INTERNATIONAL HYDROGRAPHIC ORGANIZATION



IHO UNIVERSAL HYDROGRAPHIC DATA MODEL

Version 0.0.1

27 December 2018

**XML Based NtM Chart Corrections Data Exchange**

**Data Classification and Encoding Guide**

Published by the

International Hydrographic Organisation

**MONACO**

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Document Control

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| --- | --- | --- | --- | --- | --- |
| **Version** | **Version Type** | **Date** | **Approved By** | **Signed Off By** | **Role** |
| 0.0.1 | Initial Draft | 27.12.2018 | NIPWG |  | NIPWG Chair |
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# Overview

## Preface

The “Data Classification and Encoding Guide” has been developed to provide consistent, standardized instructions for encoding XML Based NTM Chart Corrections Data Exchange data.

This document describes how to encode information which should be provided by chart correction editing Hydrographic Office.

## Data Classification and Encoding Guide – Metadata

Note: This information uniquely identifies this Data Classification and Encoding Guide and provides information about its creation and maintenance.

|  |  |
| --- | --- |
| **Metadata** | **Content** |
| **Title:** | The International Hydrographic Organization XML Based NtM Chart Corrections Data Exchange, Data Classification and Encoding Guide |
| **Version:** | 0.0.1 |
| **Date:** | 27 December 2018 |
| **Language:** | English |
| **Classification:** | Unclassified |
| **Contact:** | International Hydrographic Bureau4 Quai Antione 1erB.P. 445MC 98011 MONACO CEDEXTelephone: +377 93 10 81 00Fax: +377 93 10 81 40URL: www.iho.int |
| **Identifier:** |  |
| **Maintenance:** | Changes to this Data Classification and Encoding Guide are coordinated by the IHO Nautical Information Provision Working Group (NIPWG) and must be made available via the IHO web site. |

Table 1‑1 XML based NTM Chart Correction Data Exchange metadata

## Terms and definitions

This list is identical with the list in the main body of this product specification.

|  |  |
| --- | --- |
| **Term** | **Definition** |
| **attribute** | named property of an entityNOTE:  Describes the geometrical, topological, thematic, or other characteristic of an entity |
| **enumeration** | a fixed list which contains valid identifiers of named literal values. Attributes of an enumerated type may only take values from this list. |
| **feature** | abstraction of real world phenomena (ISO 19101)*NOTE: A feature may occur as a type or an instance. Feature type or feature instance shall be used when only one is meant.* |
| **feature attribute** | characteristic of a **feature** (ISO 19101)*NOTE 1: A feature attribute may occur as a type or an instance. Feature attribute type or feature attribute instance is used when only one is meant.**NOTE 2: A feature attribute type has a name, a data type and a domain associated to it. A feature attribute for a feature instance has an attribute value taken from the domain.* |
| **metadata** | data about data (ISO 19115) |

Table 1‑2 List of terms and definitions

## Abbreviations

|  |  |
| --- | --- |
| **Abbreviation** | **Description** |
| DCEG | Data Classification and Encoding Guide |
| HO | Hydrographic Office |
| IHO | International Hydrographic Organization |
| ISO | International Organization for Standardization |
| UML | Unified Modelling Language |
| URL | Universal Resource Locator |
| XML | eXtensible Markup Language |

Table 1‑3 List of abbreviations

## Use of language

Within this document:

 “Must” indicates a mandatory requirement;

 “Should” indicates an optional requirement, that is the recommended process to be followed, but is not mandatory;

 “May” means “allowed to” or “could possibly”, and is not mandatory, or recommended.

## Maintenance

Changes to the Data Classification and Encoding Guide must be based on consensus of the involved HOs.

# General

## Introduction

This S-122 Data Classification and Encoding Guide (DCEG) contains rules and guidance for converting data describing the a chart correction into a data product that conforms to the XML Based NtM Chart Corrections Data Exchange format.

The XML Based NtM Chart Corrections Data Exchange format contains an application schema (UML model) describing the conceptual model in terms of classes and relationships.

To simplify the DCEG text, the various data model types will be provided without the suffixes “class”, “type” or “instance”; e.g. the term “feature” should be understood as “feature class” or “feature type” or “feature instance” as best fits the immediate context in which it is used (and where there might be confusion, it is written out in full as feature class/type/instance).

This section of the DCEG contains general information needed to understand the encoding rules and describes fundamental common rules and constraints.

Within this document the features, information types, associations and attributes appear in **bold text**.

## Descriptive characteristics

## Attributes

Attributes may be simple type or complex type. Complex (C) attributes are aggregates of other attributes that can be simple type or complex type attributes. Simple (S) attributes are assigned to one of the types collected at clause 2.4.1.

The binding of attributes to a feature, the binding of attributes to attributes to construct complex attributes, and attribute multiplicity are all defined in the UML.

Within this document, the allowable attributes are included in the description of each feature, as well as the allowable values for enumeration type attributes.

### Simple attribute types

Each simple attribute (S) is assigned to one of attribute types in Table 2‑2 (in alphabetic order):

|  |  |  |
| --- | --- | --- |
| **Abbre-viation** | **Attribute type** | **Description** |
| BO | Boolean | A value representing binary logic. The value can be either True or False. The default state for Boolean type attributes (i.e. where the attribute is not populated for the feature) is False. |
| CL | Code List | A type of flexible enumeration (see “EN” below). A code list type is a list of literals which may be extended only in conformance with specified rules. Attributes of a code list type may take values from the list or other values which are defined according to the rules. The rules should be part of the specification of the individual codelist type. A code list could either be closed (fixed) or open (extensible).A code list type has the following properties: 1. A description of the code list type, 2. The URI where the list could be found, and 3. An encoding instruction. |
| DA | Date | A date provides values for year, month and day according to the Gregorian Calendar.Example: 19980918 (YYYYMMDD) |
| DT | Date and Time | A DateTime is a combination of a date and a time type.Example: 19850412T101530 (YYYYMMDDThhmmss) |
| EN | Enumer-ation | A fixed list of valid identifiers of named literal values. Attributes of an enumerated type may only take values from this list. |
| IN | Integer | A signed integer number. The representation of an integer is encapsulation and usage dependent.Integer attribute values must not be padded by non-significant zeroes. For example, for a number of 19, the value populated for the attribute must be 19 and not 019.Examples: 29, -65547 |
| RE | Real | A signed real (floating point) number consisting of a mantissa and an exponent. The representation of a real is encapsulation and usage dependent.Real attribute values must not be padded by non-significant zeroes. For example, for a signal period of 2.5 seconds, the value populated for the attribute signal period must be 2.5 and not 02.50.Examples: 23.501, -0.0001234, -23.0, 3.141296 |
| TD | Trun-cated Date | One or more significant components of the modelling date are omitted.Example: – – – –02– – (Year and date not encoded)The exact format depends on the encoding. A GML dataset would use a GML built-in type and encode it as <gMonth>--02<gMonth>.An 8211 data format based dataset would truncated encode the date as – – – –02– –. |
| TE | Free text | A CharacterString is an arbitrary-length sequence of characters including accents and special characters from a repertoire of one of the adopted character sets. |
| TI | Time | A time is given by an hour, minute and second. Time zone according to UTC is optional. Character encoding of a time is a string that follows the local time Example: 183059 or 183059+0100 or 183059Z |

Table 2‑2 Simple attribute types

### Missing attribute values

Where a value of a mandatory attribute is not known, the attribute must be populated with an empty (null) value.

Where the value of a non-mandatory attribute is not known, the attribute must not be used.

### Multiplicity

In order to control the number of allowed attribute values or sub-attribute instances within a complex attribute, S-100 uses the concept of multiplicity. This defines lower and upper limits for the number of values, whether the order of the instances is significant and if an attribute is mandatory. Common examples are shown in theTable 2‑3:

Format: MinOccurs, MaxOccurs (a \* indicates that infinite instances are possible, the term(ordered) indicates that the order of the provided instances is significant)

|  |  |
| --- | --- |
| **Multiplicity** | **Explanation** |
| 0,1 or 0..1 | An instance is not required; if provided there must only be one instance. |
| 1,1 or 1..1 | An instance is required and there must only be one instance. |
| 0,\*or 0..1 | An instance is not required and there can be an infinite number of instances. |
| 1,\* or 1..\* | An instance is required and there can be an infinite number of instances. |
| 1,\* (ordered) | An instance is required and there can be an infinite number of instances, the order of which is significant. |
| 2,2 or 2..2 | Two instances are required and there must be no more than two. |

Table 2‑3 Multiplicity of attributes

### Attributes referencing external files

#### Predefined derived types

|  |  |  |
| --- | --- | --- |
| **Name** | **Description** | **Derived from** |
| URI  | A uniform resource identifier which character encoding shall follow the syntax rules as defined in RFC 3986.EXAMPLE http://registry.iho.int  | CharacterString |
| URL  | A uniform resource locator (URL) is a URI that provides a means of locating the resource by describing its primary access mechanism (RFC 3986). EXAMPLE http://registry.iho.int  | URI  |
| URN  | A persistent, location-independent, resource identifier that follows the syntax and semantics for URNs specified in RFC 2141. EXAMPLE urn:iho:s101:1:0:0:AnchorageArea  | URI  |

Table 2‑4 Predefined derived types

# Features

## Notice To Mariner List

|  |
| --- |
| **FEATURE TYPE**: NoticesIHO Definition:A collection of chart-updating notices supporting the permanent chart updating with navigationally significant information. |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Country ISO 3116-1 | ISO 3116-1 | S (TE) | 1,1 |
| Creation Date |  | TD |  |
| Language ISO 639-3 | ISO 639-3 | S (TE) | 1,1 |
| Producing Agency S62 | S-62 | IN |  |
| **Notices🡪Notices (see 3.2)** |  |  |  |
| Notice To Mariner List**NoticeToMarinerList** has a feature **Notices** which is being used as a container to provide information on different N**oticeToMariner.**Remarks:* No remarks.
 |

## Notices

|  |
| --- |
| **FEATURE TYPE**: NoticesIHO Definition: A list of chart-updating notices supporting the permanent chart updating with navigationally significant information. |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **Notice🡪Notice To Mariner (see 3.3)** |  |  | 0,\* (ordered)  |
| Notice**Notice** has a feature **Notices** which may contain an ordered list of as many as applicable **NoticeToMariner.**Remarks:* No remarks.
 |

## Notice to Mariner

|  |
| --- |
| **FEATURE TYPE**: Notice to MarinerIHO Definition: A chart-updating notice supporting the permanent chart updating with navigationally significant information. |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Area |  | (S) TE | 0,1 |
| Region |  | S (TE) | 0,1 |
| Vicinity |  | S (TE) | 0,\* |
| Notice Original |  | S (BO) | 1,1 |
| Notice Original Source |  | S (TE) |  |
| Notice Date Published |  | TD |  |
| Notice Status | 1: Published2: Cancelled3: Deactivated | EN | 0,1 |
| Notice Validity |  | S (TE) | 0,1 |
| Notice Cancels Notice🡪 Notice Indentifier (see 6.1) |  |  | 0,\* (ordered) |
| Notice Identifier🡪 Notice Indentifier (see 6.1) |  |  |  |
| Notice Refers To Notice🡪 Notice Indentifier (see 6.1) |  |  | 0,\* (ordered) |
| **Charts🡪Charts (see 3.4)** |  |  |  |
| **Contents🡪Contents (see 3.11)** |  |  |  |
| Notice to MarinerSeveral features describing elements of the **NoticeToMariner** in more detail.Remarks:* No remarks.
 |

## Charts

|  |
| --- |
| **FEATURE TYPE**: ChartsIHO Definition: A graphical representation of data, in which the data is represented by symbols. |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **Chart Products🡪Chart Products (see 3.5)** |  |  | 0,\* (ordered) |
| ChartsAn ordered list of affected **ChartProducts**. Remarks:* No remarks.
 |

## Chart Products

|  |
| --- |
| **FEATURE TYPE**: Chart ProductsIHO Definition: A set of affected charts. |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **Chart Product🡪Chart Product** |  |  | 0,\* (ordered) |
| ChartsAn ordered list of affected **ChartProducts**. Remarks:* No remarks.
 |

## Chart Product

|  |
| --- |
| **FEATURE TYPE**: Chart ProductIHO Definition: A single chart product that could contain one or several chart panels (chart images). |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Product Title |  | (S) TE |  |
| Product INT Number |  | IN | 0,1 |
| Product Edition Date |  | TD |  |
| Product Edition Name |  | S (TE) | 0,1 |
| Product Last Correction🡪Notice Indentifier (see 6.1**)** |  |  | 0,1 |
| **Panels🡪Panels (see 3.7)** |  |  |  |
| Chart Product**ChartProduct** provides a set of descriptive data and information of last correction to that chart. It also refers to panels if necessary.Remarks:* No remarks.
 |

## Panels

|  |
| --- |
| **FEATURE TYPE**: PanelsIHO Definition: A part of a chart.  |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **Chart Panel🡪Chart Panel (see 3.8)**  |  |  | 1,\* (ordered) |
| Panels* In this context, a panel is either the main chart or a plan or a part of a chart.

Remarks:* No remarks.
 |

## Chart Panel

|  |
| --- |
| **FEATURE TYPE**: Chart PanelIHO Definition: A single chart panel / image. |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Horizontal Datum EPSG |  | IN |  |
| Panel Name |  | S (TE) |  |
| **ID🡪ID**  |  |  |  |
| Chart PanelRemarks:* No remarks.
 |

## Chart Panel Ref

|  |
| --- |
| **FEATURE TYPE**: Chart Panel RefIHO Definition: The unique reference to a panel- |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **Chart Ref🡪Chart Ref (see 3.10)** |  |  | 0,\* |
| Chart PanelRemarks:* No remarks.
 |

## Chart Ref

|  |
| --- |
| **FEATURE TYPE**: Chart RefIHO Definition: The reference to a chart.  |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **IDREF🡪IDREF**  |  |  |  |
| IDREFRemarks:* No remarks.
 |

## Contents

|  |
| --- |
| **FEATURE TYPE**: ContentsIHO Definition: A collection of contents relevant for a single chart update |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **Contents🡪Content (see 3.12)**  |  |  | 0,\* (ordered) |
| ContentsRemarks:* No remarks.
 |

## Content

|  |
| --- |
| **FEATURE TYPE**: ContentIHO Definition: The content relevant for a chart update. |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **Chart Correrction Content🡪Chart Correction Content (see 3.15)**  |  |  |  |
| **Graphic Content🡪Graphic Content (3.14)** |  |  |  |
| **Text Content🡪Text Content (see 3.13)** |  |  |  |
| Content**Content** provides different chart correction methods by using a composition with **NoticeContentChoice**.Remarks:* No remarks.
 |

## Text Content

|  |
| --- |
| **FEATURE TYPE**: Text ContentIHO Definition: Simple text content for miscellaneous information additional to or instead of **ChartCorrectionContent**. |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Text |  | S (TE) |  |
| Content number |  | IN |  |
| **Chart Refs🡪Chart Panel Ref (see 3.9)**  |  |  |  |
| Text ContentRemarks:* No remarks.
 |

## Graphic Content

|  |
| --- |
| **FEATURE TYPE**: Graphic ContentIHO Definition: An Image as content to be displayed with the notice. |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Description |  | S (TE) | 0,1 |
| File Locator |  | URL | 1,\* |
| Graphic Content File Format | 1: JPEG2: PNG | EN |  |
| Content number |  | IN |  |
| **Chart Refs🡪Chart Panel Ref (see 3.9)**  |  |  |  |
| Graphic ContentRemarks:* No remarks.
 |

## Chart Correction Content

|  |
| --- |
| **FEATURE TYPE**: Chart Correction ContentIHO Definition: A set of different features which may be used to display the correction.  |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Chart Correction Action | 1: Insert2: Delete3: Move4: Amend5: Replace | EN |  |
| **External Contents🡪External Contents** **(see 3.16)**  |  |  |  |
| **Positions🡪Positions** **(see 3.18)** |  |  |  |
| **Symbols🡪Symbols (see 3.20)** |  |  |  |
| Content number |  | IN |  |
| **Chart Refs🡪Chart Panel Ref (see 3.9)**  |  |  |  |
| Chart Correction ContentRemarks:* No remarks.
 |

## External Contents

|  |
| --- |
| **FEATURE TYPE**: External ContentsIHO Definition: A set of chart correction information provided by external sources. |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **External Content🡪External Content (see 3.17)** |  |  | 0,\* (ordered) |
| External ContentsRemarks:* No remarks.
 |

## External Content

|  |
| --- |
| **FEATURE TYPE**: External ContentIHO Definition: A chart correction information provided by external sources. |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| External Content Description |  | S (TE) |  |
| External Content File Format | 1: PDF2: TIFF3: SVG4. PNG | EN |  |
| External Content File Locator |  | URL |  |
| External Content Type | 1: Block2: Table | EN |  |
| External ContentRemarks:* No remarks.
 |

## Positions

|  |
| --- |
| **FEATURE TYPE**: External ContentsIHO Definition: A set of positions. |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **Position🡪Position (see 3.19)** |  |  | 0,\* (ordered) |
| PositionsRemarks:* No remarks.
 |

## Position

|  |
| --- |
| **FEATURE TYPE**: PositionIHO Definition: Indication of one position. |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Position Description |  | S (TE) | 0,1 |
| Latitude Longitude Point |  | C | 0,1 |
|  Latitude Decimal |  | RE |  |
|  Latitude Degrees |  | IN |  |
|  Latitude Minutes |  | S (TE) |  |
|  Latitude Seconds |  | S (TE) | 0,1 |
|  Longitude Decimal |  | RE |  |
|  Longitude Degrees |  | IN |  |
|  Longitude Minutes |  | S (TE) |  |
|  Longitude Seconds |  | S (TE) | 0,1 |
| PositionNormally latitude and longitude is given, but a position might consist of only a description.Remarks:* No remarks.
 |

## Symbols

|  |
| --- |
| **FEATURE TYPE**: SymbolsIHO Definition: A set of chart correction symbols |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **Symbol🡪Chart Correction Symbol (see 3.21)** |  |  | 0,2 (ordered) |
| SymbolsRemarks:* No remarks.
 |

## Chart Correction Symbol

|  |
| --- |
| **FEATURE TYPE**: Chart Correction SymbolIHO Definition: A structure consisting of the symbol, additional text and instructions for the end-user. Alternative ways of describing the symbol exists. |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| Correction Instruction |  | S (TE)  | 0,\* (ordered) |
| Symbol MRN |  | URN | 0,1 |
| Symbol Text |  | S (TE) | 0,\* (ordered) |
| **Alternative Provision🡪Symbol Alternative Provision** **(see 3.22)** |  |  |  |
| Chart Correction SymbolRemarks:* No remarks.
 |

## Symbol Alternative Provision

|  |
| --- |
| **FEATURE TYPE**: Symbol Alternative ProvisionIHO Definition: A set of different methods to provide chart symbols. |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| **File Based Symbol🡪Alternative Symbol File (see 3.23)**  |  |  |  |
| **True Type Font Symbol🡪Alternative Symbol TTF (see 3.24)** |  |  |  |
| Symbol Alternative Provision**SymbolAlternativeProvision** provides different symbol provision methods by using a composition with **AlternativeSymbolDescription.**Remarks:* No remarks.
 |

## Alternative Symbol File

|  |
| --- |
| **FEATURE TYPE**: Alternative Symbol FileIHO Definition: A file which contains the external symbols |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| File Locator |  | URL |  |
| Symbol Format | 1: PNG2. SVG | EN |  |
| Symbol Description |  | S (TE) | 0,1 |
| Alternative Symbol FileRemarks:* No remarks.
 |

## Alternative Symbol TTF

|  |
| --- |
| **FEATURE TYPE**: Alternative Symbol TTFIHO Definition: A symbol in TrueTypeFont.  |
| Attribute**/Features** | **Allowable Encoding Value** | **Type** | **Multiplicity** |
| True Type Font Color |  | S (TE) | 0,1 |
| True Type Font File |  | URL |  |
| True Type Font Name |  | S (TE) |  |
| True Type Font Size |  | S (TE) | 0,1 |
| True Type Font Text |  | S (TE) |  |
| Symbol Description |  | S (TE) | 0,1 |
| Alternative Symbol TTFThe font used must be publicly available.Remarks:* No remarks.
 |

# Simple Attributes

## Notice Number

CamelCase: noticeNumber

IHO Definition: A standard method of numbering notices.

Indication: Integer

Unit:

Resolution:

Minimum value:

Format:

Example:

Remarks:

* No remarks

## Notice Year

CamelCase: noticeYear

IHO Definition: The year according to the Gregorian calendar when a notice has been published.

Indication: Integer

Unit:

Resolution:

Minimum value:

Format:

Example: 2018

Remarks:

* No remarks

## Sequence Number

CamelCase: sequenceNumber

IHO Definition: The number of a chart correction. This number must be unique.

Indication: Integer

Unit:

Resolution:

Minimum value:

Format:

Example:

Remarks:

* The awarding of a sequence number is optional.

## Latitude Decimal

CamelCase: latitudeDecimal

IHO Definition: The decimal value of the latitude position.

Indication: Float

Unit:

Resolution:

Minimum value:

Format:

Example:

Remarks:

* No remarks

## Latitude Degree

CamelCase: latitudeDegreel

IHO Definition: The degree value of the latitude position.

Indication: Integer

Unit:

Resolution:

Minimum value:

Format:

Example:

Remarks:

* No remarks

## Latitude Minutes

CamelCase: latitudeMinutes

IHO Definition: The minutes value of the latitude position.

Indication: Text

Unit:

Resolution:

Minimum value:

Format:

Example:

Remarks:

* Leading zero or zero minutes can be provided.

## Latitude Seconds

CamelCase: latitudeSeconds

IHO Definition: The seconds value of the latitude position.

Indication: Text

Unit:

Resolution:

Minimum value:

Format:

Example:

Remarks:

* The provision of seconds is optional.

## Longitude Decimal

CamelCase: longitudeDecimal

IHO Definition: The decimal value of the longitude position.

Indication: Float

Unit:

Resolution:

Minimum value:

Format:

Example:

Remarks:

* No remarks

## Longitude Degree

CamelCase: longitudeDegreel

IHO Definition: The degree value of the longitude position.

Indication: Integer

Unit:

Resolution:

Minimum value:

Format:

Example:

Remarks:

* No remarks

## Longitude Minutes

CamelCase: longitudeMinutes

IHO Definition: The minutes value of the longitude position.

Indication: Text

Unit:

Resolution:

Minimum value:

Format:

Example:

Remarks:

* Leading zero or zero minutes can be provided.

## Longitude Seconds

CamelCase: longitudeSeconds

IHO Definition: The seconds value of the longitude position.

Indication: Text

Unit:

Resolution:

Minimum value:

Format:

Example:

Remarks:

* The provision of seconds is optional.

## Country ISO 3116-1

The identification of the producing country should be ISO3116-1 conformant.

## Creation Date

Creation date of the dataset.

## Language ISO 639-3

Language must be English.

## Producing Agency S62

The identification of a producing agency should be S-62 conformant.

## Area

The description of a spatial which is has a wider extent. In this context, area could be defined as large sea areas where a notice applies.

## Region

This is a part of an area where a notice applies. The term should be provided on the referred chart and assists the mariner’s orientation.

## Vicinity

The geographic description of the place where a notice applies.

## Notice Original

A Boolean indicating if a notice was issued by the printing HO or if the notice was derived from foreign HOs’ notice(s).

## Notice Original Source

The original source of the data.

## Notice Date Published

Publication date of the notice.

## Notice Validity

Validity period of notice as text.

Examples: "July 2018", "Open water season", "Until further notice"

## Product Title

The national name, number or title of the chart.

## Product INT Number

The international (INT) number of the chart, if available.

## Product Edition Date

he product edition date as set by the producing agency.

## Product Edition Name

Product edition id, name or other identification, if used additionally to edition date.

## Text

The part of a correction provided in written words.

## Content number

The order number of the content within the notice. Content is ordered to assist correct display.

## Description

Description / title of the external content.

## File Locator

The www address of an external file.

## External Content Description

Description / title of the external content.

## External Content File Locator

The location of the external content.

## Position Description

Additional text to describe or explain the current position.

## Correction Instruction

An instruction to show the mariner.

## Symbol MRN

A MRN is defining a symbol uniquely. This MRN is not yet available (as of 2018), but intended to be the recommended way to define the symbol in the future.

## Symbol Text

Text needed along with the symbol, that is to be put on the chart.

## Symbol Description

Symbol description is a human readable description of the symbol.

## True Type Font Color

The colour of the font.

## True Type Font File

The location of the TTF-file to use.

## True Type Font Name

The name of the font.

## True Type Font Size

The size of the font.

## True Type Font Text

The character(s) used to form the symbol.

## Horizontal Datum EPSG

The horizontal datum of the chart panel as an EPSG-code.

## Panel Name

The title, identification or name used to identify the panel within the product.

# Enumerate Attributes

## Graphic Content File Format Enumeration

CamelCase: graphicContenFileFormatEnum

IHO Definition: The particular way that a graphic is encoded for storage in a computer file (adapted <https://en.wikipedia.org/wiki/Format>)

1) JPEG

IHO Definition: A commonly used method of lossy compression for digital images, particularly for those images produced by digital photography. The degree of compression can be adjusted, allowing a selectable trade-off between storage size and image quality. (<https://en.wikipedia.org/wiki/JPEG>)

2) PNG

IHO Definition: is a raster graphics file format that supports lossless data compression. (<https://en.wikipedia.org/wiki/Portable_Network_Graphics>)

## Symbol Format Enumeration

CamelCase: symbolFormatEnum

IHO Definition: The particular way that a symbol is encoded for storage in a computer file (adapted <https://en.wikipedia.org/wiki/Format>)

1) PNG

IHO Definition: is a raster graphics file format that supports lossless data compression. (<https://en.wikipedia.org/wiki/Portable_Network_Graphics>)

2) SVG

IHO Definition: An XML-based vector image format for two-dimensional graphics with support for interactivity and animation. (<https://en.wikipedia.org/wiki/Scalable_Vector_Graphics>)

## Notice Type Enumeration

CamelCase: noticeTypeEnum

IHO Definition: Predefined methods of chart corrections to satisfy the requirement that a HO is be aware of. (adapted <https://en.wikipedia.org/wiki/Notice>)

1) Normal

IHO Definition: A textual chart-updating notice supporting the permanent chart updating with navigationally significant information. (adapted IHO S-4/2018 B-631.1)

2) Temporary

IHO Definition: Notice which is used to promulgate navigationally significant information that will remain valid only for a limited period. (IHO S-4/2018 B-633.1)

3) Preliminary

IHO Definition: A notice to promulgate navigationally significant data early to the mariner (IHO S-4/2018 B-634.1)

## Notice Status Enumeration

CamelCase: noticeStatusEnum

IHO Definition: The condition of a notice.

1) Published

IHO Definition: The dissemination of information to make this information available to the general public. (adapted <https://en.wikipedia.org/wiki/Publishing>)

2) Cancelled

IHO Definition: A special message used to remove articles previously posted to Notice to Mariners. (<https://en.wikipedia.org/wiki/Cancel>)

3) Deactivated

IHO Definition: The process to initiate the discontinuation of a previously issued notice to mariners.

## External Content Type Enumeration

CamelCase: externalContentTypeEnum

IHO Definition: Additional information associated to a particular Notice.

1) Block

IHO Definition: An updated portion of a chart containing new or revised information in a particular area. (IHO S-4/2018 B-632.1)

2) Table

IHO Definition: An updated portion of a chart containing new or revised information in a particular area in tabular format. (adapted IHO S-4/2018 B-632.1)

## External Content File Format Enumeration

CamelCase: externalContentFileFormatEnum

IHO Definition: A standard way that information is encoded for storage in a computer file. It specifies how bits are used to encode information in a digital storage medium (<https://en.wikipedia.org/wiki/File_format>)

1) PDF

IHO Definition: A file format developed by Adobe to present documents, including text formatting and images, in a manner independent of application software, hardware, and operating systems. (Adapted <https://en.wikipedia.org/wiki/PDF>)

2) TIFF

IHO Definition a computer file format for storing raster graphics images, popular among graphic artists, the publishing industry and photographers. (<https://en.wikipedia.org/wiki/TIFF>)

3) SVG

IHO Definition: An XML-based vector image format for two-dimensional graphics with support for interactivity and animation. (<https://en.wikipedia.org/wiki/Scalable_Vector_Graphics>)

4) PNG

IHO Definition: is a raster graphics file format that supports lossless data compression. (<https://en.wikipedia.org/wiki/Portable_Network_Graphics>)

## Chart Correction Action Enumeration

CamelCase: chartCorrectionActionEnum

IHO Definition: A set of orders which describes meaningful activities.

1) Insert

IHO Definition: The addition of new information: either a new feature or a new characteristic at an existing feature (IHO S-4/2018 B-631.4)

2) Delete

IHO Definition: The removal of existing charted details. (IHO S-4/2018 B-631.4)

3) Move

IHO Definition: When a point feature has moved a short distance, but the associated details are unchanged. (IHO S-4/2018 B-631.4)

4) Amend

IHO Definition: Change a characteristic of an existing charted feature when its position has not changed. (IHO S-4/2018 B-631.4)

5) Replace

IHO Definition: Replace a different feature in the same position. (IHO S-4/2018 B-631.4)

# Complex Attributes

## Notice Identifier

CamelCase: noticeIdentifier

IHO Definition: A name that identifies a unique chart notice.

Indication: Identifier’s structure depends on issuing HOs system.

Sub-attributes:

Notice Number see clause 5.1

Notice Type see clause 6.3

Notice Year see clause 5.3

Sequence Number [0..1] see clause 5.4

Remarks:

No remarks

## Latitude Longitude Point

CamelCase: latlonPoint

IHO Definition: A coordinate system that enables every location on Earth to be specified by a set of numbers, letters or symbols.

(Wikipedia: <https://en.wikipedia.org/wiki/Geographic_coordinate_system>)

Indication: Some sub-attributes must be provided in Text format. This has to do with the necessity to provide leading 0 “zero” for coordinates

Sub-attributes:

Latitude Decimal see clause 5.5

Latitude Degree see clause 5.6

Latitude Minutes see clause 5.7

Latitude Seconds [0..1] see clause 5.8

Longitude Decimal see clause 5.9

Longitude Degree see clause 5.10

Longitude Minutes see clause 5.11

Longitude Seconds [0..1] see clause 5.12

Remarks:

No remarks