Input paper: [[1]](#footnote-2) ARM13-8.4.7

Input paper for the following Committee(s): check as appropriate Purpose of paper:

**X** ARM **□** ENG **□** PAP X Input

**□** ENAV **□** VTS **□** Information

Agenda item [[2]](#footnote-3) 8.4

Technical Domain / Task Number 2 …………………………………

Author(s) / Submitter(s) Eivind Mong / Canadian Coast Guard, Sewoong Oh / KRISO

S-201 implementation and proposed improvements

# Summary

This paper propose specific changes to the data model of S-201 following discussions at ARM12 on proposed exertions found in S-201 implementation work in Canada and Republic of Korea.

## Purpose of the document

This input paper intend to propose ways to implement the proposals listed in section 3.2 of ARM12-8.5.1,

## Related documents

S-201 Edition 1.0.0

ARM12-8.5.1 Input paper - Proposed S-201 extensions\_final

# Background

At ARM12, Canadian Coast Guard and Korean Ministry of Oceans and Fisheries/KRISO reported on our investigations of current databases and methodologies versus S-201 edition 1.0.0. These reviews found some items lacking in the S-201 data model that would simplify their own integration of S-201. These were listed as potential extensions to the data model. Since ARM12 agreed that these extensions could be beneficial to S-201, the team has now drafted proposed ways to implement these changes in the data model.

# Discussion

The items from the proposed extensions in the ARM12-8.5.1 paper, have been listed in Annex A with their proposed changes to the S-201 data model. An additional attribute has been proposed to the status attribute, which was not listed in the original proposal. This is the addition of the of value ‘temporarily discontinued’. Use and rational for this additional enumeration value is detailed in Annex A together with all proposed data model changes.

If these proposed changes are accepted, the team plans on updating the S-201 Data Capture and Encoding guide with corresponding material. Moreover, changes will also be reflected in the S-201 Feature Catalogue and GML schema.

# Action requested of the Committee

The Committee is requested to:

1. Note this paper.
2. It is recommended that ARM review the proposals and assign actions as appropriate.

Annex A - Proposed data model changes to S-201

|  |
| --- |
| 1. Mooring component of buoys are not covered by S-201. Mooring components would include components like anchor/sinkers, chains/ropes, swivels and shackles. Attributes would include weight, material, size and length. It may also be important to model how the different components are combined. 2. Buoy counter weight is not covered by S-201. There is external counterweight (balls) added by the ship crew on site and there is internal ones, rings at the base of the buoy. Maybe a distinction would be useful. Could be an attribute on the buoy or a new class or equipment.      1. **Action taken:** Added classes MooringShackle, Bridle, Swivel, CableSubmarine (from S-57) and SinkerAnchor to account for the various components of floating aids mooring system. 2. **Action taken:** Added class CounterWeight to represent the floating aid counter weight component. |
| AtoN equipment sometimes has some required seasonal actions, e.g. remove lantern at end of season. To capture this, it would be beneficial to have an attribute on both structure and equipment.    **Action taken:** Added attribute seasonalActionRequired to the AidsToNavigation abstract class allowing all derived classes to inherit the attribute. |
| Currently it is possible to add some information about batteries. However a more comprehensive set of information on power source would be useful. Suggest to amend the model to add a power source attribute where, e.g. battery, diesel generator, solar, electrical service, etc details could be captured.    **Action taken:** Added class PowerSource deriving from the abstract class Equipment to hold information about an aid’s power source. |
| 1. Mooring buoys are not covered by S-201, only mark indicating moorings. Suggest to add mooring buoys (MORFAC in S-57). 2. Add emergency wreck marking buoy to S-201. Could be added as a separate class or as a category of special purpose mark. S-57 does not support this, while S-101 has added it as a new class. Propose to align with S-101 methodology.      1. **Action taken:** Added MooringWrapingFacility (from S-57) to support mooring buoys. Class has been constrained to only permit the category mooring buoy. 2. **Action taken:** Added BuoyEmergencyWreckMarking (from S-101) to support emergency wreck buoys. |
| To add emphasis some of our AtoN have fluorescent colour. Suggest to add attributes to indicate a colour being florescence.    **Action taken:** Added fluorescent white, fluorescent red, fluorescent green and fluorescent orange to the list since this method will allow the modelling to remain consistent with both S-57 and S-101. |
| Sometimes the colour pattern on an AtoN is non-standard, and it would be good to have an option in the colourPattern attribute to indicate this. Could be combined with an indication of looking to information attribute for additional information. The attribute ‘topmarkDaymarkShape’ already does something similar.    **Action taken:** other pattern value added to allow for patters that do not match the pre-configured list between model updates. S-201 DCEG should be updated with instructions on how to use this attribute. |
| 1. It would be helpful to add an option to capture day board (Daymark) orientation from true north. 2. Daymarks can be solid or slatted, should this be added as a Boolean attribute or does it need to also include the ratio between board and spacing?      1. **Action taken:** Orientation attribute added to capture dayboard orientation from true north. 2. **Action taken:** isSlatted boolean attribute added to indicate if dayboard is solid or not. |
| Lights are often specified using target candela. An attribute to capture this in the Lights class would be beneficial.    **Action taken:** Added attribute candela to hold the candela value of the light emitted. |
| Consider a review of the ‘remotelyMonitored’ attribute and ‘status’ values ‘watched’ and ‘unwatched’. These seem to overlap somewhat and it would be beneficial to harmonize these with sufficient use guidance added.  **Action taken:** None, think additional guidance in DCEG is best action. |
| Consider adding means to capture buoy fixing methods and positioning information.    **Action taken:** Added an information type class to describe AtoNFixingMethod and allow for described methods to be shared among AtoNs. |
| We frequently test AtoN equipment. During tests the aid and or equipment being tested may not be in a full operation capacity and the reliability may be less than other aids. It would be useful to add ‘experimental’ as a value in the ‘status’ enumeration to capture that an aid is experimental.    **Action taken:** Added value ‘experimental’ to cover trials and experiments  **Action Taken:** Added value ‘temporarily discontinued’; should be used when a service is intentionally stopped with the expectation of restarting that same service in the future. This action is taken when an aid needs to be discontinued temporarily, during its operating season, such as due to changes beyond AtoN authority control, often while a review is being completed. For example, planned maintenance and reconstruction. This is distinctive from equipment failures.  ​This value is important to distinguish since the issue is beyond AtoN authority control and do not count against the reliability figures for that aid. |
| Bridge lights should be considered as category of light. Also should be possible to be one aggregation per direction and association to group per bridge. DCEG should be updated with guidance for encoding these.    **Action taken:** Added value ‘bridge light’, definition is needed. |
| The highest category of AtoN is to determine if it’s management is public or private responsibility. Currently this is captured in the status attribute, which also has include numerous other possible values. Need to consider moving to a new attribute for public or private for added emphasis.  **Action taken:** none, more discussion needed. Maybe it is sufficient to add more clarification in DCEG. |
| Status of AtoN : Korea use the following status (Installed, Planned, Removed, Not operational, New), it seems that Current status doesn’t fit with AtoN all Korean status use. Suggest to consider the filter or amend the Status attribute.  **Action taken:** none, filtering depends on outcome of discussion on different paper. |
| categoryOfSpecialPurposeMark : consider adding new attributes like wrecks, marine construction/operation, Facility protection, Oil pipeline protection, Marine cable protection. Suggest to filter and add listed values.    **Action taken:** Added values ‘wrecks mark’, ‘facility protection mark’, ‘oil pipeline protection mark’ & ‘marine cable protection mark’. The requested value ‘marine construction/operation’ may be supported by the existing values ‘work in progress mark’ and discussion needed to clarify. Definitions needed for added values. |

1. Input document number, to be assigned by the Committee Secretary [↑](#footnote-ref-2)
2. Leave open if uncertain [↑](#footnote-ref-3)