

Paper for Consideration by S-100WG

Revision of Part 5 Feature Catalogue

Submitted by:	Teledyne CARIS
Executive Summary:	Enhance Feature and Information bindings to allow a binding to a list of possible objects
Related Documents:	S-100 Edition 4.0.0 Part 5.
Related Projects:	S-101 DCEG Improve validation and management of Associations in S-100

Introduction / Background

The intention of this proposal is to improve the ability to construct, manage and validate feature and information associations.

Analysis/Discussion

In the current implementation it is difficult to define and constrain the associations to suit the needs. The existing feature catalogue only works in some cases and simply does not support several use cases.

Use case 1

Need to define at least one association of a specific role which can related to one of many possible objects.

e.g. An equipment feature is to be associated with exactly on Structure object from a choice of structure objects

Role	RoleType	Multiplicity	Association	Associated Object Candidates
supportedBy	association	1,1	StructureEquipment	BeaconCardinal, BeaconIsolatedDanger, BeaconLateral, BeaconSafeWater, BeaconSpecialPurposeGeneral, Bridge, Building, BuoyCardinal, BuoyEmergencyWreckMarking, BuoyInstallation, BuoyIsolatedDanger, BuoyLateral, BuoySafeWater, BuoySpecialPurposeGeneral, Conveyor, Crane, FishingFacility, FloatingDock, FortifiedStructure, Hulk, Landmark, LightFloat, LightVessel, MooringWarpingFacility, OffshorePlatform, Pile, PipelineOverhead, Pontoon, PylonBridgeSupport, ShorelineConstruction, SiloTank, SpanFixed, SpanOpening, WindTurbine

Use case 2

Certain components of an aggregation are necessary but other components are optional.

Bridge Object. Needs to have at least one of span fixed or span opening and at least 2 supports.

Proposed change to Part 5

Note: FOR REASONS OF ECONOMY, DELEGATES ARE KINDLY REQUESTED TO BRING THEIR OWN COPIES OF THE DOCUMENTS TO THE MEETING

S-100 Part 5 Figure 5-A-1 Feature Catalogue UML diagram.

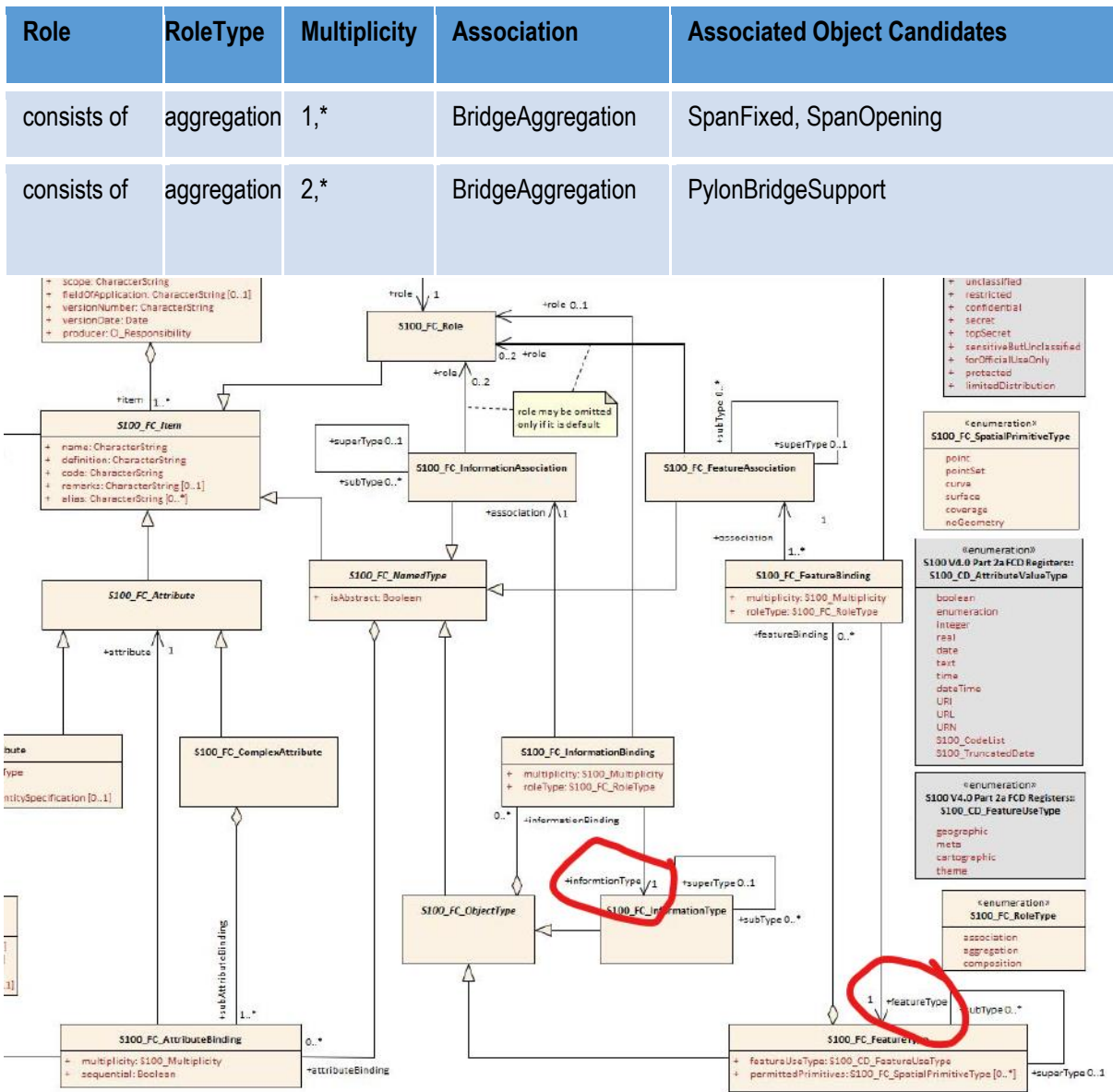


Figure 5-A-1. Feature Catalogue — UML Model

In S100_FC_FeatureBinding enhance the multiplicity of the featureType member to allow 1 or many feature types to be listed as potential candidates for the specific association binding. Existing Feature Catalogues with only one featureType in each binding will still be valid.

Table 5-A-18 — S100_FC_FeatureBinding

Role Name	Name	Description	Mult	Type	Remarks
Class	S100_FC_FeatureBinding	Class describing the relationship from one feature type to another feature type by means of a feature association	-	-	
Attribute	multiplicity	Multiplicity defining how many instances of the target feature type can be linked to one instance of the source feature type	1	S100_Multiplicity	
Attribute	roleType	The nature of the association end	1	S100_FC_RoleType	
Role	featureType	The target feature type	1	S100_FC_FeatureType	
Role	role	The role used for the binding. It must be part of the association used for the binding and defines the end of the association	1	S100_FC_Role	
Role	association	The association used for the binding	1	S100_FC_FeatureAssociation	

In S100_FC_InformationBinding enhance the multiplicity of the informationType member to allow 1 or many information types to be listed as potential candidates for the specific association binding. Existing Feature Catalogues with only one informationType in each binding will still be valid.

Table 5-A-17 — S100_FC_InformationBinding

Role Name	Name	Description	Mult	Type	Remarks
Class	S100_FC_InformationBinding	Class describing the use of an information type by a named type	-	-	
Attribute	multiplicity	Multiplicity defining how many instances of the target information type can be linked to one instance of the named type	1	S100_Multiplicity	
Attribute	roleType	The nature of the association end	1	S100_FC_RoleType	
Role	role	The role used for the binding. It must be part of the association used for the binding and defines the end of the association	0..1	S100_FC_Role	
Role	association	The association used for the binding, defining also the role	1	S100_FC_InformationAssociation	
Role	informationType	The target information type	1	S100_FC_InformationType	

In the Feature catalogue schema S100FC.XSD file apply the changes as described above.
Change the maxOccurs of featureType within S100_FC_FeatureBinding to maxOccurs="unbounded"

```
<xs:element name="featureType" type="S100FC:Reference" maxOccurs="unbounded" minOccurs="1"/>
```

Change the maxOccurs of informationType within S100_FC_InformationBinding to maxOccurs="unbounded"

```
<xs:element name="informationType" type="S100FC:Reference" maxOccurs="unbounded" minOccurs="1"/>
```

Conclusions

This is a fixing change which will resolve significant difficulties in modelling of associations without breaking existing feature catalogues.

Recommendations

Accept this to be included into S-100 Edition 5.

Justification and Impacts

This will facilitate the creation and constraints needed to support S-101 and other product specs which use associations.

Action Required of S100WG

The S-100WG is asked to

1. Consider the aims and content of the proposal for S-100 Part 5 Feature Catalogue
2. Support this minor addition to Part 5 of S-100 in the forthcoming edition 5.0.0 in order to greatly simplify feature catalogue creation and maintenance as well as improve the quality of the data being produced.