**Title: S-100 Proposal Form - Appendix 2a-A-update complex attributes example**

## S-100 Maintenance - Change Proposal Form

| Organisation | PRIMAR | | Date | 22-Aug-2019 |
|---|---|---|---|---|
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## Change Proposal Type *(Select only one option)*

| 1.Clarification | 2.Correction | 3.Extension |
|---|---|---|
| X | | |

## Location (*Identify all change proposal locations)*

| S-100 Version No. | Part No. | Section No. | Proposal Summary |
|---|---|---|---|
| 4.0.0 | 2a | Appendix 2a-A Example of a complex attribute | The example no longer equals the definitions in S-101 1.0.0 DCEG. Consider aligning example with existing definition. |
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## Change Proposal

*The change proposal suggests aligning the complex attribute example in 2a-A with existing definitions in S-101 1.0.0 DCEG.*

The current example used is this:

# Appendix 2a – A
## Example of a complex attribute
### (informative)

A light may have several sectors. All of them share the same light characteristic and sequence. Other common attributes are the height and the name.

All attributes describing one sector in a complex attribute are structured "Light sector".

A complex attribute for the "Rhythm of light" is also defined.

The simple attributes used in "lightSector" are:

- sectorLimit1 (type Real)

- sectorLimit2 (type Real)

- colour (type Enumeration)

- valueOfNominalRange (type Real)

Therefore the complex attribute is:

| Characteristic | Value | |
|---|---|---|
| Name | Light sector | |
| Definition | A sector is the part of a circle between two straight lines drawn from the centre to the circumference. (Advanced Learner's Dictionary, 2nd Edition). | |
| Remarks | n/a | |
| CamelCase | lightSector | |
| AlphaCode | LITSEC | |
| **Sub Attributes** | **Attribute Binding** | |
| **CamelCode Identifier** | **multiplicity** | **sequential** |
| sectorLimit1 | 1 | n/a |
| sectorLimit2 | 1 | n/a |
| colour | 1 | n/a |
| valueOfNominalRange | 0..1 | n/a |

Note: The multiplicity and sequence are carried in the attribute between the complex and sub-attribute.

The "Rhythm of light" consists of:

- lightCharacteristic

- signalPeriod

- signalGroup

| Characteristic | Value |
|---|---|
| Name | Rhythm of light |
| Definition | |
| Remarks | n/a |
| CamelCase | rhythmOfLight |
| AlphaCode | RHYLGT |

| Sub Attributes | Attribute Binding | |
|---|---|---|
| **CamelCode Identifer** | **multiplicity** | **sequential** |
| lightCharacteristic | 1 | n/a |
| signalPeriod | 0..1 | n/a |
| signalGroup | 0..1 | n/a |

A second way of describing the rhythm of light is the "signal sequence" as it is done with the S-57 SIGSEQ attribute. A signal sequence consists of intervals where the signal is either on or off (here light or eclipse)

| Characteristic | Value | |
|---|---|---|
| **Name** | Signal sequence interval | |
| Definition | tbd. | |
| Remarks | n/a | |
| CamelCase | signalSequenceInterval | |
| AlphaCode | SGSQIN | |
| **Sub Attributes** | **Attribute Binding** | |
| **CamelCode Identifer** | **multiplicity** | **sequential** |
| signalStatus | 1 | n/a |
| duration | 1 | n/a |

A Signal sequence is then just an ordered list of those intervals.

| Characteristic | Value | |
|---|---|---|
| **Name** | Signal sequence | |
| Definition | The sequence of times occupied by intervals of light and eclipse for all "light characteristics". (Adapted from S-57 Edition 3.1, Appendix A – Chapter 2, Page 2.191, November 2000). | |
| Remarks | n/a | |
| CamelCase | signalSequence | |
| AlphaCode | SIGSEQ | |
| **Sub Attribute** | **Attribute Binding** | |
| **CamelCode Identifier** | **multiplicity** | **sequential** |
| signalSequenceInterval | 1..* | True |

A light object would now consist of:

Light:

- rhythmOfLight [1..*]

- lightSector [1..*]

- signalSequence [0..1]

- objectName[0..1]

- height[0..1]

This definition would be in the feature catalogue, although the definition of the attributes is in the data dictionary.

Existing situation:

1.According to S-101 1.0.0 DCEG the complex attribute **light sector** carries more sub-attributes then stated in the S-100 example. The sub-attributes **directional character**, **light visibility**, **sector information** and **sector extension** are not referred to in the example. The definition of **light sector** in S-101 DCEG:

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**Light sector:** <u>IHO Definition:</u> A sector is the part of a circle between two straight lines drawn from the centre to the circumference. (Advanced Learner's Dictionary, 2nd Edition).

<u>Indication:</u>

| <u>Sub-attributes:</u> | **colour** | see clause 27.72 |
| | **directional character** | see clause 29.1 |
| | **light visibility** | see clause 27.116 |
| | **sector limit** | see clause 29.21 |
| | **value of nominal range** | see clause 27.183 |
| | **sector information** | see clause 29.20 |
| | **sector extension** | see clause 30.4 |

<u>Remarks:</u>
- No remarks.

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Further on, the complex attribute **sector limit** carries the two sub-attributes **sector limit one** and **sector limit two**. The definition of sector limit in S-101 DCEG:

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**Sector limit:** <u>IHO Definition:</u> A sector is the part of a circle between two straight lines drawn from the centre to the circumference. (Advanced Learner's Dictionary, 2nd Edition).

The sector limit specifies the limits of the sector in a clockwise direction around the central feature (for example a light). (Adapted from S-57 Edition 3.1, Appendix A – Chapter 2, Page 2.184, November 2000).

<u>Indication:</u> The complex attribute describes the angle of a light sector as defined by the sub-attributes.

| <u>Sub-attributes:</u> | **sector limit one** | see clause 29.22 |
| | **sector limit two** | see clause 29.23 |

<u>Remarks:</u>
- No remarks.

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The two sub-attributes **sector limit one** and **sector limit two** are not defined as simple attributes but are also complex attributes. The definition of **sector limit one** in S-101 DCEG (also equal to **sector limit two** definition):

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**Sector limit one:** <u>IHO Definition:</u> A sector is the part of a circle between two straight lines drawn from the centre to the circumference. (Advanced Learner's Dictionary, 2nd Edition).

**sector limit one** specifies the first limit of the sector. The order of **sector limit one** and **sector limit two** is clockwise around the central feature (for example a light). (S-57 Edition 3.1, Appendix A – Chapter 2, Page 2.184, November 2000).

<u>Indication:</u> The complex attribute describes the line or bearing of a light where the character changes or the light is obscured.

| <u>Sub-attributes:</u> | **sector bearing** | see clause 27.151 |
| | **sector line length** | see clause 27.152 |

<u>Remarks:</u>
- The values given to the common limits of adjacent sectors should be identical.
- The orientation of the bearing is from seaward to the central feature. This conforms with the method used in "List of Lights" publications.
- A generic term such as "to shore" cannot be used; a specific bearing must be encoded. Where a light sector limit is defined as "to the shore", it should be encoded using a value that ensures that, when the limit is drawn, it will fall entirely on land.

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A demonstrated above, the definitions of **light sector** and **sector limit** attributes do not align with the example used in S-100 2a-A.

2. According to S-101 1.0.0 DCEG the complex attribute **rhythm of light** carries more sub-attributes then stated in the S-100 example. The sub-attribute **signal sequence** is not referred to in the example. The definition of **signal sequence** in S-101 DCEG:

> **Rhythm of light:** IHO Definition:
>
> Indication: The complex attribute describes the rhythm of a light (or a light sector).
>
> Sub-attributes: **light characteristic**    see clause 27.115
>                **signal group**         see clause 27.156
>                **signal period**        see clause 27.157
>                **signal sequence**     see clause 29.25
>
> Remarks:
> - No remarks.

As demonstrated above, the definition of **rhythm of light** attribute does not longer align with the example used in S-100 2a-A.

3.With reference to the examples presented above it is proposed to update the complex attribute example in S-100 2a-A to align with current situation in S-101 1.0.0 DCEG.
Further work should be done to rewrite the examples accordingly.


## Change Proposal Justification

This proposal:
1) correct an inconsistency. When using examples from an existing product specification, the example should be aligned with an official version of this specification. If user will study the example in more detail, the product specification version must be available. Assuming only official versions will be made available from IHO.


## What parts of the S-100 Infrastructure will this proposal affect?

☐       S-100 Feature Concept Dictionary Interface or Database
☐       S-100 Portrayal Register
☐       S-100 Feature Catalogue Builder
☐       S-100 Portrayal Catalogue Builder
☐       S-100 UML Models


**Please send completed forms and supporting documentation to the secretary S-100WG.**