

# IALA GUIDELINE

G1106-1

## IALA PRODUCT SPECIFICATION NUMBER TEMPLATE

**Edition 1.0**

**December 2017**



# DOCUMENT HISTORY

---

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

| Date          | Details               | Approval   |
|---------------|-----------------------|------------|
| December 2017 | 1 <sup>st</sup> issue | Council 65 |
|               |                       |            |

DRAFT



# CONTENTS

---

|   |           |
|---|-----------|
| <b>1. OVERVIEW .....</b>                            | <b>5</b>  |
| 1.1. Introduction .....                             | 5         |
| 1.2. References .....                               | 5         |
| 1.2.1. Normative references.....                    | 5         |
| 1.2.2. Informative references .....                 | 5         |
| 1.3. Terms, definitions and abbreviations .....     | 5         |
| 1.3.1. Terms and Definitions.....                   | 5         |
| 1.3.2. Acronyms.....                                | 5         |
| 1.4. Product specification metadata.....            | 5         |
| 1.4.1. IALA Product Specification Maintenance.....  | 6         |
| <b>2. SPECIFICATION SCOPES .....</b>                | <b>7</b>  |
| <b>3. DATA PRODUCT IDENTIFICATION .....</b>         | <b>7</b>  |
| <b>4. DATA CONTENT AND STRUCTURE .....</b>          | <b>8</b>  |
| 4.1. Introduction .....                             | 8         |
| 4.2. Application Schema .....                       | 8         |
| 4.3. Feature Catalogue.....                         | 8         |
| 4.3.1. Introduction.....                            | 8         |
| 4.4. Data Product Types.....                        | 8         |
| 4.5. Data Product Loading and Unloading.....        | 8         |
| 4.6. Geometry .....                                 | 9         |
| <b>5. CO-ORDINATE REFERENCE SYSTEMS (CRS) .....</b> | <b>9</b>  |
| 5.1. Introduction .....                             | 9         |
| <b>6. DATA QUALITY.....</b>                         | <b>9</b>  |
| <b>7. DATA CAPTURE AND CLASSIFICATION .....</b>     | <b>9</b>  |
| <b>8. DATA MAINTENANCE.....</b>                     | <b>9</b>  |
| <b>9. PORTRAYAL .....</b>                           | <b>10</b> |
| <b>10. DATA PRODUCT FORMAT (ENCODING) .....</b>     | <b>10</b> |
| 10.1. Introduction .....                            | 10        |
| <b>11. DATA PRODUCT DELIVERY .....</b>              | <b>10</b> |
| 11.1. Dataset.....                                  | 10        |
| 11.1.1. Datasets 10                                 |           |
| 11.1.2. Dataset size.....                           | 11        |
| 11.1.3. Dataset file naming.....                    | 11        |
| 11.2. Support Files .....                           | 11        |



# CONTENTS

---

|         |  |    |
|---------|--|----|
| 11.2.1. | Support File Naming .....                    | 11 |
| 11.3.   | Exchange Catalogue.....                      | 11 |
| 12.     | METADATA.....                                | 11 |
| ANNEX A | DATA CLASSIFICATION AND ENCODING GUIDE ..... | 13 |
| ANNEX B | DATA PRODUCT FORMAT (ENCODING) .....         | 14 |
| ANNEX C | NORMATIVE IMPLEMENTATION GUIDANCE.....       | 14 |
| ANNEX D | FEATURE CATALOGUE.....                       | 14 |
| ANNEX E | PORTRAYAL CATALOGUE .....                    | 14 |

## List of Tables

|         |   |    |
|---------|---|----|
| Table 1 | Specification scopes.....                             | 7  |
| Table 2 | Spatial representation type .....                     | 7  |
| Table 3 | Feature catalogue builder .....                       | 8  |
| Table 4 | Data distribution.....                                | 9  |
| Table 5 | Portrayal catalogue .....                             | 10 |
| Table 6 | Standard encoding form.....                           | 10 |
| Table 7 | Data classification and encoding guide template ..... | 13 |

## List of Figures

|          |  |    |
|----------|--|----|
| Figure 1 | Example of metadata for an Ice Information Product Specification ..... | 12 |
|----------|--|----|

## 1. OVERVIEW

### 1.1. INTRODUCTION

*<Provide a general introduction regarding the intent and use of this product specification.>*

### 1.2. REFERENCES

#### 1.2.1. NORMATIVE REFERENCES

IHO S.100 IHO Universal Hydrographic Data Model, June 2015

#### 1.2.2. INFORMATIVE REFERENCES

### 1.3. TERMS, DEFINITIONS AND ABBREVIATIONS

#### 1.3.1. TERMS AND DEFINITIONS

The following terms and definitions are in addition to those in S-100 Annex A.

*<Insert Terms and Definitions>*

#### 1.3.2. ACRONYMS

*<Insert Abbreviations>*

|           |   |
|-----------|---|
| IALA-AISM | International Association of marine aids to navigation and Lighthouse Authorities |
| CRS       | Co-ordinate Reference System  |
| ECDIS     | Electronic Chart Display Information System                                       |
| EPSG      | European Petroleum Survey Group   |
| ENC       | Electronic Navigational Chart   |
| IHO       | International Hydrographic Organisation   |
| IMO       | International Maritime Organisation   |
| ISO       | International Organisation for Standardisation                                    |

### 1.4. PRODUCT SPECIFICATION METADATA

*<This information uniquely identifies this Product Specification and provides information about its creation and maintenance.>*

|                 |  |
|-----------------|--|
| Title:          | <i>&lt;title of the product specification&gt;</i><br><i>X-### Version: 0.0.0 &lt;version of the product specification following S-100 1.4.1.5.&gt;</i> |
| Identifier:     | <i>&lt;X-### unique IALA identifier.&gt;</i>   |
| S-100 Version:  | <i>1.0.0 &lt;version of S-100 used in the creation of this product specification.&gt;</i>  |
| Date:           | <i>&lt;date of the creation or last update of this product specification.&gt;</i>  |
| Language:       | <i>&lt;language(s) of the product specification, English is mandatory, other languages may be included&gt;</i>   |
| Classification: | 001 - unclassified   |



Contact: IALA-AISM  
10, rue des Gaudines  
78100 Saint Germain en Laye, France  
Telephone: +33 1 34 51 70 01 Fax: +33 1 34 51 82 05  
URL: [http://registry.iho.int/s100\\_gi\\_registry/ProductSpecificationRegister/ps\\_home.php](http://registry.iho.int/s100_gi_registry/ProductSpecificationRegister/ps_home.php)  
Maintenance:

*Who maintains the product specification*

*Specified review regime*

*Specified procedures*

#### 1.4.1. IALA PRODUCT SPECIFICATION MAINTENANCE

This chapter is for clarification only on Product Specification (PS) Maintenance.

##### 1.4.1.1. Introduction

Changes to a product specification will be released by IALA-AISM as a new edition, revision, or clarification.

##### 1.4.1.2. New Edition

New editions of a product specification introduce significant changes. *New editions* enable new concepts, such as the ability to support new functions or applications, or the introduction of new constructs or data types.

##### 1.4.1.3. Revisions

*Revisions* are defined as substantive semantic changes to a product specification. Typically, revisions will change a product specification to correct factual errors; introduce necessary changes that have become evident as a result of practical experience or changing circumstances. A *revision* must not be classified as a clarification. Revisions could have an impact on either existing users or future users of a product specification. All cumulative clarifications must be included with the release of approved corrections.

Changes in a revision are minor and ensure backward compatibility with the previous versions within the same edition. Newer revisions, for example, introduce new features and attributes. Within the same edition, a data product of one version could always be processed with a later version of the feature and portrayal catalogues.

##### 1.4.1.4. Clarification

Clarifications are non-substantive changes to a product specification. Typically, clarifications remove ambiguity; correct grammatical and spelling errors; amend or update cross references; insert improved graphics, spelling, punctuation and grammar. A clarification must not cause any substantive semantic change to a product specification.

Changes in a clarification are minor and ensure backward compatibility with the previous versions within the same edition. Within the same edition, a data product of one clarification version could always be processed with a later version of the feature and portrayal catalogues, and a portrayal catalogue can always rely on earlier versions of the feature catalogues.

##### 1.4.1.5. Version Numbers

The associated version control numbering to identify changes (n) to a product specification must be as follows:

New editions denoted as **n.0.0**

Revisions denoted as **n.n.0**

Clarifications denoted as **n.n.n**

## 2. SPECIFICATION SCOPES

*<Some parts of a product specification may apply to the whole product whereas other parts of the product specification may apply to parts of the product. Co-ordinate reference system will generally apply to the complete product; whereas maintenance regimes may be different for navigational features and contextual features. If a specification is homogeneous across the whole data product it is only necessary to define a general scope (e.g. root scope), to which each section of the data product specification applies.>*

**Table 1** *Specification scopes*

|                      |                               |
|----------------------|-------------------------------|
| Scope identification | According to S-100 table 11-3 |
| Level                | According to S-100 table 11-3 |
| Level name           | According to S-100 table 11-3 |

## 3. DATA PRODUCT IDENTIFICATION

*<Information that uniquely identifies each data product.>*

|                              |   |
|------------------------------|---|
| Title:                       | <i>&lt;Data product title.&gt;</i>  |
| Alternate Title:             | <i>&lt;Optional alternate data product title.&gt;</i>   |
| Abstract:                    | <i>&lt;Brief narrative summary of the content of the data product.&gt;</i>  |
| Topic Category:              | <i>&lt;Optional field using MD_TopicCategoryCode (ISO 19115) to capture theme information about the data product content.&gt;</i>   |
| Geographic Description:      | <i>&lt;value from a code list of described regions. The code list can be defined by an international body or the producer of the data.&gt;</i>  |
| Spatial Extent:              | <i>For IALA products probably 'Global' will be default.</i>   |
| Description:                 | East Bounding Longitude: -180<br>West Bounding Longitude: 180<br>North Bounding Latitude: 90<br>South Bounding Latitude: 90   |
| Spatial Resolution:          | <i>&lt;Level of detail expressed as a scale factor or a ground distance.&gt;</i>  |
| Purpose:                     | <i>&lt;Summary of the intention with which the data product is developed.&gt;</i>   |
| Language:                    | <i>&lt;Language(s) of the data product using the format of ISO 639-2. One value must be English. If language is not applicable, e.g. for gridded data, use 'not applicable' as value for the element.&gt;</i> |
| Spatial Representation Type: | <i>&lt;Form of the spatial representation, S-100 allows one of the following two options.&gt;</i>   |

**Table 2** *Spatial representation type*

|     |        |
|-----|--------|
| 001 | vector |
| 002 | grid   |

Default setting for IALA Product Specifications would be vector.

Point of Contact: *<Identification of, and means of communication with, the responsible entity(ies) issuing the data. Field must use the structure of CI\_ResponsibleParty (ISO 19115).>*

Use Limitation: *<Limitation affecting the fitness for use of the data product. Field is a character string.> Applicable if Product Specification is dependent on other PS or specific software or device.*

## 4. DATA CONTENT AND STRUCTURE

### 4.1. INTRODUCTION

*<This clause mandates different requirements for compliant data products. There are different requirements for feature based data versus coverage based data.*

*This template focuses only on feature based data; for coverage based data see S-100 part 7.>*

### 4.2. APPLICATION SCHEMA

*<This section holds the application schema, which describes the concepts of the data model of the product specification. The application schema shall be described using the S-100 conceptual schema language. At least one UML diagram (or more) needs to be provided. Normally, the full application schema is described in this section, however, for specifications that have large application schemas a subset showing the main concepts of the model can be provided.>*

### 4.3. FEATURE CATALOGUE

*<Build Feature Catalogue by using Feature Catalogue Builder.>*

#### 4.3.1. INTRODUCTION

**Table 3 Feature catalogue builder**

Name  
Scope  
Field of application  
Version Number  
Producer  
Functional Language

#### 4.3.1.1. Complex attributes

Complex attributes are a composition of other attributes; either simple or complex.

### 4.4. DATA PRODUCT TYPES

*<This paragraph is optional>*

*<By the use of scopes, there may be different types of data products within a product specification. The nature of these types is described here with particular specifications that apply specifically to the types.>*

### 4.5. DATA PRODUCT LOADING AND UNLOADING

*<This paragraph is optional>*



*<This section provides guidance on how data products are loaded and/or unloaded in a typical use scenario. This section may also be used to describe any dependencies that may exist on other data products, such as ENC.>*

## 4.6. GEOMETRY

*<Geometric representation is the digital description of the spatial component of an object as described in S-100 and ISO 19107. Specify, in accordance with S-100 part 7 paragraph 5.3, which S-100 Level of Geometry is to be used in the product specification and any deviations from these.>*

## 5. CO-ORDINATE REFERENCE SYSTEMS (CRS)

### 5.1. INTRODUCTION

*<This clause specifies the type of Co-ordinate Reference System used in the data product.>*

*WGS-84 is the default.*

## 6. DATA QUALITY

*<Each product specification shall describe the data quality requirements. The 'data quality overview element' allows users to decide whether this dataset is the one they want. The data quality overview element should include at least the intended purpose and statement of quality or lineage. Other data quality elements cover completeness, logical consistency, positional uncertainty, temporal uncertainty, thematic uncertainty, and anything data quality related that is specifically required for the data product being specified.>*

*<Additional guidance for data quality can be found in IMO e-navigation Software Quality Assurance guideline.>*

## 7. DATA CAPTURE AND CLASSIFICATION

*<This paragraph is optional.>*

*<This section contains guidance about how the data is to be captured. This should be as detailed and specific as necessary. Should this guidance become extensive, then it can be placed in an annex, and referenced from this section.>*

*For example, data sources, time validity and data production process could be described, depending on desired classification of the data product.*

## 8. DATA MAINTENANCE

*<This section specifies how data product maintenance is done, how frequent and how it is done.>*

*<Additional guidance for data maintenance can be found in IMO e-navigation Software Quality Assurance guideline.>*

*For message-type or streaming based data distribution this section may not be relevant.*

**Table 4 Data distribution**

**Maintenance and  
Update Frequency**

**Data Source**

**Production Process**

## 9. PORTRAYAL

*<This paragraph is optional.>*

*<This section contains the portrayal catalogue or a reference to where it is found. In an S-100 1.0.0 based product specification, the portrayal catalogue is optional. S-100 1.0.0 has no complete portrayal part. If it is considered that portrayal of the data product specified by the product specification is significant enough to specify, a portrayal standard (such as OGC Styled Layer Description) may be used.>*

**Table 5** *Portrayal catalogue*

| Item Name                | Description                                      | M/O | Card | type                    |
|--------------------------|--|-----|------|-------------------------|
| PortrayalLibraryCitation | Bibliographic reference to the portrayal library | O   | 0..1 | CI_Citation (ISO 19115) |

## 10. DATA PRODUCT FORMAT (ENCODING)

### 10.1. INTRODUCTION

*<This clause specifies the encoding for conformant data products. While various encodings may be used such as GML and XML, if the primary intent is that this data will be used in conjunction with ENC's on an ECDIS, then IHO recommends that ISO/IEC 8211 encoding should be used. Should another encoding be used by the product specification, this encoding must be sufficiently specified within the product specification itself, or a reference to the encoding standard must be provided. If the encoding is in the form of AIS Application Specific Messages, the standard table form can be used where attributes are mapped to a number of bits in the bit sequence.>*

**Table 6** *Standard encoding form*

Format Name

Version

Character Set

Specification

## 11. DATA PRODUCT DELIVERY

*<This paragraph is optional.>*

*<This clause specifies the delivery mechanisms for compliant data products. The clause can also include specifications on units of delivery; transfer size, medium name and other relevant delivery information. If a data product can be delivered in several formats, then the appropriate information for each shall be given. If the delivery mechanisms are in the form of information services, the used service standard and service interface definition should be sufficiently specified or referenced.>*

### 11.1. DATASET

*<If the data products are datasets, further specifications can be provided here. Otherwise this section can be removed.>*

#### 11.1.1. DATASETS

*<Specify the distribution format:*

- *Message based*
- *Streaming based*

## - Datasets

*In case of datasets, specify the distribution format to be one or more of the following: new edition, update or re-issue.>*

### 11.1.2. DATASET SIZE

*<Specify any limitations on dataset size or, in case of message-based distribution, message size.>*

### 11.1.3. DATASET FILE NAMING

*<Specify the dataset naming convention.>*

## 11.2. SUPPORT FILES

*<Specify if the product will utilise support files.>*

### 11.2.1. SUPPORT FILE NAMING

*<If applicable specify the naming convention for support files>*

## 11.3. EXCHANGE CATALOGUE

*<This paragraph is optional.>*

*<An exchange set is a grouping of data sets in a logical, consistent and self-contained collection to support the interchange of geospatial data and metadata. It is comprised of at least one dataset (i.e. a collection of features) and one exchange catalogue. This is the minimum number of entities that can be encapsulated in an exchange set. An exchange set may also contain a number of support files.>*

*<Specify if the data delivery will include an exchange catalogue and if so, what the structure of the exchange catalogue is.>*

## 12. METADATA

*<This clause specifies the metadata for the data product, it may be in an XML format and will conform to Part 4 S-100 metadata.>*

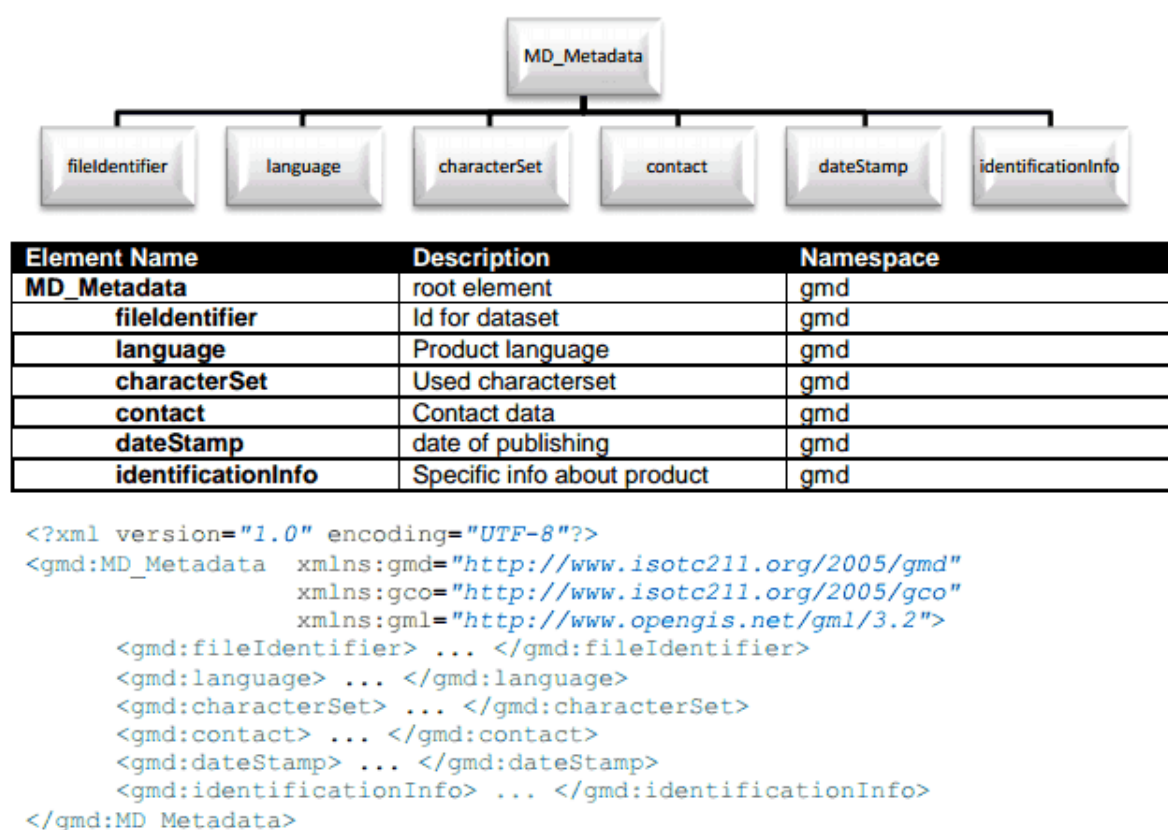
*<Dataset metadata is intended to describe information about a dataset or data resource. It facilitates the management and exploitation of data and is needed for understanding the characteristics of a dataset.>*

*<Select all core S-100 metadata elements that are of interest plus any additional ones from the base ISO 19115 metadata elements. Document the metadata elements in a tabular list as in the example provided below.>*

*<It is recommended to create a sample XML file to match the tabular list and to validate it. For this purpose, the base XML schema for ISO 19114 can be used, as described in ISO 19139. The base XML schema can be found at: <http://www.isotc211.org/2005/> as is outlined here: <http://www.isotc211.org/schemas/2005/>.>*

*<For these cases in which the S100/ISO19115 defined metadata elements are not sufficient to accommodate some more specific metadata requirements, such cases need to be handled by a custom extension, as is outlined in ISO 19139, section A.3 Conformance requirements -Extensions.>*

*<An example of metadata for an Ice Information Product Specification is provided at Figure 1.>*



**Figure 1** *Example of metadata for an Ice Information Product Specification*

## ANNEX A DATA CLASSIFICATION AND ENCODING GUIDE

<This annex contains a template for a data classification and encoding guide that can be used or referenced in clause 7.>

**Table 7 Data classification and encoding guide template**

| IHO Definition: <b>FEATURE:</b> Definition. (Source of definition).  |  |  |                                  |   |
|--|--|--|----------------------------------|---|
| <b>S-101 Geo Feature:</b> Feature (S-57 Acronym) S-101 feature and corresponding S-57 acronym  |  |  |                                  |   |
| <b>Primitives:</b> Point, Curve, Surface Allowable geometric primitive(s)<br><This clause specifies the discovery metadata for the data product, it is usually in an XML format and conforms to S-100 metadata.>   |  |  |                                  |   |
| <i>Real World</i><br>Example if real world instance(s) of the Feature.   | <i>Paper Chart Symbol</i><br>Example(s) of paper chart equivalent symbology for the Feature.                       | <i>ECDIS Symbol</i><br>Example(s) of ECDIS symbology for the Feature.  |                                  |   |
| S-101 Attribute  | S-57 Acronym   | Allowable Encoding Value *   | Type                             | Multiplicity  |
| Category of beer   |  | 1 : ale<br>2 : lager<br>3 : porter<br>4 : stout<br>5 : pilsener  | EN                               | 1,1   |
| This section lists the full list of allowable attributes for the S-101 feature. Attributes are listed in alphabetical order. Sub-attributes (Type prefix (S)) of complex (Type C) attributes are listed in alphabetical order and indented directly under the entry for the complex attribute (see below for example).   | This section lists the corresponding S-57 attribute acronym. A blank cell indicates no corresponding S-57 acronym. | This section lists the allowable encoding values for S-101 (for enumerate (E) Type attributes only). Further information about the attribute is available in Section XX. | Attribute type (see clause X.X). | Multiplicity describes the "cardinality" of the attribute in regard to the feature. See clause X.X. |
| Fixed date range   |  |  | C                                | 0,1   |
| Date end   | (DATEND)   |  | (S) DA                           | 0,1   |
| Date start   | (DATSTA)   |  | (S) DA                           | 0,1   |
| <b>INT 1 Reference:</b> The INT 1 location(s) of the Feature – by INT1 Section and Section Number.<br><b>X.X.X Sub-clause heading(s) (see S-4 – B-YYY.Y)</b><br>Introductory remarks. Includes information regarding the real world entity/situation requiring the encoding of the Feature in the ENC, and where required nautical cartographic principles relevant to the Feature to aid the compiler in determining encoding requirements.<br>Specific instructions to encode the feature.<br><b>Remarks:</b><br><ul style="list-style-type: none"> <li>Additional encoding guidance relevant to the feature.</li> </ul> <b>X.X.X.X Sub-sub-clause heading(s) (see S-4 – B-CCC.C)</b><br>Clauses related to specific encoding scenarios for the Feature. (Not required for all Features).<br><b>Remarks:</b><br><ul style="list-style-type: none"> <li>Additional encoding guidance relevant to the scenario (only if required).</li> </ul> <b>Distinction:</b> List of features in the Product Specification distinct from the Feature. |  |  |                                  |   |



## **ANNEX B**    **DATA PRODUCT FORMAT (ENCODING)**

*<This Annex can be used to provide specification on the encoding of compliant data products.>*

## **ANNEX C**    **NORMATIVE IMPLEMENTATION GUIDANCE**

*<This Annex can be used to provide specific guidance that must be adhered to during implementation of systems that will utilise the data product specified by this product specification.>*

## **ANNEX D**    **FEATURE CATALOGUE**

*<This Annex can be used to show the feature catalogue.>*

## **ANNEX E**    **PORTRAYAL CATALOGUE**

*<This Annex can be used to show the optional portrayal catalogue.>*

DRAFT