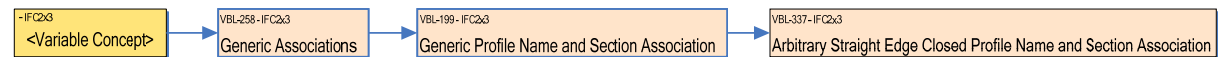


IFC Release Specific Concept Description (IFC2x3)

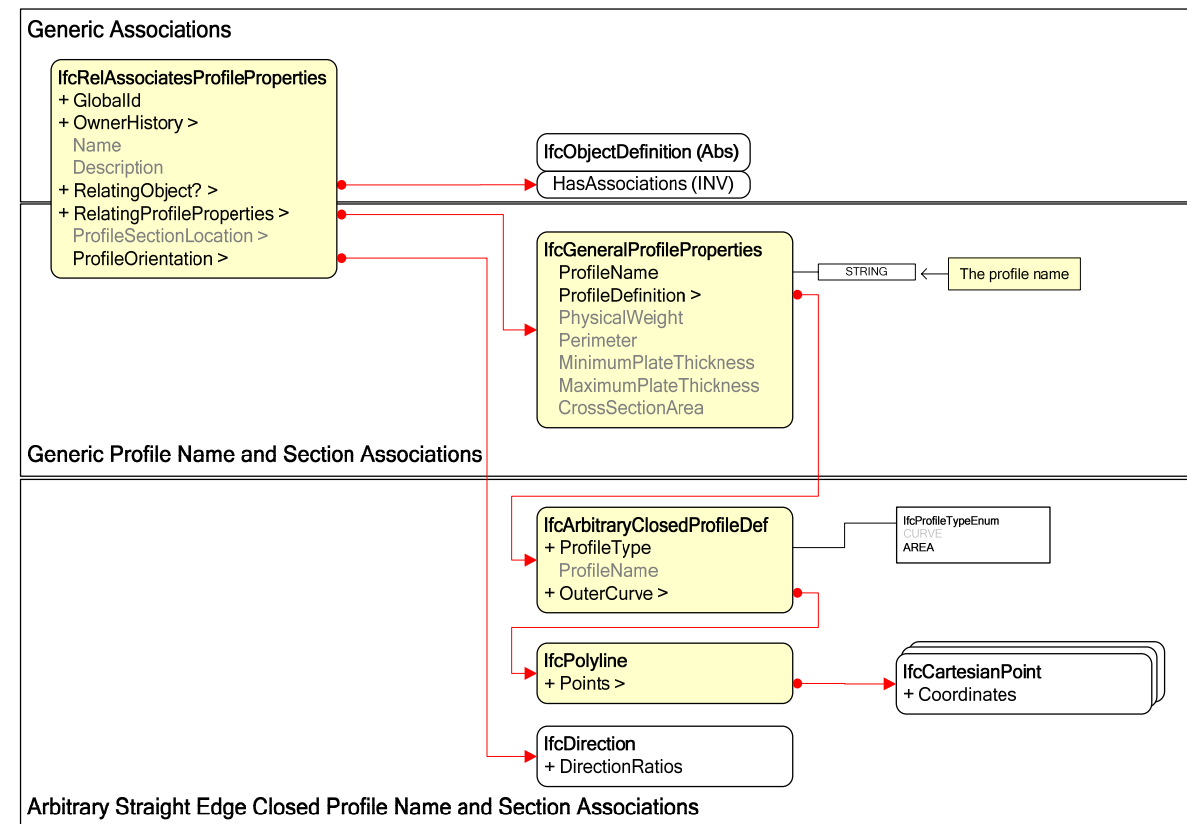
Arbitrary Straight Edge Closed Profile Name and Section Associations

Reference	VLB-337	Version	2	Status	Proposal
Relationships					
History	Created 16.3.2007, improved 28.9.2007				
Authors	Sakari Lehtinen				
Document Owner	Virtual Building Laboratory @ TUT (sakari.lehtinen@tut.fi)				

Usage in view definition diagram



Instantiation diagram



Implementation agreements

IfcRelAssociatesProfileProperties

Attribute	Implementation agreements
GlobalId	Providing a GUID is mandatory, but the GUID is allowed to change.
OwnerHistory	Providing an OwnerHistory is mandatory, but it is allowed to use dummy data.
Name	Reserved.
Description	Reserved.
RelatedObjects	N/A
RelatingProfileProperties	Must be IfcGeneralProfileProperties.
ProfileSectionLocation	Not used.
ProfileOrientation	For IfcStructuralCurveMember it is a rotation about the longitudinal axis of the underlying curve, the x axis is determined by a line from the start vertex to the end vertex.
	If the longitudinal axis is not parallel to the structural z axis of the structural

coordinate system of the analysis model, i.e. the curve member is a beam (or non-vertical member), the ProfileOrientation defaults to [0.,0.,1.] (if the z axis is not orthogonal to the x axis, an adjustment is made to maintain orthogonality). The β angle is then measured from the structural z axis to determine the location of the structural z axis of the profile.

If the longitudinal axis is parallel to the structural z axis of the structural coordinate system of the analysis model, i.e. the curve member is a column, the ProfileOrientation defaults to [1.,0.,0.]. The β angle is then measured from the structural x axis to determine the location of the structural z axis of the profile. If the ProfileOrientation attribute is given as an IfcDirection, it would default to:
For 'beams' as [0., sin β , cos β]
For 'columns' as [cos β , -sin β , 0.]

IfcGeneralProfileProperties

Attribute	Implementation agreements
ProfileName	The profile name associated to the structural member is entered here.
ProfileDefinition	Must be IfcArbitraryClosedProfileDef.
PhysicalWeight	Not used.
Perimeter	Not used.
MinimumPlateThickness	Not used.
MaximumPlateThickness	Not used.
CrossSectionArea	Not used.

IfcArbitraryClosedProfileDef

Attribute	Implementation agreements
ProfileType	Must be AREA.
ProfileName	Not used.
OuterCurve	Must be IfcPolyline.

IfcPolyline

Attribute	Implementation agreements
Dim	N/A
Points	The polyline must be closed. The given first and the last point must be the same. Coordinated must have three dimensions.

Additional information

P21 example

```
#246= IFCSTRUCTURALCURVEMEMBER('2IIEkk$zf4khCF1qWGDGVP',#28,'1',$,$,#257,#274,.NOTDEFINED.);
#255= IFCCARTESIANPOINT((6.,0.,-2.2737368E-15));
#257= IFCLLOCALPLACEMENT($,#263);
#259= IFCDIRECTION((0.,-1.,0.));
#261= IFCDIRECTION((1.,0.,0.));
#263= IFCAxis2PLACEMENT3D(#255,#259,#261);
#264= IFCCARTESIANPOINT((6.,0.,-2.2737368E-15));
#266= IFCVERTEXPPOINT(#264);
#267= IFCCARTESIANPOINT((10.,0.,-2.2737368E-15));
#269= IFCVERTEXPPOINT(#267);
#369= IFCDIRECTION((0.,0.,1.));
#373= IFCCARTESIANPOINT((8.,0.,0));
#377= IFCAxis2PLACEMENT3D(#373,#369,$);
#380= IFCCIRCLE(#377,2.);
#383= IFCTRIMMEDCURVE(#380,($266,$),($269,$),.F.,$);
#270= IFCEGECURVE(#266,#269,#383,.T.);
#271= IFCTOPOLOGYREPRESENTATION(#43,$,'Edge',($270));
#274= IFCPRODUCTDEFINITIONSHAPE($,$,($271));

#116= IFCCARTESIANPOINT((-0.2,-0.2));
#117= IFCCARTESIANPOINT((0.2,-0.2));
#118= IFCCARTESIANPOINT((0.2,0.2));
#119= IFCCARTESIANPOINT((-0.2,0.2));
#120= IFCPOLYLINE((#116,#117,#118,#119,#116));
#121= IFCARBITRARYCLOSEDPROFILEDEF(.AREA.,$,#120);
#122= IFCGENERALPROFILEPROPERTIES('HEA300',#121,$,$,$,$);
#288= IFCRELASSOCIATESPROFILEPROPERTIES('2h1ejvQrbc2uzDRESGxamy',#28,$I$,$($246),#122,$);
```

This document uses the official IFC Model View Definition Format version 1.1.0. of the IAI (www.iai-international.org)
The content of this document has to be certified by the IAI before becoming part of an official IFC Model View Definition.

