

S-100WG4

Title: Part 10b (GML Profile) clarifications

S-100 Maintenance - Change Proposal Form (Draft)

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|---------------------|-------------------|--------------|-------------------------------|
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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 | 3 | 5.2 | Add a masking attribute to the metaclass S100_GF_SpatialAttributeType (Figure 3-1). |
| | 3 | 5.3.1 5.3.5 | Show the structure of the masking attribute in Figure 3-2. Add the masking attribute to Table 3-13 (S100_GF_SpatialAttributeType) and describe its structure in the new Table 3-14. Renummer subsequent tables in Part 3 accordingly and update the references to those tables. |
| | 10a | 5.11.6 | Add text relating the fields of "masked spatial type" to the masking attribute in the GFM. |
| | 10b | 8.5.6 (new) | New clause describing how masking is implemented in the GML format. |

Change Proposal

While the S-100 ISO 8211 format (Part 10a) includes a masking/truncation indicator for spatial records, this is not formally described in the General Feature Model (GFM) and the GML format leaves it to application schemas to implement indicators of masking/truncation. This proposal adds a formal specification for an indicator of masking/truncation of spatial primitives to the S-100 GFM and documents how it is implemented in the GML format.

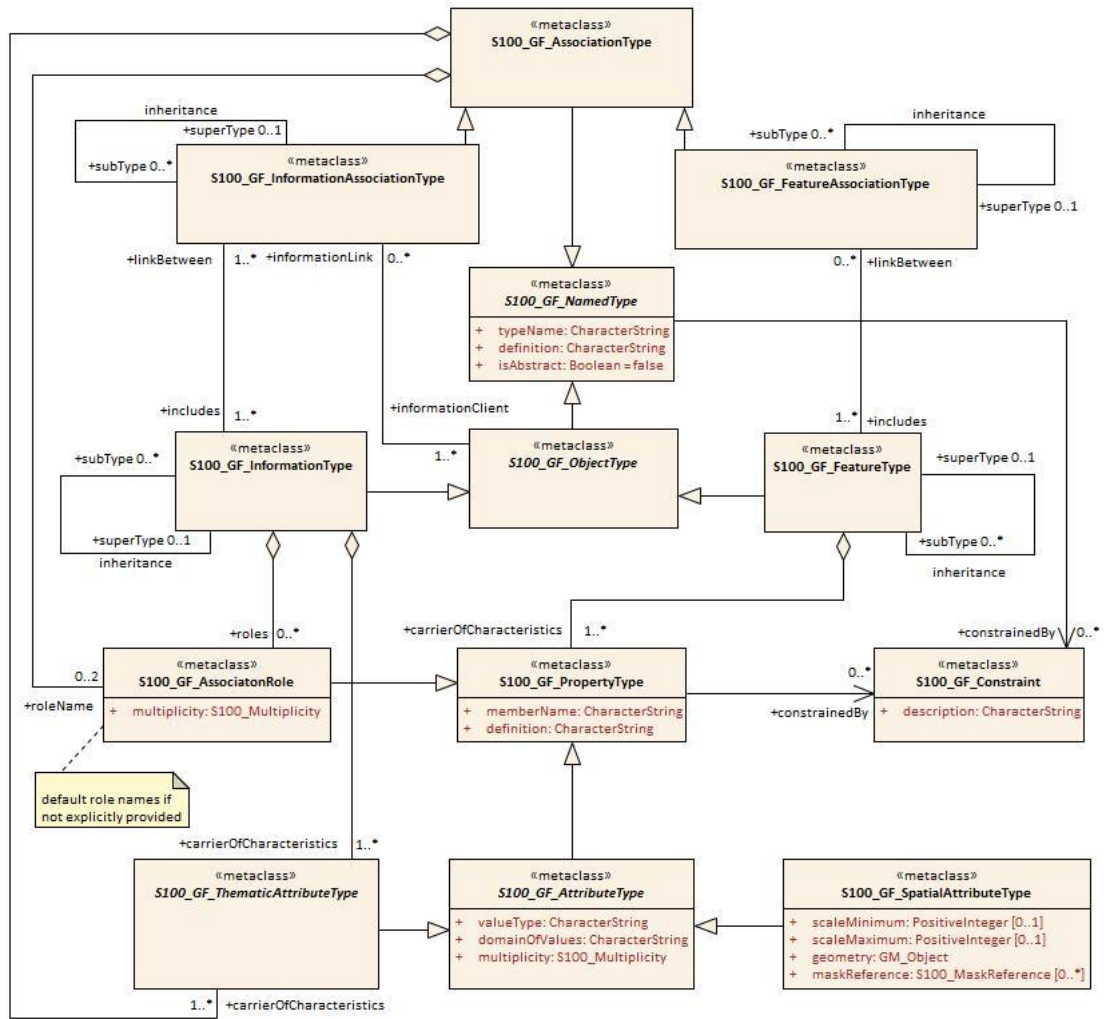
In order to maintain compatibility with both the ISO 8211 format and the standard GML method of referencing objects (which is already being used for feature and information associations in the S-100 GML format), the masking attribute is defined to be compatible with both the existing masked spatial attribute field in Part 10a (10a-5.11.6) and the GML ReferenceType datatype, and the S-100 GML format merely constrains the allowed values for object references and roles in the GML ReferenceType datatype.

This proposal does not entail any change to the masked spatial type field for the ISO 8211 format which is currently defined in Part 10a.

3-5.2 The General Feature Model

3-5.2.1 Introduction

[Replace Figure 3-1 with the figure below.]



3-5.3 Attributes of feature types

3-5.3.1 Introduction

[Replace Figure 3-2 with the figure below.]

and *xlink:role* attributes; the ISO 8211 format uses unsigned integers containing the record identifier of a spatial object and the numeric code of the mask indicator value.

The spatial objects referenced in the masking attribute must be among the components of the GM_Object that constitutes the spatial object referenced by the same instance of the spatial attribute. They may be components at any level, for example, components of components, etc. (In other words, the masked or truncated geometry must be part of the geometry of that particular instance of the spatial attribute.)

[Note: This constraint precludes masking in the broader sense, e.g., masking part of a surface by another surface or masking multiple points using a surface. This limitation should be discussed by the working group and either confirmed or revised.]

Table 3-13 - S100_GF_SpatialAttributeType

| Role Name | Name | Description | Mult. | Type |
|-----------|---------------|---|-------|--------------------|
| Attribute | maskReference | Reference indicating masked or truncated spatial primitives or objects. | 0..* | S100_MaskReference |

Table 3-14 - S100_MaskReference

| Role Name | Name | Description | Mult. | Type |
|-----------|-------------------------------------|--|-------|---|
| Class | S100_MaskReference | Reference to a masked or truncated spatial primitive. Model is based on gml:Reference but limits the allowed attributes and makes the identifier and role mandatory. | -- | -- |
| Attribute | spatialRef (alias xlink:href) | Identifier of a spatial primitive. | 1 | <reference>GM_Object |
| Attribute | maskIndicator (alias xlink:role) | Indicates whether a spatial primitive is masked or truncated. | 1 | Enumeration <i>maskIndicatorType</i> 1: truncated 2: suppressed |

Part 10a – ISO 8211 format:

10a-5.11.6 Masked Spatial Type field structure

[Add the following text]

The *Referenced Record identifier* field corresponds to the *spatialRef* attribute of S100_MaskReference (Part 3, Table 3-14). The *Mask Indicator* field corresponds to the *maskIndicator* attribute of S100_MaskReference.

Part 10b – GML format:

10b-8.5.6 Masking, truncation, and scale ranges

Beginning with Edition 4.1, the S-100 GML format defines a generic complex type S100_SpatialAttributeType for spatial attributes with *scaleMinimum* and *scaleMaximum* attributes and a *maskReference* tag. These correspond to the attributes of the S100_SpatialAttribute metaclass in the S-100 General Feature Model (Part 3, Figures 3-1 and 3-2 and clause 3-5.3.5). *scaleMinimum* and *scaleMaximum* are implemented as integer attributes. The *maskReference* attribute is implemented using the GML Reference Type with the following constraints:

- The value of the xlink:href attribute must be the gml:id of the masked/truncated object.
- The value of the xlink:role attribute must be either 'truncated' or 'suppressed'.
- The meaning of other attributes is undefined in S-100. Product specifications may specify their use depending on the needs of the data product.

The structure of the S100_SpatialAttribute Complex type is depicted in Figures X.X and X.X below.

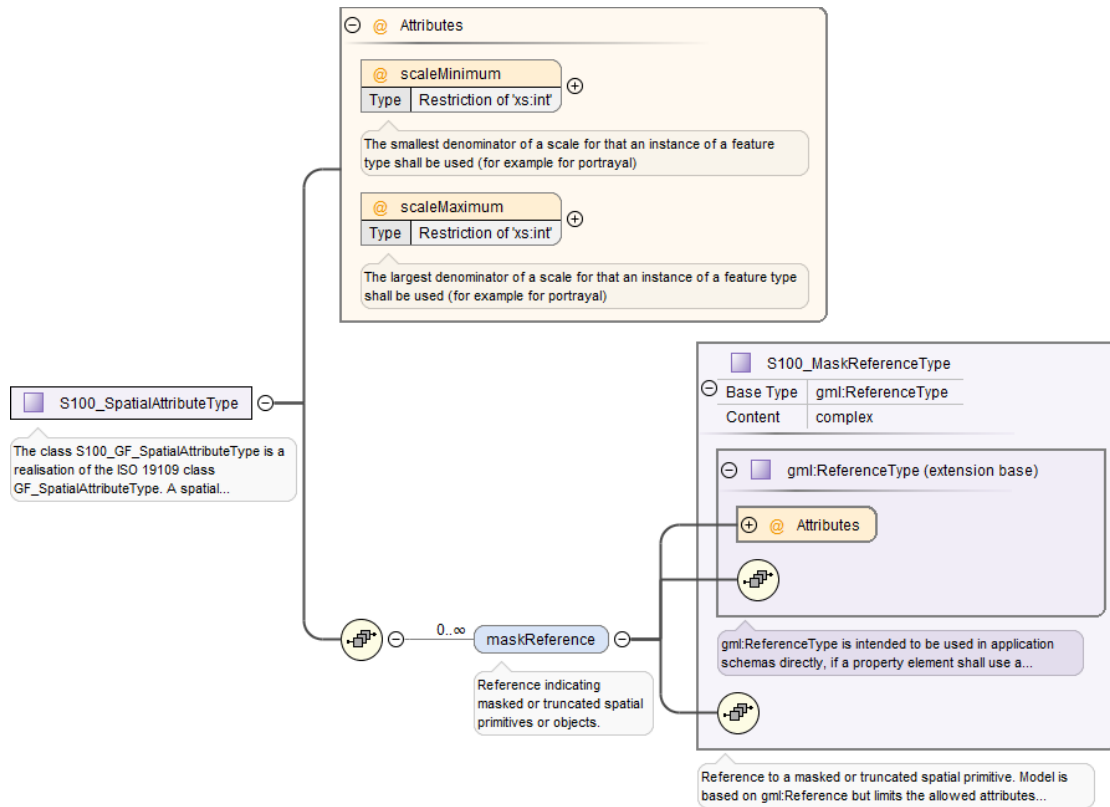


Figure X.X Structure of generic spatial attribute type in the S-100 GML format

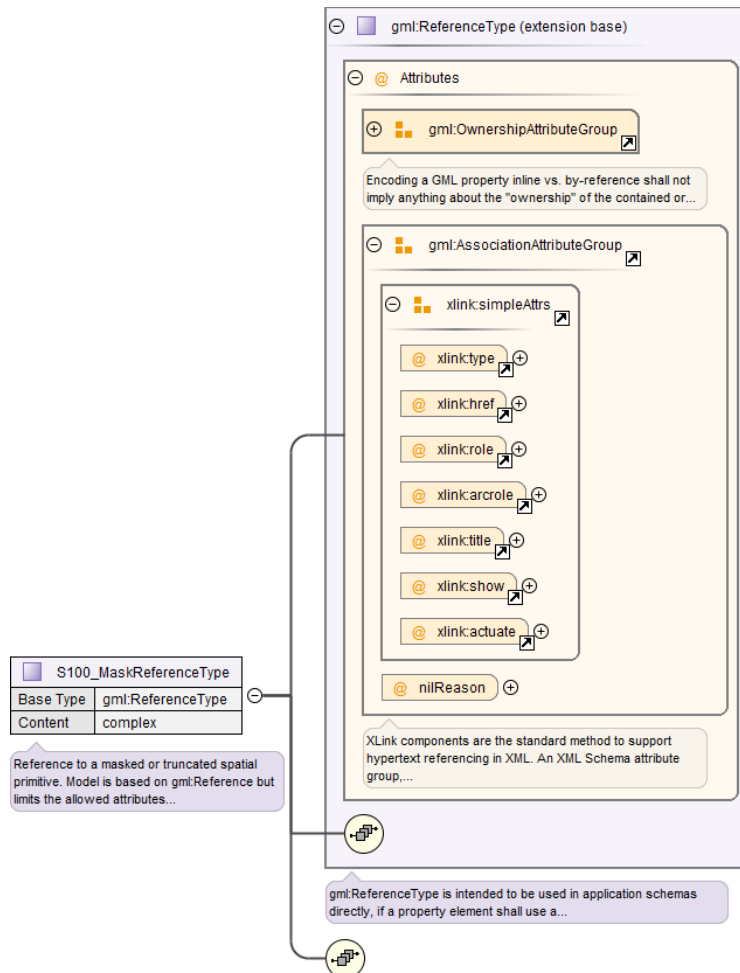


Figure X.X Structure of mask reference type. This Part specifies only the href and role attributes. The other AssociationAttributeGroup members, OwnershipAttributeGroup members, and nilReason are not used.

An example of the use of masking is depicted in Figure X.X below. The surface boundary is defined by reference to two curves (sequential curves comprising the exterior ring), whose gml:id's are JS.C.123 and JS.C.567. These curves are defined elsewhere in the file. The maskReference tag in the example indicates that the curve JS.C.567 is suppressed.

NOTE 1: The S-100 GML format does not require that the object geometry (the Surface object in Figure X.X) be encoded inline as depicted in Figure X.X. It can be encoded elsewhere in the dataset as an separate spatial data object, like the curves.

NOTE 2: The '#' character preceding the identifier is an XML convention indicating that the part which follows is the identifier of an XML element inside an XML file (since no filename is specified, the convention is that the referenced element is in the same file). Note that the reference mechanism also allows references to objects in external files by prefixing the object identifier with the file name or URL of the external file.

[Question: Should this edition of S-100 constrain whether referenced spatial objects must be in the same file?]

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<S127:MilitaryPracticeArea gml:id="JS.MIPARE.676">
  <featureName><name>Jussland Naval Firing Area</name></featureName>
  <textContent><information><text>Example of masked spatial type</text></inform
  <theServiceHours xlink:href="#JS.SRVHRS.685"/>
  <geometry>
    <S100:surfaceProperty scaleMinimum="1000000" scaleMaximum="10000">
      <S100:maskReference xlink:href="#JS.C.567" xlink:role="suppressed"/>
      <S100:Surface gml:id="JS.MIPARE.676.S.1" srsDimension="2" srsName="u
        <gml:patches><gml:PolygonPatch><gml:exterior>
          <gml:Ring>
            <gml:curveMember xlink:href="#JS.C.123"/>
            <gml:curveMember xlink:href="#JS.C.567"/>
          </gml:Ring>
        </gml:exterior></gml:PolygonPatch></gml:patches>
      </S100:Surface>
    </S100:surfaceProperty>
  </geometry>
</geometry>

```

Figure X.X Example of masking in the GML format.

Other

The S-100 GML profile will need to be updated to add the masking reference type. **Validation rules will need to be defined to check the validity of references to masked spatial primitives. These rules should be added to the generic S-100 validation tests.** Product specifications which use masked spatial types will need to add these validation rules either individually or by incorporating a common set of validation rules (this common set is as yet not formally defined, and exists only informally for certain NIPWG specifications).

Change Proposal Justification

Fills an implementor / test-bed request to describe how masked spatial types are indicated in S-100 GML format datasets. S-100 WG discussions added truncated spatial types to this request.

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.