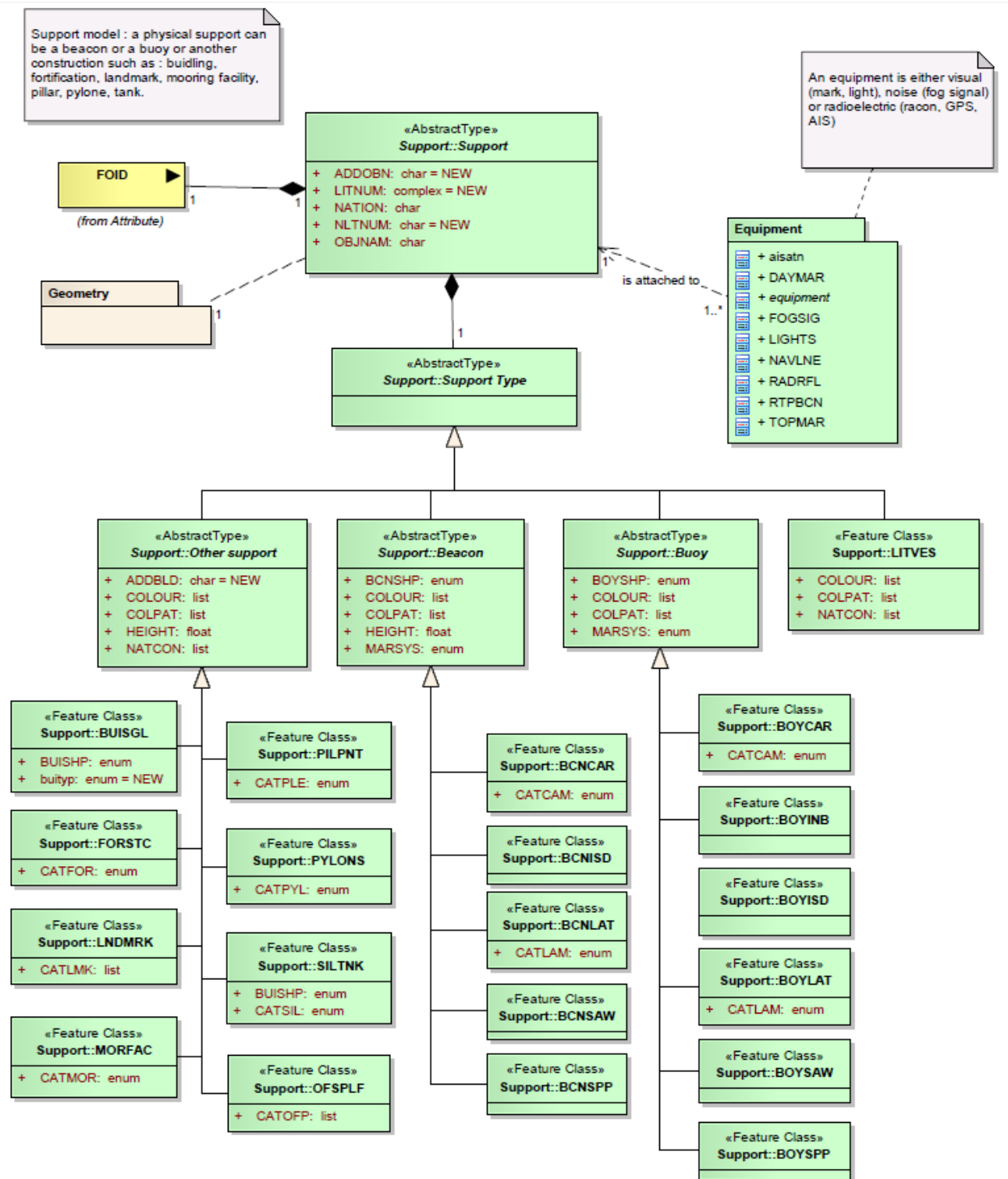
The NIPWG is invited to consider this proposal to model lights and other navigational signals in the scope of S-125 product specifications on navigational services.

### **Action Required of NIPWG**

The NIPWG is invited to consider this paper for future S-125 product specifications on navigational services.

## Annex: UML diagrams for Lights information relevant for LoL documents

### Supports



Note: FOR REASONS OF ECONOMY, DELEGATES ARE KINDLY REQUESTED TO BRING THEIR OWN COPIES OF THE DOCUMENTS TO THE MEETING

# Equipments

