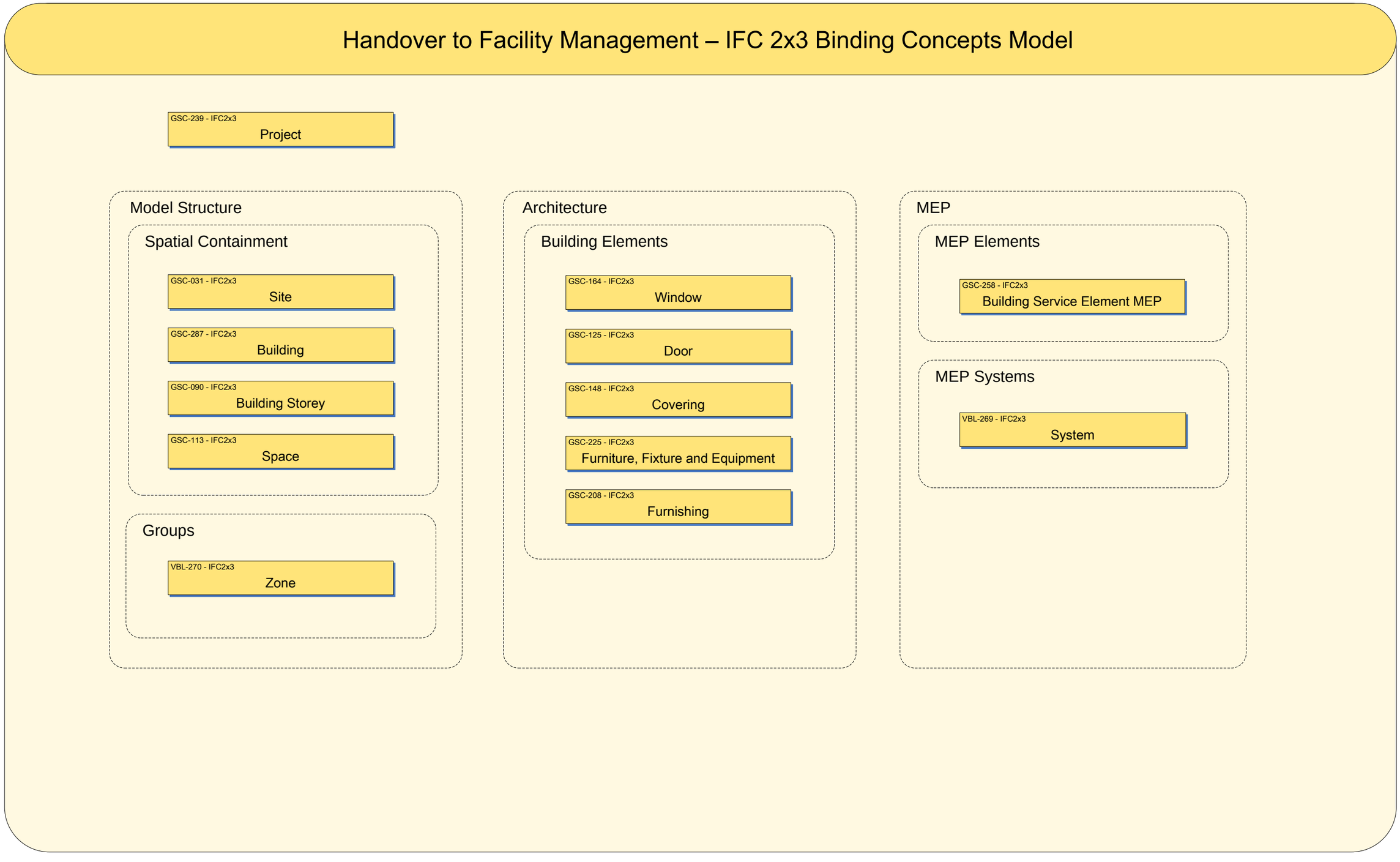
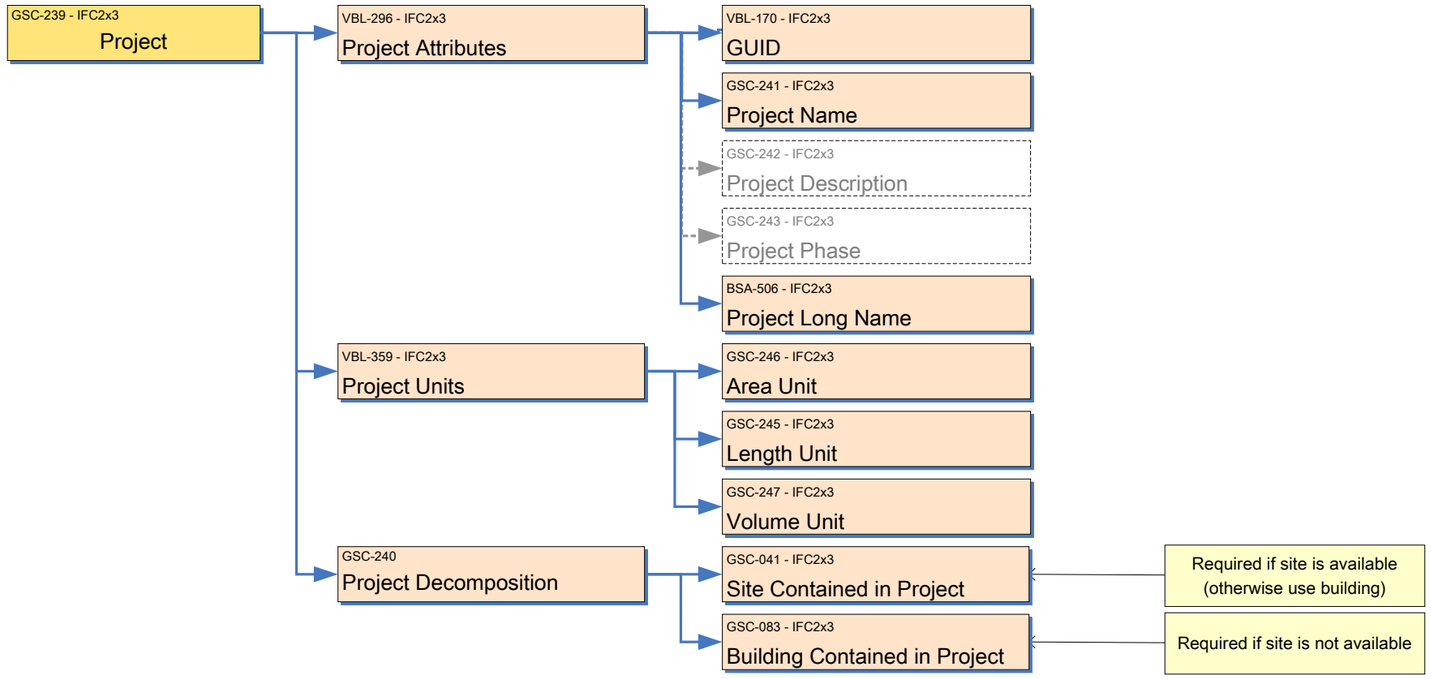
IFC Model View Definition Diagram : [GSC-001-Generic] Handover to FM

APPLICATION NAME	APP. VERSION	EXCHANGE TYPE	DIAGRAM AUTHORS
Generic		Export	Thomas Liebich, Matthias Weise



IFC Model View Definition Diagram : Project IFC2x3

VIEW ID	VIEW NAME	APPLICATION NAME	APP. VERSION	EXCHANGE TYPE	DIAGRAM STATUS	DIAGRAM VERSION	DIAGRAM DATE	DIAGRAM AUTHORS
GSC-001	Handover to FM	Generic		Export	Candidate	1.1	06.10.2009	Thomas Liebich, Matthias Weise



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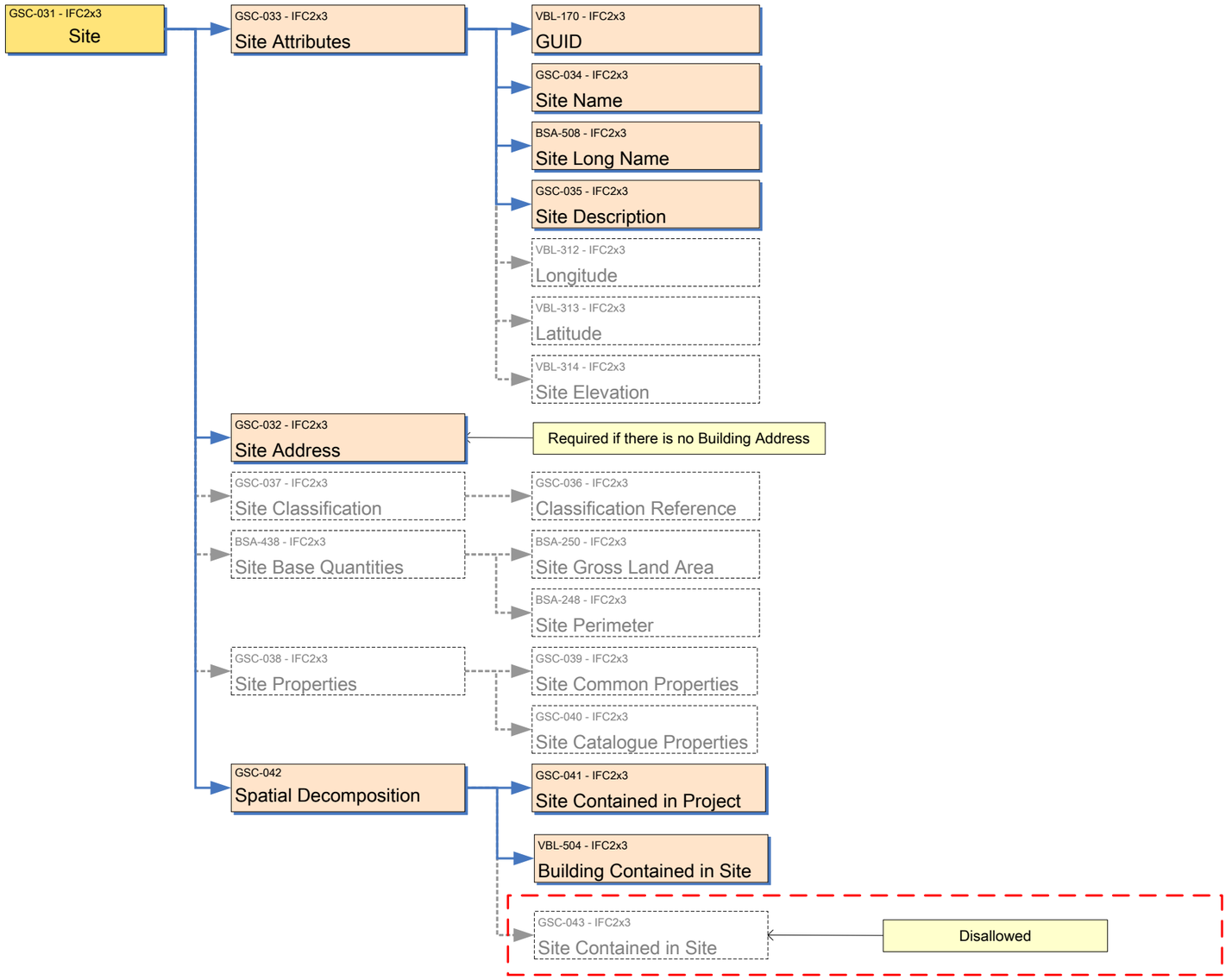
IFC Model View Definition Diagram : Site IFC2x3

VIEW ID	VIEW NAME	APPLICATION NAME	APP. VERSION	EXCHANGE TYPE	DIAGRAM STATUS	DIAGRAM VERSION	DIAGRAM DATE	DIAGRAM AUTHORS
GSC-001	Handover to FM	Generic		Export	Candidate	1.1	06.10.2009	Thomas Liebich, Matthias Weise



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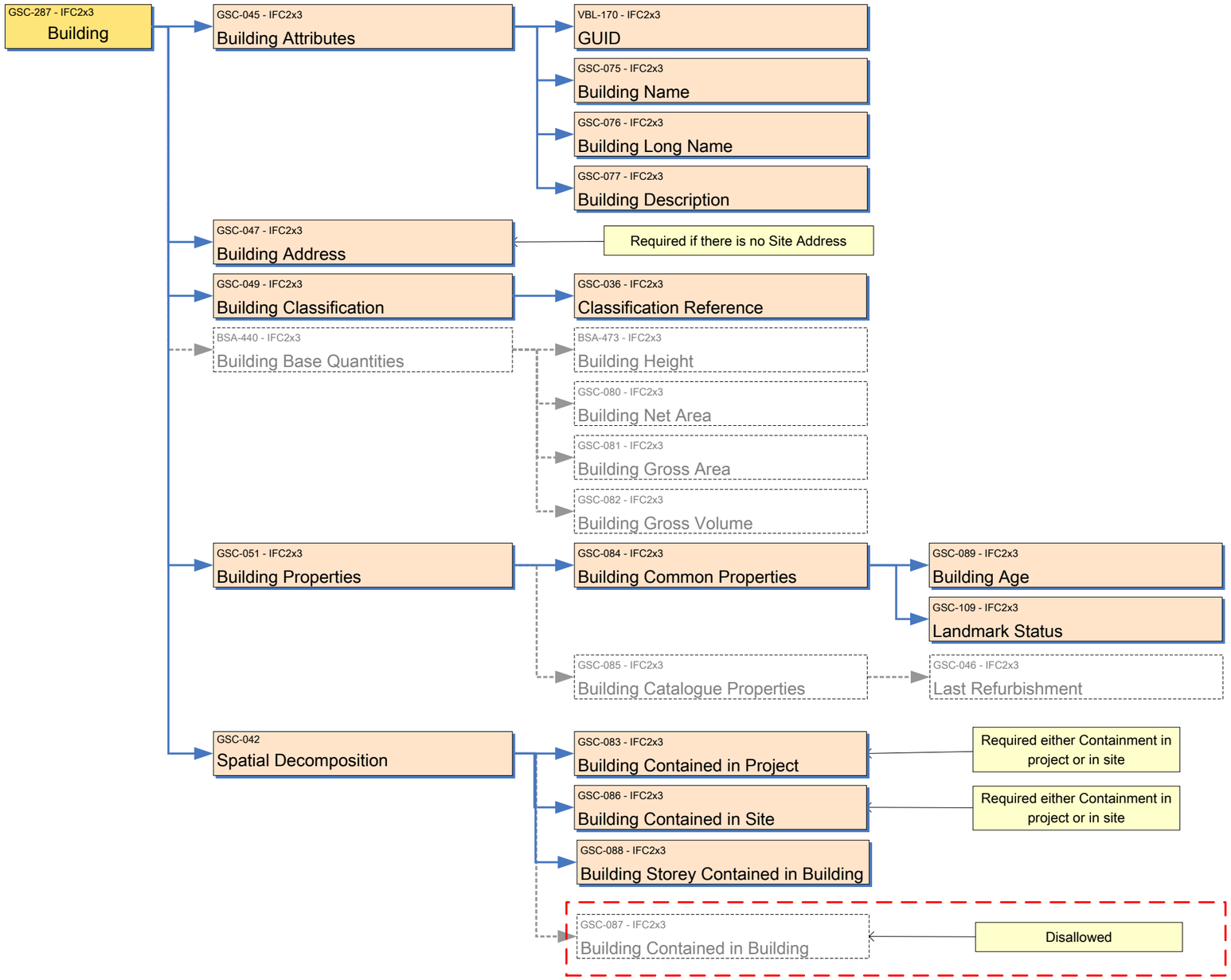
IFC Model View Definition Diagram : Building IFC2x3

VIEW ID	VIEW NAME	APPLICATION NAME	APP. VERSION	EXCHANGE TYPE	DIAGRAM STATUS	DIAGRAM VERSION	DIAGRAM DATE	DIAGRAM AUTHORS
GSC-001	Handover to FM	Generic		Export	Candidate	1.1	06.10.2009	Thomas Liebich, Matthias Weise



Document owner German Speaking Chapter

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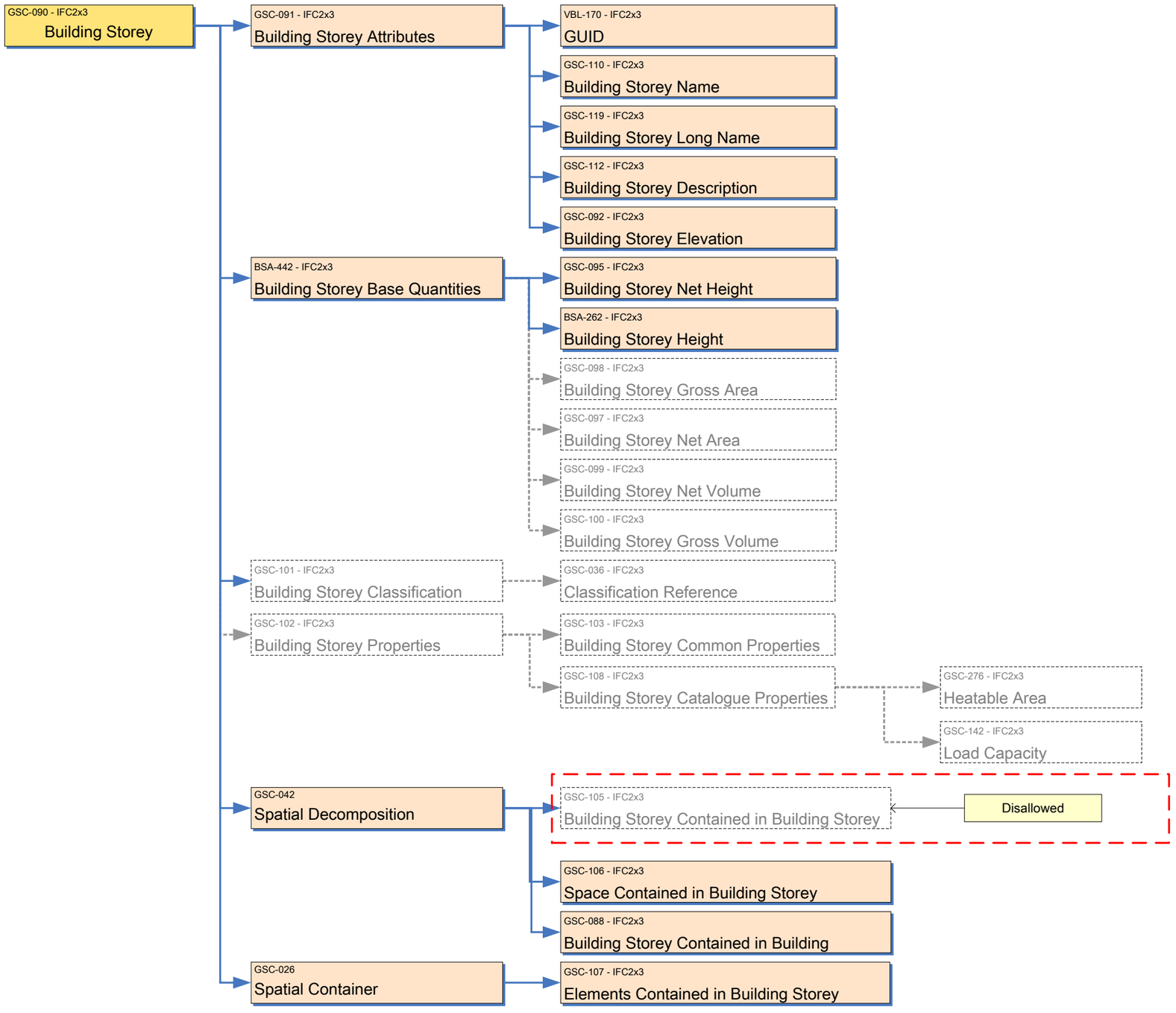
IFC Model View Definition Diagram : Building Storey IFC2x3

VIEW ID	VIEW NAME	APPLICATION NAME	APP. VERSION	EXCHANGE TYPE	DIAGRAM STATUS	DIAGRAM VERSION	DIAGRAM DATE	DIAGRAM AUTHORS
GSC-001	Handover to FM	Generic		Export	Candidate	1.1	06.10.2009	Thomas Liebich, Matthias Weise



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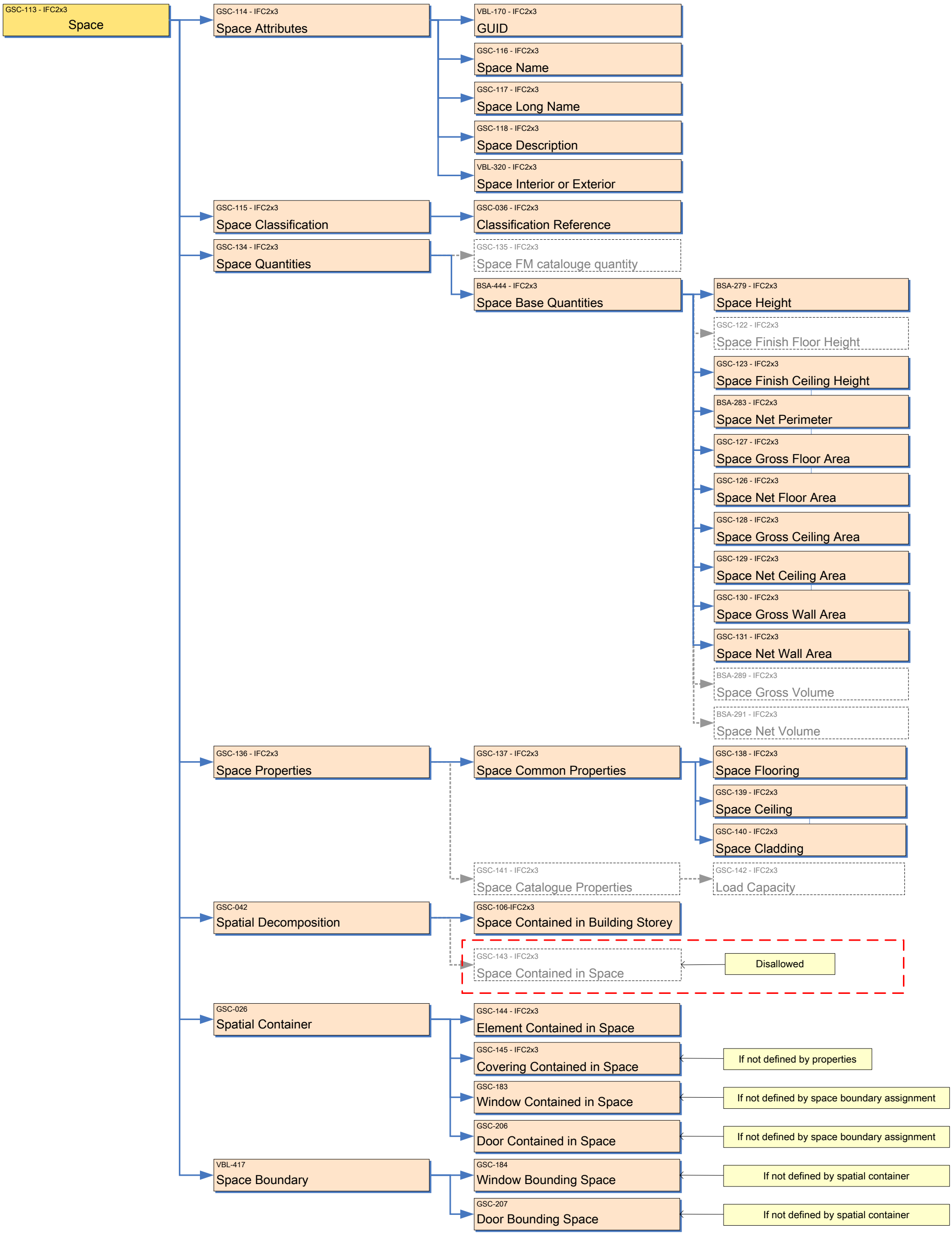
IFC Model View Definition Diagram : Space IFC2x3

VIEW ID	VIEW NAME	APPLICATION NAME	APP. VERSION	EXCHANGE TYPE	DIAGRAM STATUS	DIAGRAM VERSION	DIAGRAM DATE	DIAGRAM AUTHORS
GSC-001	Handover to FM	Generic		Export	Candidate	1.0	13.05.2009	Thomas Liebich, Matthias Weise



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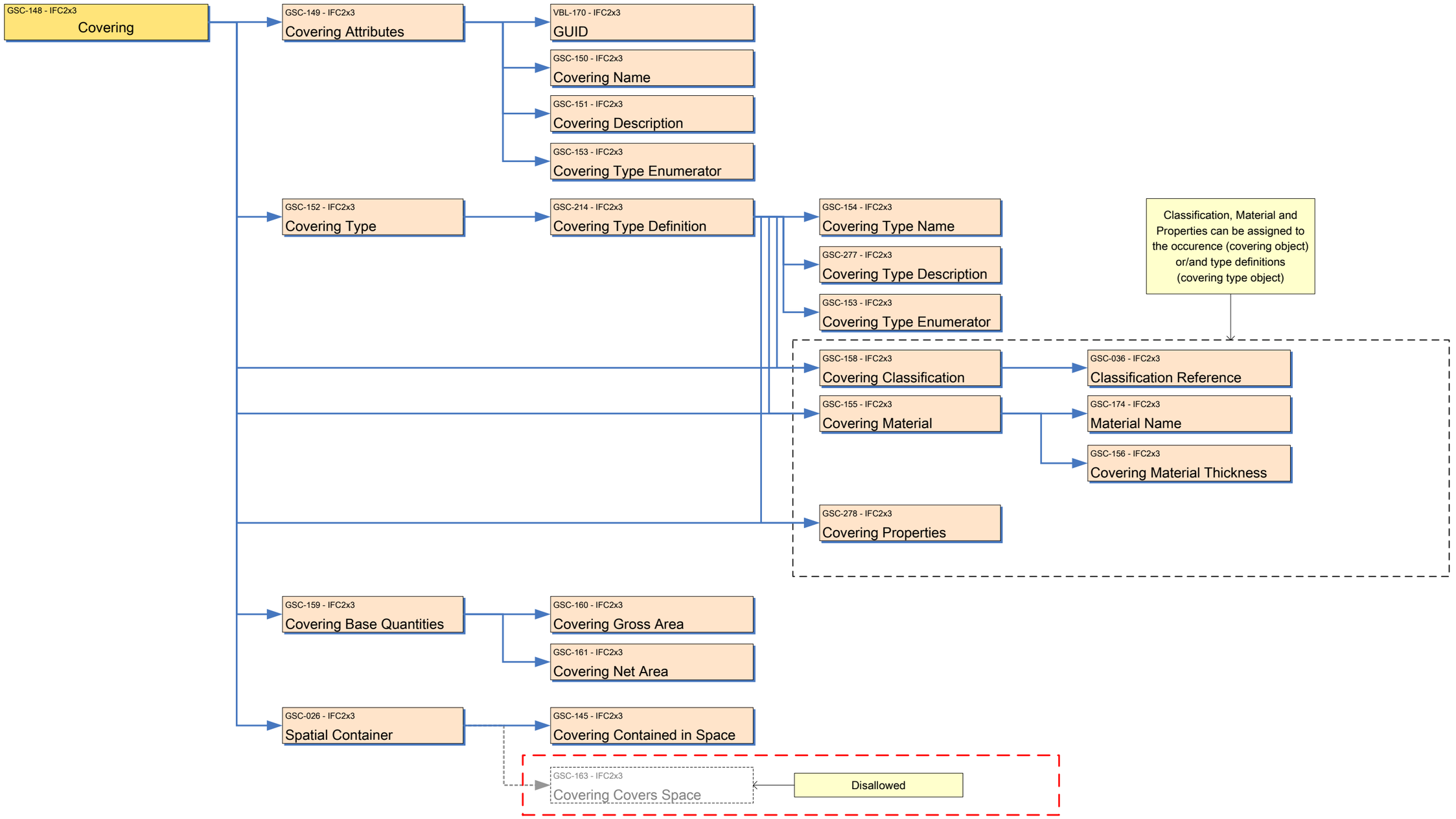
IFC Model View Definition Diagram : Covering IFC2x3

VIEW ID	VIEW NAME	APPLICATION NAME	APP. VERSION	EXCHANGE TYPE	DIAGRAM STATUS	DIAGRAM VERSION	DIAGRAM DATE	DIAGRAM AUTHORS
GSC-001	Handover to FM	Generic		Export	Candidate	1.1	6.10.2009	Thomaas Liebich, Matthias Weise



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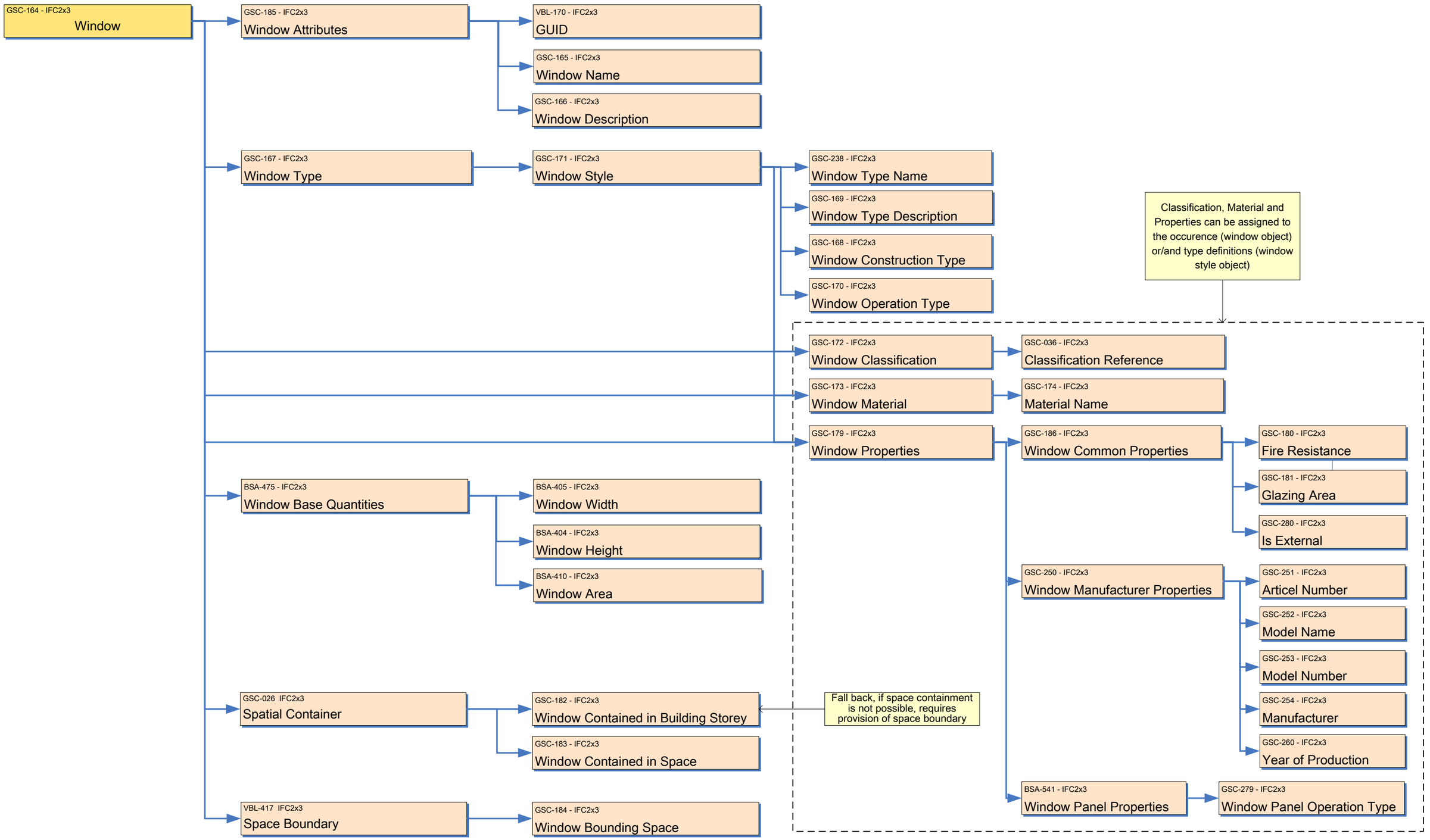
IFC Model View Definition Diagram : Window IFC2x3

VIEW ID	VIEW NAME	APPLICATION NAME	APP. VERSION	EXCHANGE TYPE	DIAGRAM STATUS	DIAGRAM VERSION	DIAGRAM DATE	DIAGRAM AUTHORS
GSC-001	Handover to FM	Generic		Export	Candidate	1.1	06.10.2009	Thomas Liebich, Matthias Weise



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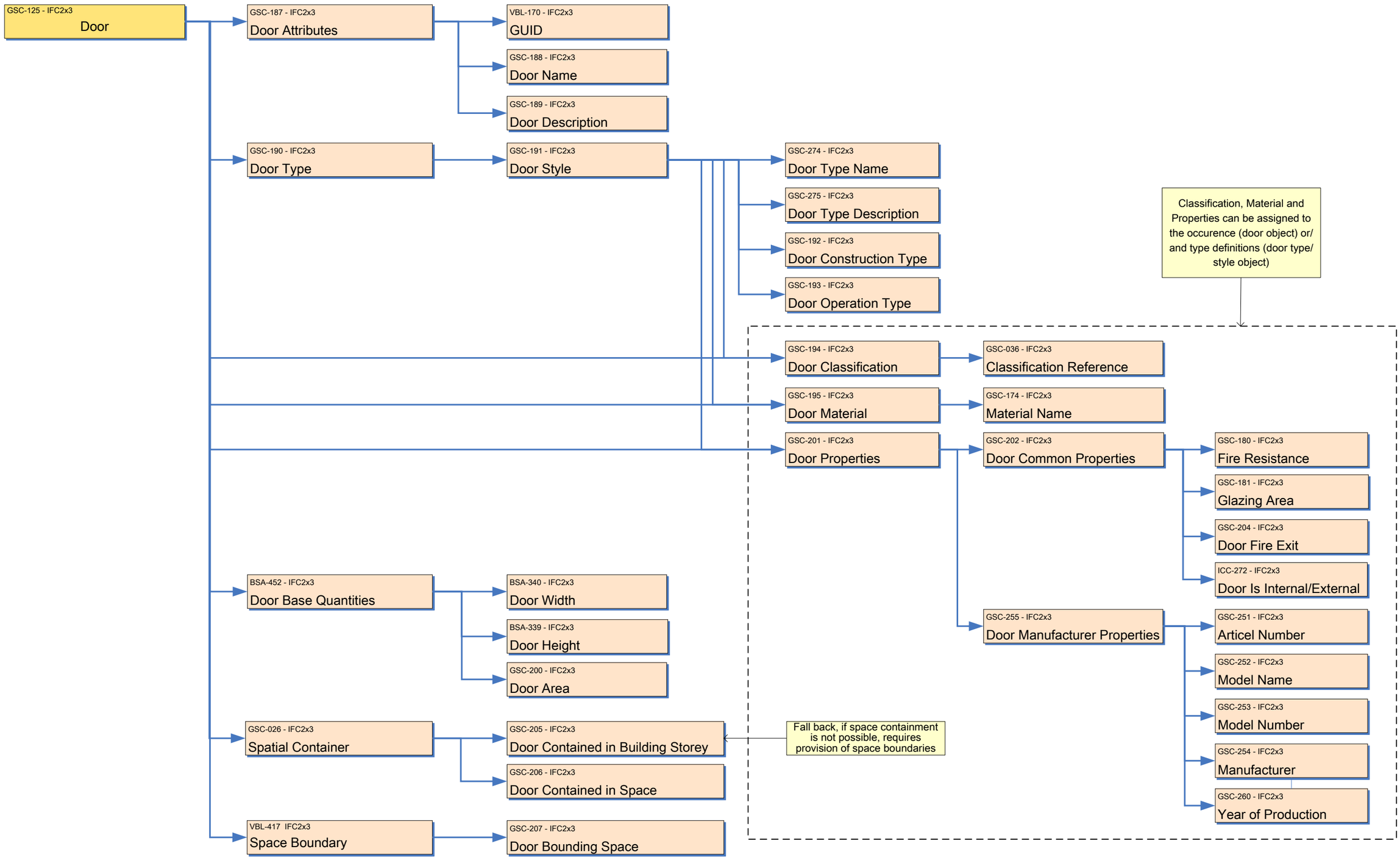
IFC Model View Definition Diagram : Door IFC2x3

VIEW ID	VIEW NAME	APPLICATION NAME	APP. VERSION	EXCHANGE TYPE	DIAGRAM STATUS	DIAGRAM VERSION	DIAGRAM DATE	DIAGRAM AUTHORS
GSC-001	Handover to FM	Generic		Export	Candidate	1.1	06.10.2009	Thomas Liebich, Matthias Weise



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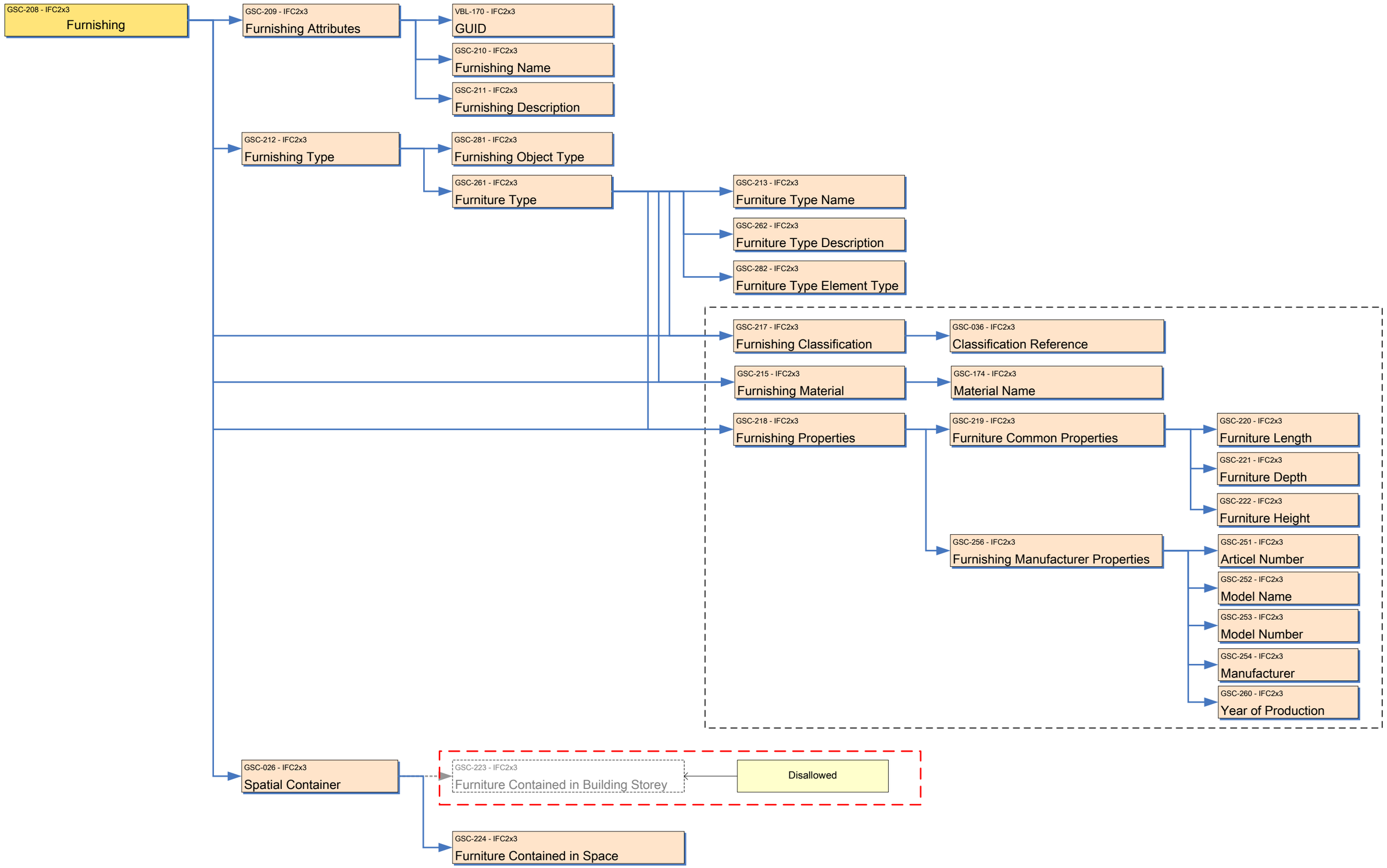
IFC Model View Definition Diagram : Furnishing IFC2x3

VIEW ID	VIEW NAME	APPLICATION NAME	APP. VERSION	EXCHANGE TYPE	DIAGRAM STATUS	DIAGRAM VERSION	DIAGRAM DATE	DIAGRAM AUTHORS
GSC-001	Handover to FM	Generic		Export	Candidate	1.1	06.10.2009	Thomas Liebich, Matthias Weise



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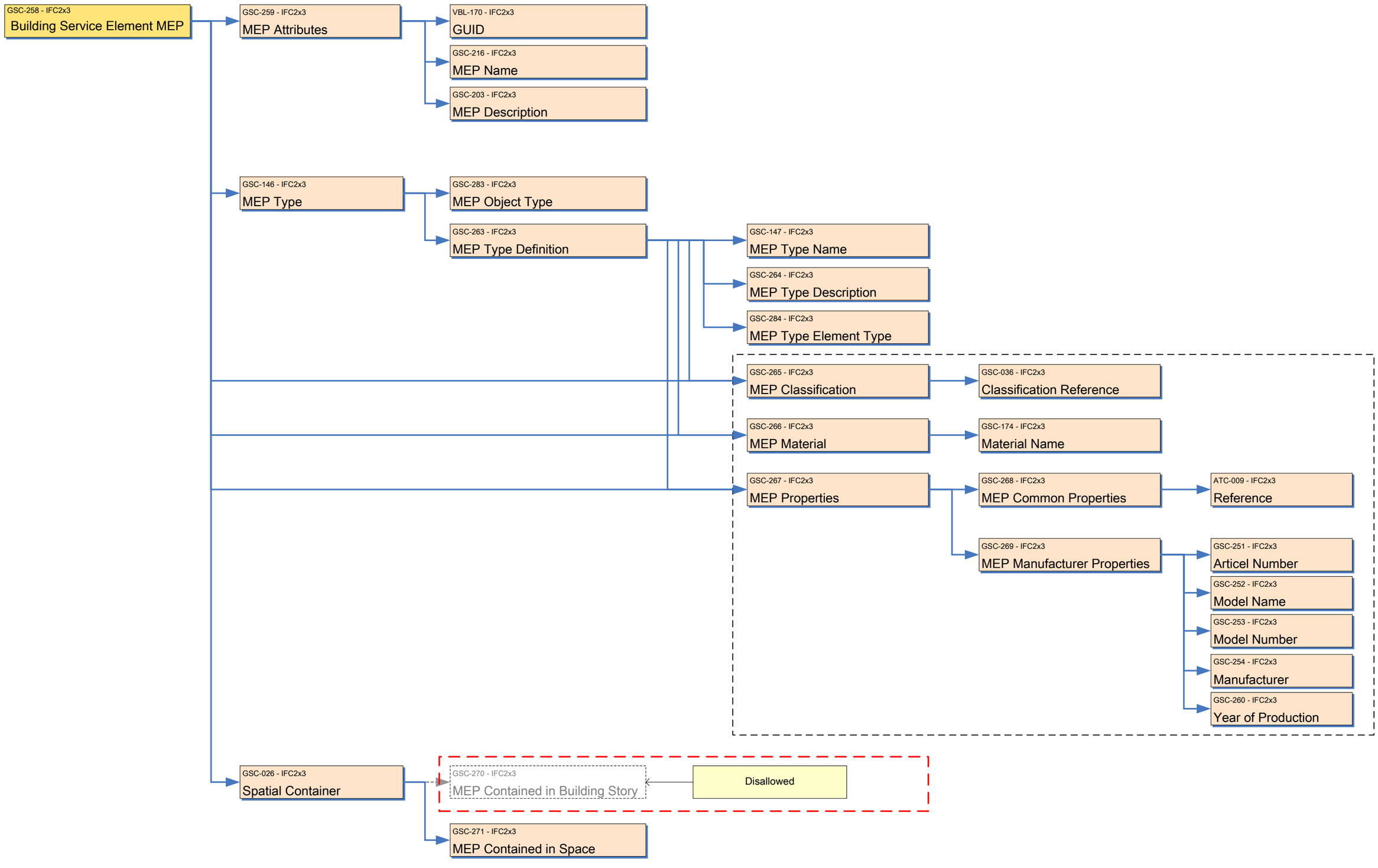
IFC Model View Definition Diagram : Building Service Element MEP IFC2x3

VIEW ID	VIEW NAME	APPLICATION NAME	APP. VERSION	EXCHANGE TYPE	DIAGRAM STATUS	DIAGRAM VERSION	DIAGRAM DATE	DIAGRAM AUTHORS
GSC-001	Handover to FM	Generic		Export	Candidate	1.1	06.10.2009	Thjomas Liebich, Matthias Weise



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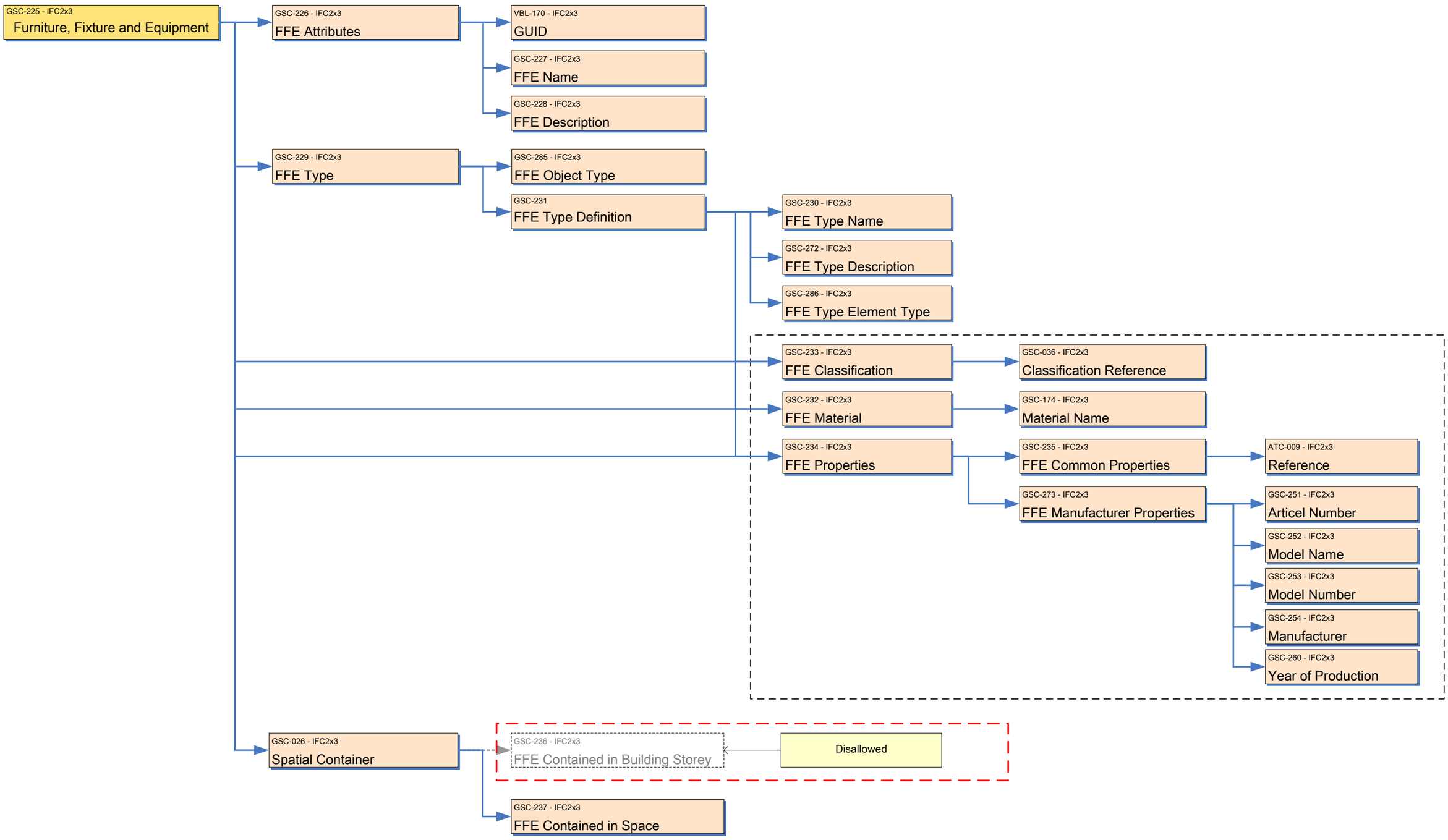
IFC Model View Definition Diagram : Furniture, Fixture and Equipment IFC2x3

VIEW ID	VIEW NAME	APPLICATION NAME	APP. VERSION	EXCHANGE TYPE	DIAGRAM STATUS	DIAGRAM VERSION	DIAGRAM DATE	DIAGRAM AUTHORS
GSC-001	Handover to FM	Generic		Export	Candidate	1.1	06.10.2009	Thomas Liebich, Matthias Weise



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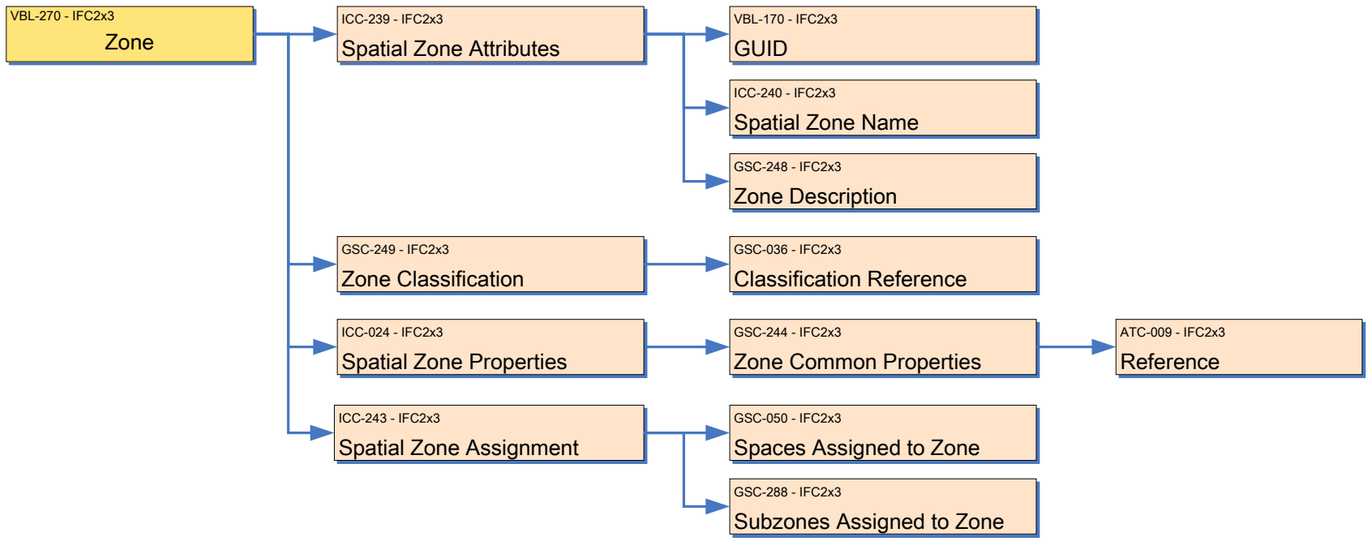
IFC Model View Definition Diagram : Zone IFC2x3

VIEW ID	VIEW NAME	APPLICATION NAME	APP. VERSION	EXCHANGE TYPE	DIAGRAM STATUS	DIAGRAM VERSION	DIAGRAM DATE	DIAGRAM AUTHORS
GSC-001	Handover to FM	Generic		Export	Candidate	1.1	06.10.2009	Matthias Weise



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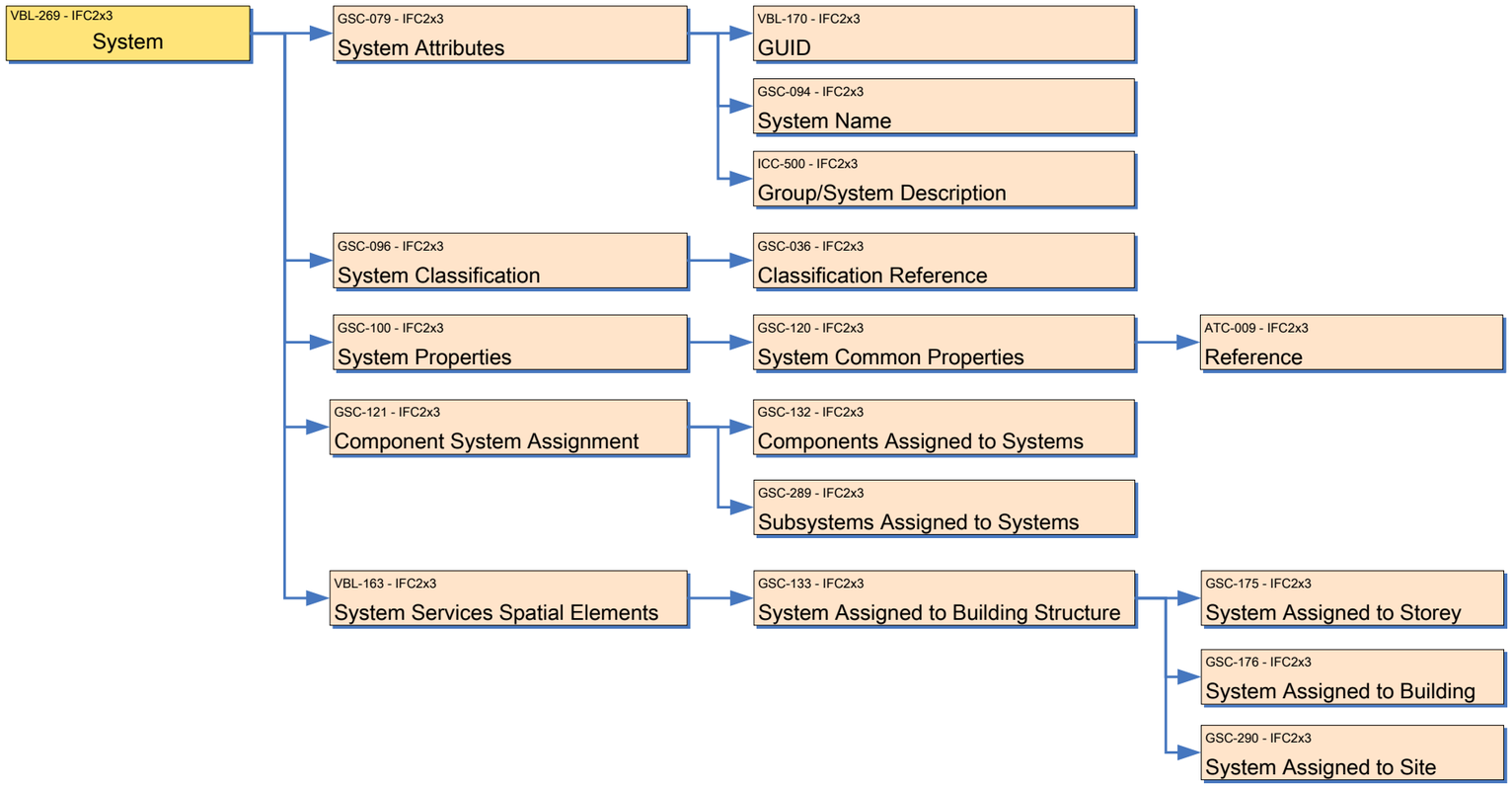
IFC Model View Definition Diagram : System IFC2x3

VIEW ID	VIEW NAME	APPLICATION NAME	APP. VERSION	EXCHANGE TYPE	DIAGRAM STATUS	DIAGRAM VERSION	DIAGRAM DATE	DIAGRAM AUTHORS
GSC-001	Handover to FM	Generic		Export	Candidate	1.1	06.10.2009	Matthias Weise



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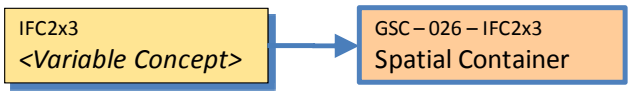
IFC Release Specific Concept Description (IFC2x3)

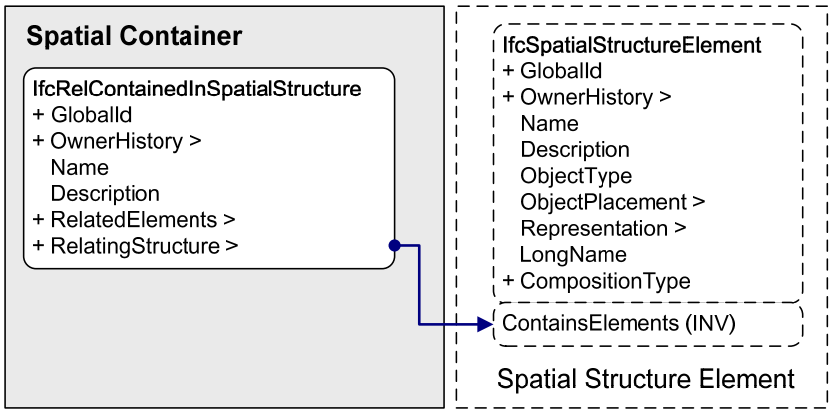
Spatial Container

Reference	GSC-026	**Version**	1.0	**Status**	Proposal
Relationships					
History	9th June, 2008				
Authors	Matthias Weise (mw@aec3.de)				
Document Owner	AEC3 (with friendly support by the German research initiative “ZukunftBau”)				

Usage in view definition diagram



Instantiation diagram



Please note that *IfcSpatialStructureElement* is an abstract supertype of the concepts *“Site”*, *“Building”*, *“BuildingStorey”* and *“Space”*. Thus, it cannot be instantiated as suggested in the instantiation diagram.

Implementation agreements

IfcRelContainedInSpatialStructure

Attribute	Implementation agreements
GlobalId	Must be provided, but is allowed to change
OwnerHistory	Must be provided, but may contain (reusable) dummy value
Name	Reserved
Description	Reserved
RelatedElements	Must be provided - set of products (subtype of IfcProduct) that are contained in the relating structure
RelatingStructure	Must be provided – the spatial structure element that contains the elements

Example (spf)

```
#10=IFCSPACE('sIYIqQKx4TkF9N05m0d8oG', #2, 'EG.001', $, 'Room', $, $, 'Room 001',
      .ELEMENT., .INTERNAL., 0.0);
#11=IFCBUILDINGELEMENTPROXY('AfvlGFoY4ToALtbzm0d8Fm', #2, 'Sun protection', $, $,
      $, $, $, $);
#12=IFCRELCONTAINEDINSPATIALSTRUCTURE('cwpeaWRq4TsV1W5nm0d8F0', #2, $, $,
      (#11), #10);
#2=IFCOWNERHISTORY(#5, #6, $, .ADDED., 0, $, $, 1207828354);
#3=IFCPERSON('Matthias Weise', '', '', $, $, $, $, $);
#4=IFCORGANIZATION('', '', '', $, $);
#5=IFCPERSONANDORGANIZATION(#3, #4, $);
#6=IFCAPPLICATION(#4, 'IFC-Application X', 'IFC-Exporter V2.3', 'Company Y');
```

All values that are needed to define a spatial container are marked with bold letters.

The example shows a proxy element (#11) that is contained in a room (#10), whereas the proxy element is an example for the *"Variable Concept"* and the room is an example for the *"Spatial Structure Element"*. Both elements are connected by the relationship *IfcRelContainedInSpatialStructure* (#12).

Example (ifcXML)

```
<IfcSpace id="ID10">
	<GlobalId>sIYIqQKx4TkF9N05m0d8oG</GlobalId>
	<OwnerHistory>
		<IfcOwnerHistory xsi:nil="true" ref="ID2"/>
	</OwnerHistory>
	<Name>EG.001</Name>
	<ObjectType>Room</ObjectType>
	<LongName>Room 001</LongName>
	<CompositionType>element</CompositionType>
	<InteriorOrExteriorSpace>internal</InteriorOrExteriorSpace>
	<ElevationWithFlooring>0.</ElevationWithFlooring>
</IfcSpace>
<IfcBuildingElementProxy id="ID11">
	<GlobalId>AfvlGFoY4ToALtbzm0d8Fm</GlobalId>
	<OwnerHistory>
		<IfcOwnerHistory xsi:nil="true" ref="ID2"/>
	</OwnerHistory>
	<Name>Sun protection</Name>
</IfcBuildingElementProxy>
<IfcRelContainedInSpatialStructure id="ID12">
	<GlobalId>cwpeaWRq4TsV1W5nm0d8F0</GlobalId>
	<OwnerHistory>
		<IfcOwnerHistory xsi:nil="true" ref="ID2"/>
	</OwnerHistory>
	<RelatedElements ex:cType="set">
		<IfcBuildingElementProxy pos="0" xsi:nil="true" ref="ID11"/>
	</RelatedElements>
	<RelatingStructure>
		<IfcSpace xsi:nil="true" ref="ID10"/>
	</RelatingStructure>
</IfcRelContainedInSpatialStructure>
<IfcOwnerHistory id="ID2">
	<OwningUser>
		<IfcPersonAndOrganization xsi:nil="true" ref="ID5"/>
	</OwningUser>
	<OwningApplication>
		<IfcApplication xsi:nil="true" ref="ID6"/>
	</OwningApplication>
	<ChangeAction>added</ChangeAction>
	<LastModifiedDate>0</LastModifiedDate>
	<CreationDate>1207828354</CreationDate>
</IfcOwnerHistory>
<IfcPerson id="ID3">
	<Id>Matthias Weise</Id>
	<FamilyName></FamilyName>
	<GivenName></GivenName>
</IfcPerson>
<IfcOrganization id="ID4">
	<Id></Id>
	<Name></Name>
	<Description></Description>
</IfcOrganization>
<IfcPersonAndOrganization id="ID5">
	<ThePerson>
		<IfcPerson xsi:nil="true" ref="ID3"/>
	</ThePerson>
	<TheOrganization>
		<IfcOrganization xsi:nil="true" ref="ID4"/>
	</TheOrganization>
</IfcPersonAndOrganization>
<IfcApplication id="ID6">
	<ApplicationDeveloper>
		<IfcOrganization xsi:nil="true" ref="ID4"/>
	</ApplicationDeveloper>
```

```
        <Version>IFC-Application X</Version>
        <ApplicationFullName>IFC-Exporter V2.3</ApplicationFullName>
        <ApplicationIdentifier>Company Y</ApplicationIdentifier>
 </IfcApplication>
```

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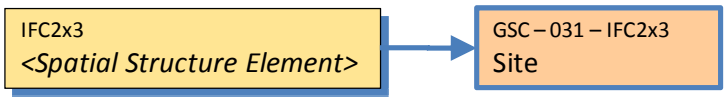
IFC Release Specific Concept Description (IFC2x3)

Site

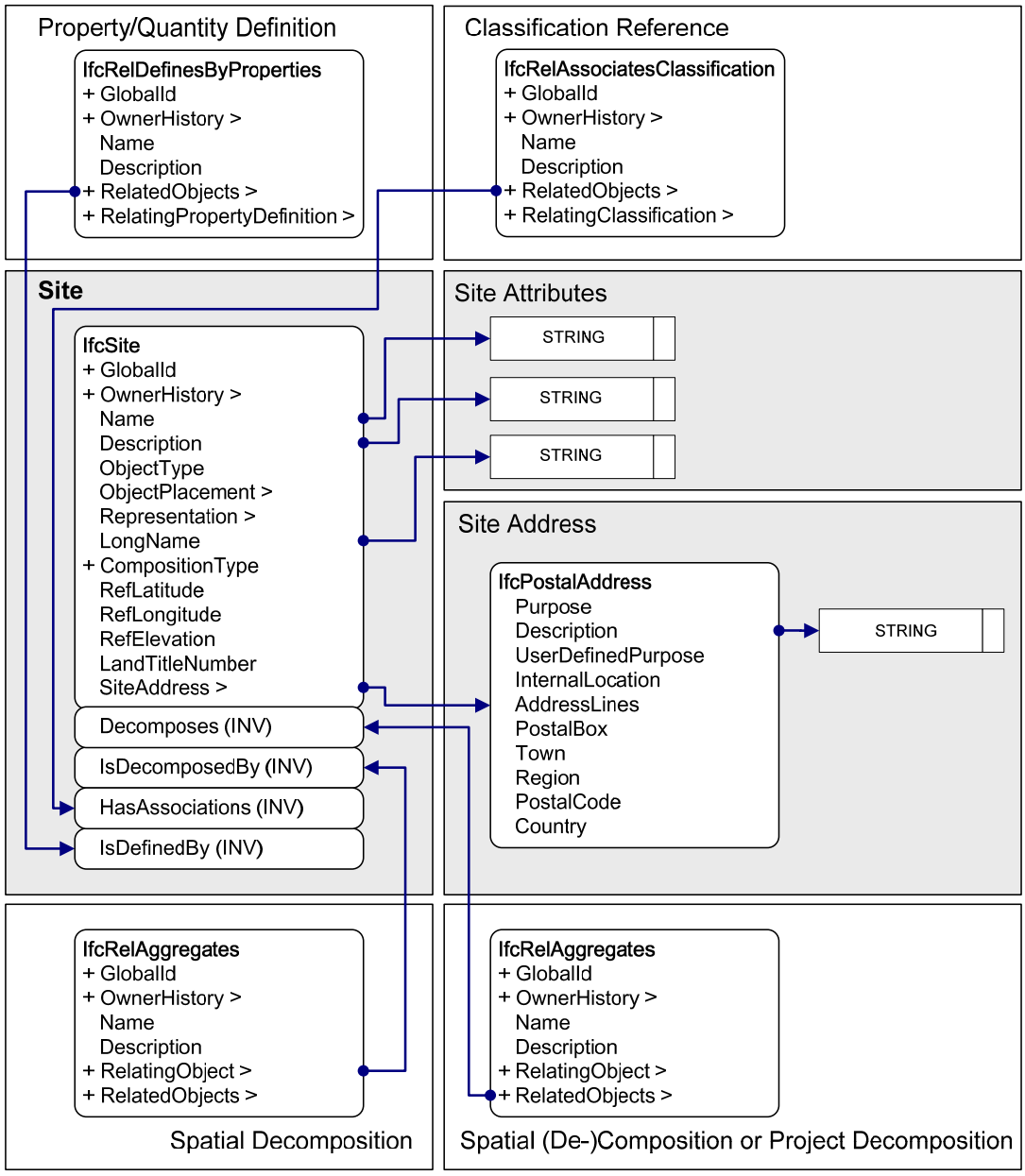
Reference	GSC-031	**Version**	1.0	**Status**	Proposal
Relationships					
History	9th June, 2008				
Authors	Matthias Weise (mw@aec3.de)				
Document Owner	AEC3 (with friendly support by the German research initiative “ZukunftBau”)				

Usage in view definition diagram



Please note that there might be further agreements for the *“Site”* concept that are not shown here. In particular, there might be separate concept definitions for specific properties, quantities and classifications.

Instantiation diagram



Implementation agreements

IfcSite

Attribute	Implementation agreements
GlobalId	Must be provided
OwnerHistory	Must be provided
Name	Short name of the site (may follows specific coding rules)
Description	Human readable name
Object Type	Reserved
Object Placement	Reserved
Representation	Reserved
LongName	Unique key of the site (full/long name)
Composition Type	Should be - COMPLEX, in case of a 'complex site' - ELEMENT, in case of an 'elementary site' - PARTIAL, in case of a 'partial site' Please note that the composition type restricts the spatial decomposition.
RefLatitude	No agreements needed
RefLongitude	No agreements needed
RefElevation	No agreements needed
LandTitleNumber	Reserved
SiteAddress	Postal address of the site (defined by IfcPostalAddress)
Decomposes (INV)	Reference to the parent site or the project
IsDecomposedBy (INV)	Reference to the child nodes (site or building) of the spatial structure
HasAssociations (INV)	Reserved
IsDefinedBy (INV)	Reference to properties or quantities

IfcPostalAddress

Attribute	Implementation agreements
Purpose	No agreements needed
Description	No agreements needed
UserDefinedPurpose	No agreements needed
InternalLocation	No agreements needed
AddressLines	No agreements needed
PostalBox	No agreements needed
Town	No agreements needed
Region	No agreements needed
PostalCode	No agreements needed
Country	No agreements needed

Example (spf)

```
#100= IFCSITE('1G217EQPv3OASE5ZNlFE5v',#2,'BF-J','Baufeld J',$,$,$,$,
      .ELEMENT.,(52,31,0),(13,24,0),$,$,#101);
#101= IFCPOSTALADDRESS(.SITE.,$,$,$,
      ('Dresdner Str.10', '01199 Dresden'),$,'Dresden',$,$,$);
#105= IFCPROJECT('0J$yPqHBD12v72y4qF6XcD',#2,'WHD',$,$,
      'Wohnhaus Dresden','Entwurfsplanung',(#10),#11);
#106= IFCBUILDING('30V5XJ5d5ApRzfhSGEj6Q2',#2,'NBH-Haus-J.1','Neues Bauen am Horn -
      Baufeld J - Haus 1',$,$,$,$,.ELEMENT.,$,$,$);
#107= IFCRELAGGREGATES('2kPxR9pkf4IhXHOhzu5khk',#2,'SiteContainer','SiteContainer
      For Buildings',#100,(#106));
#108= IFCRELAGGREGATES('3HOv58cYbDBAu7vMbay3W7',#2,'ProjectContainer',
```

```
        'ProjectContainer for Sites',#105,(#100));
 #2= IFCOWNERHISTORY(#5, #6, $, .ADDED., 0, $, $, 1207828354);
 #3= IFCPERSON('Matthias Weise', '', '', $, $, $, $, $);
 #4= IFCORGANIZATION('', '', '', $, $);
 #5= IFCPERSONANDORGANIZATION(#3, #4, $);
 #6= IFCAPPLICATION(#4, 'IFC-Application X', 'IFC-Exporter V2.3', 'Company Y');
 #10= IFCGEOMETRICREPRESENTATIONCONTEXT('Plan','Design',3,1.0000000E-5,#20,$);
 #11= IFCUNITASSIGNMENT((#16,#17,#18));
 #16= IFCSIUNIT(*,.LENGTHUNIT.,$,.METRE.);
 #17= IFCSIUNIT(*,.AREAUNIT.,$,.SQUARE_METRE.);
 #18= IFCSIUNIT(*,.VOLUMEUNIT.,$,.CUBIC_METRE.);
 #20= IFCAXIS2PLACEMENT3D(#21,#22,#23);
 #21= IFCCARTESIANPOINT((0.,0.,0.));
 #22= IFCDIRECTION((0.,0.,1.));
 #23= IFCDIRECTION((1.,0.,0.));
```

Example (ifcXML)

```
 <IfcSite id="ID100">
        <GlobalId>1G217EQPv3OASE5ZNlFE5v</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>BF-J</Name>
        <Description>Baufeld J</Description>
        <CompositionType>element</CompositionType>
        <RefLatitude ex:cType="list">
             <ex:long-wrapper pos="0">52</ex:long-wrapper>
             <ex:long-wrapper pos="1">31</ex:long-wrapper>
             <ex:long-wrapper pos="2">0</ex:long-wrapper>
        </RefLatitude>
        <RefLongitude ex:cType="list">
             <ex:long-wrapper pos="0">13</ex:long-wrapper>
             <ex:long-wrapper pos="1">24</ex:long-wrapper>
             <ex:long-wrapper pos="2">0</ex:long-wrapper>
        </RefLongitude>
        <SiteAddress>
             <IfcPostalAddress xsi:nil="true" ref="ID101"/>
        </SiteAddress >
 </IfcSite>
 <IfcPostalAddress id="ID101">
        <Purpose>site</Purpose>
        <AddressLines ex:cType="list">
             <IfcLabel pos="0">Dresdner Str.10</IfcLabel>
             <IfcLabel pos="1">01199 Dresden</IfcLabel>
        </AddressLines>
        <Town>Dresden</Town>
 </IfcPostalAddress>
 <IfcProject id="ID105">
        <GlobalId>0J$yPqHBD12v72y4qF6XcD</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>WHD</Name>
        <LongName>Wohnhaus Dresden</LongName>
        <Phase>Entwurfsplanung</Phase>
        <RepresentationContexts ex:cType="set">
             <IfcGeometricRepresentationContext pos="0" xsi:nil="true" ref="ID10"/>
        </RepresentationContexts>
        <UnitsInContext>
             <IfcUnitAssignment xsi:nil="true" ref="ID11"/>
        </UnitsInContext>
 </IfcProject>
 <IfcBuilding id="ID106">
        <GlobalId>30V5XJ5d5ApRzfhSGEj6Q2</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>NBH-Haus-J.1</Name>
        <Description>Neues Bauen am Horn - Baufeld J - Haus 1</Description>
        <CompositionType>element</CompositionType>
```

```
</IfcBuilding>
<IfcRelAggregates id="ID107">
	<GlobalId>2kPxR9pkf4IhXHOhzu5khk</GlobalId>
	<OwnerHistory>
		<IfcOwnerHistory xsi:nil="true" ref="ID2"/>
	</OwnerHistory>
	<Name>SiteContainer</Name>
	<Description>SiteContainer For Buildings</Description>
	<RelatingObject>
		<IfcSite xsi:nil="true" ref="ID100"/>
	</RelatingObject>
	<RelatedObjects ex:cType="set">
		<IfcBuilding pos="0" xsi:nil="true" ref="ID106"/>
	</RelatedObjects>
</IfcRelAggregates>
<IfcRelAggregates id="ID108">
	<GlobalId>3HOv58cYbDBAu7vMbay3W7</GlobalId>
	<OwnerHistory>
		<IfcOwnerHistory xsi:nil="true" ref="ID2"/>
	</OwnerHistory>
	<Name>ProjectContainer</Name>
	<Description>ProjectContainer for Sites</Description>
	<RelatingObject>
		<IfcProject xsi:nil="true" ref="ID105"/>
	</RelatingObject>
	<RelatedObjects ex:cType="set">
		<IfcSite pos="0" xsi:nil="true" ref="ID100"/>
	</RelatedObjects>
</IfcRelAggregates>
<IfcOwnerHistory id="ID2">
	<OwningUser>
		<IfcPersonAndOrganization xsi:nil="true" ref="ID5"/>
	</OwningUser>
	<OwningApplication>
		<IfcApplication xsi:nil="true" ref="ID6"/>
	</OwningApplication>
	<ChangeAction>added</ChangeAction>
	<LastModifiedDate>0</LastModifiedDate>
	<CreationDate>1207828354</CreationDate>
</IfcOwnerHistory>
<IfcPerson id="ID3">
	<Id>Matthias Weise</Id>
	<FamilyName></FamilyName>
	<GivenName></GivenName>
</IfcPerson>
<IfcOrganization id="ID4">
	<Id></Id>
	<Name></Name>
	<Description></Description>
</IfcOrganization>
<IfcPersonAndOrganization id="ID5">
	<ThePerson>
		<IfcPerson xsi:nil="true" ref="ID3"/>
	</ThePerson>
	<TheOrganization>
		<IfcOrganization xsi:nil="true" ref="ID4"/>
	</TheOrganization>
</IfcPersonAndOrganization>
<IfcApplication id="ID6">
	<ApplicationDeveloper>
		<IfcOrganization xsi:nil="true" ref="ID4"/>
	</ApplicationDeveloper>
	<Version>IFC-Application X</Version>
	<ApplicationFullName>IFC-Exporter V2.3</ApplicationFullName>
	<ApplicationIdentifier>Company Y</ApplicationIdentifier>
</IfcApplication>
<IfcGeometricRepresentationContext id="ID10">
	<ContextIdentifier>Plan</ContextIdentifier>
	<ContextType>Design</ContextType>
	<CoordinateSpaceDimension>3</CoordinateSpaceDimension>
	<Precision>1.E-05</Precision>
```

```
        <WorldCoordinateSystem>
              <IfcAxis2Placement3D xsi:nil="true" ref="ID20"/>
        </WorldCoordinateSystem>
  </IfcGeometricRepresentationContext>
  <IfcUnitAssignment id="ID11">
        <Units ex:cType="set">
              <IfcSIUnit pos="0" xsi:nil="true" ref="ID16"/>
              <IfcSIUnit pos="1" xsi:nil="true" ref="ID17"/>
              <IfcSIUnit pos="2" xsi:nil="true" ref="ID18"/>
        </Units>
  </IfcUnitAssignment>
  <IfcSIUnit id="ID16">
        <UnitType>lengthunit</UnitType>
        <Name>metre</Name>
  </IfcSIUnit>
  <IfcSIUnit id="ID17">
        <UnitType>areaunit</UnitType>
        <Name>square_metre</Name>
  </IfcSIUnit>
  <IfcSIUnit id="ID18">
        <UnitType>volumeunit</UnitType>
        <Name>cubic_metre</Name>
  </IfcSIUnit>
  <IfcAxis2Placement3D id="ID20">
        <Location>
              <IfcCartesianPoint xsi:nil="true" ref="ID21"/>
        </Location>
        <Axis>
              <IfcDirection xsi:nil="true" ref="ID22"/>
        </Axis>
        <RefDirection>
              <IfcDirection xsi:nil="true" ref="ID23"/>
        </RefDirection>
  </IfcAxis2Placement3D>
  <IfcCartesianPoint id="ID21">
        <Coordinates ex:cType="list">
              <IfcLengthMeasure pos="0">0.</IfcLengthMeasure>
              <IfcLengthMeasure pos="1">0.</IfcLengthMeasure>
              <IfcLengthMeasure pos="2">0.</IfcLengthMeasure>
        </Coordinates>
  </IfcCartesianPoint>
  <IfcDirection id="ID22">
        <DirectionRatios ex:cType="list">
              <ex:double-wrapper pos="0">0.</ex:double-wrapper>
              <ex:double-wrapper pos="1">0.</ex:double-wrapper>
              <ex:double-wrapper pos="2">1.</ex:double-wrapper>
        </DirectionRatios>
  </IfcDirection>
  <IfcDirection id="ID23">
        <DirectionRatios ex:cType="list">
              <ex:double-wrapper pos="0">1.</ex:double-wrapper>
              <ex:double-wrapper pos="1">0.</ex:double-wrapper>
              <ex:double-wrapper pos="2">0.</ex:double-wrapper>
        </DirectionRatios>
  </IfcDirection>
```

IFC Release Specific Concept Description (IFC2x3)

Classification Reference

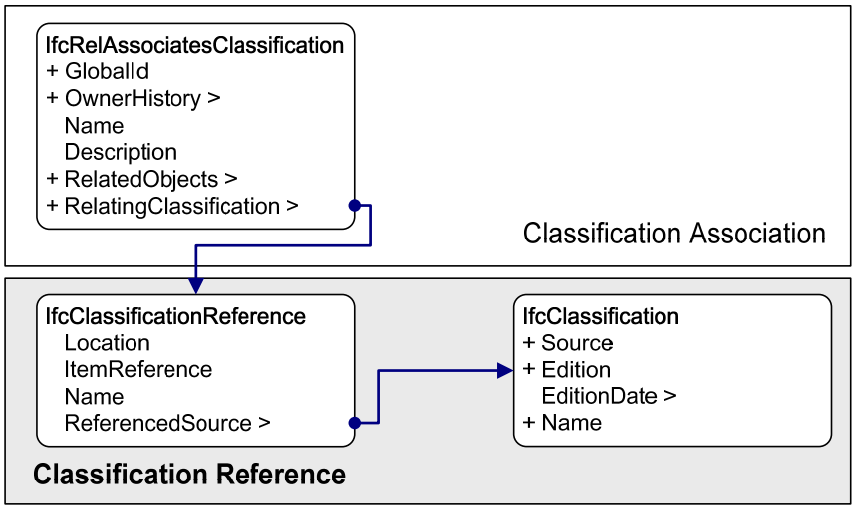
Reference	GSC-036	**Version**	1.0	**Status**	Proposal
Relationships					
History	9th June, 2008				
Authors	Matthias Weise (mw@aec3.de)				
Document Owner	AEC3 (with friendly support by the German research initiative “ZukunftBau”)				

Usage in view definition diagram

Please note that the adapter concept *“Classification Association”* might not be shown when used by a variable concept, e.g. by Site etc.

Remark for MVD harmonization: see also VBL-259, VBL-262, VBL-263 (placeholder)

Instantiation diagram



Implementation agreements

IfcClassificationReference

Attribute	Implementation agreements
Location	Optional - Pointer or URL location of the classification (defined by the generating system)
ItemReference	Must be provided - Path (separated through “/”) or GUID of the referenced item
Name	Must be provided - Human readable name
ReferencedSource	Must be provided - Reference to the classification

IfcClassification

Attribute	Implementation agreements
Source	Must be provided - GUID or standardized name of the classification/catalogue
Edition	Must be provided, but can be an empty String
EditionDate	Optional
Name	Must be provided - Human readable name

IfcRelAssociatesClassification

Attribute	Implementation agreements
GlobalId	Must be provided, but is allowed to change
OwnerHistory	Must be provided, but may contain (reusable) dummy value
Name	Reserved
Description	Reserved
RelatedObjects	A set of Objects or Object Types that are classified by the classification - further information will be provided by the variable concepts that use classification)
RelatingClassification	Reference to the Classification

Example (spf)

```
#100= IFCCLASSIFICATION('DIN','',$,'DIN277');
#101= IFCCLASSIFICATIONREFERENCE($,'HNF1/1','Wohnen und Aufenthalt',#100);
#102= IFCRELASSOCIATESCLASSIFICATION('1dejvVx$X0Gxhf6JmbZRfh',#2,$,$,
      (#103, #203),#101);
#103= IFCSPACE('38jgVeDoj3jRjcRE4OdSTf',#2,'WE-01.001',$,$,$,$, 'Living
      room',.ELEMENT.,.INTERNAL.,$);
#203= IFCSPACE('20jgVeDoj3jRjcRE4OdSTf',#2,'WE-02.001',$,$,$,$, 'Living
      room',.ELEMENT.,.INTERNAL.,$);
#2= IFCOWNERHISTORY(#5, #6, $, .ADDED., 0, $, $, 1207828354);
#3= IFCPERSON('Matthias Weise', '', '', $, $, $, $, $);
#4= IFCORGANIZATION('', '', '', $, $);
#5= IFCPERSONANDORGANIZATION(#3, #4, $);
#6= IFCAPPLICATION(#4, 'IFC-Application X', 'IFC-Exporter V2.3', 'Company Y');
```

All values that are needed for the classification of a concept are marked with bold letters.

The example shows the classification (#101) of two rooms (#103, #203) according to the German DIN 277 (#100). The rooms are defined by an instance of *IfcSpace*, which is an example for the *"Variable Concept"* and could be replaced by any other concept that can be associated by the relationship *IfcRelAssociatesClassification* (#102). As shown in the example it is possible and also recommended to associate the classification to a set of concepts that all belong to the same class.

Please note that there might be a request for the exchange of the classification only, i.e. without association to a concept. In that case there is no need to define a relationship to a dummy concept.

Example (ifcXML)

```
<IfcClassification id="ID100">
      <Source>DIN</Source>
      <Edition></Edition>
      <Name>DIN277</Name>
</IfcClassification>
<IfcClassificationReference id="ID101">
      <ItemReference>HNF1/1</ItemReference>
      <Name>Wohnen und Aufenthalt</Name>
      <ReferencedSource>
            <IfcClassification xsi:nil="true" ref="ID100"/>
      </ReferencedSource>
</IfcClassificationReference>
<IfcRelAssociatesClassification id="ID102">
      <GlobalId>1dejvVx$X0Gxhf6JmbZRfh</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <RelatedObjects ex:cType="set">
            <IfcSpace pos="0" xsi:nil="true" ref="ID103"/>
            <IfcSpace pos="1" xsi:nil="true" ref="ID203"/>
      </RelatedObjects>
      <RelatingClassification>
            <IfcClassificationReference xsi:nil="true" ref="ID101"/>
      </RelatingClassification>
</IfcRelAssociatesClassification>
<IfcSpace id="ID103">
      <GlobalId>38jgVeDoj3jRjcRE4OdSTf</GlobalId>
```

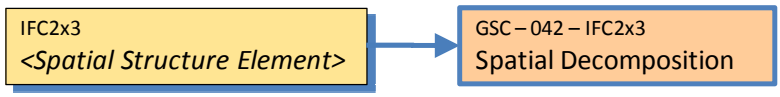
```
        <Name>WE-01.001</Name>
        <Description>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </Description>
        <LongName>Living room</LongName>
        <CompositionType>element</CompositionType>
        <InteriorOrExteriorSpace>internal</InteriorOrExteriorSpace>
  </IfcSpace>
  <IfcSpace id="ID203">
        <GlobalId>20jgVeDoj3jRjcRE4OdSTf</GlobalId>
        <Name>WE-02.001</Name>
        <Description>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </Description>
        <LongName>Living room</LongName>
        <CompositionType>element</CompositionType>
        <InteriorOrExteriorSpace>internal</InteriorOrExteriorSpace>
  </IfcSpace>
  <IfcOwnerHistory id="ID2">
        <OwningUser>
              <IfcPersonAndOrganization xsi:nil="true" ref="ID5"/>
        </OwningUser>
        <OwningApplication>
              <IfcApplication xsi:nil="true" ref="ID6"/>
        </OwningApplication>
        <ChangeAction>added</ChangeAction>
        <LastModifiedDate>0</LastModifiedDate>
        <CreationDate>1207828354</CreationDate>
  </IfcOwnerHistory>
  <IfcPerson id="ID3">
        <Id>Matthias Weise</Id>
        <FamilyName></FamilyName>
        <GivenName></GivenName>
  </IfcPerson>
  <IfcOrganization id="ID4">
        <Id></Id>
        <Name></Name>
        <Description></Description>
  </IfcOrganization>
  <IfcPersonAndOrganization id="ID5">
        <ThePerson>
              <IfcPerson xsi:nil="true" ref="ID3"/>
        </ThePerson>
        <TheOrganization>
              <IfcOrganization xsi:nil="true" ref="ID4"/>
        </TheOrganization>
  </IfcPersonAndOrganization>
  <IfcApplication id="ID6">
        <ApplicationDeveloper>
              <IfcOrganization xsi:nil="true" ref="ID4"/>
        </ApplicationDeveloper>
        <Version>IFC-Application X</Version>
        <ApplicationFullName>IFC-Exporter V2.3</ApplicationFullName>
        <ApplicationIdentifier>Company Y</ApplicationIdentifier>
  </IfcApplication>
```

IFC Release Specific Concept Description (IFC2x3)

Spatial Decomposition

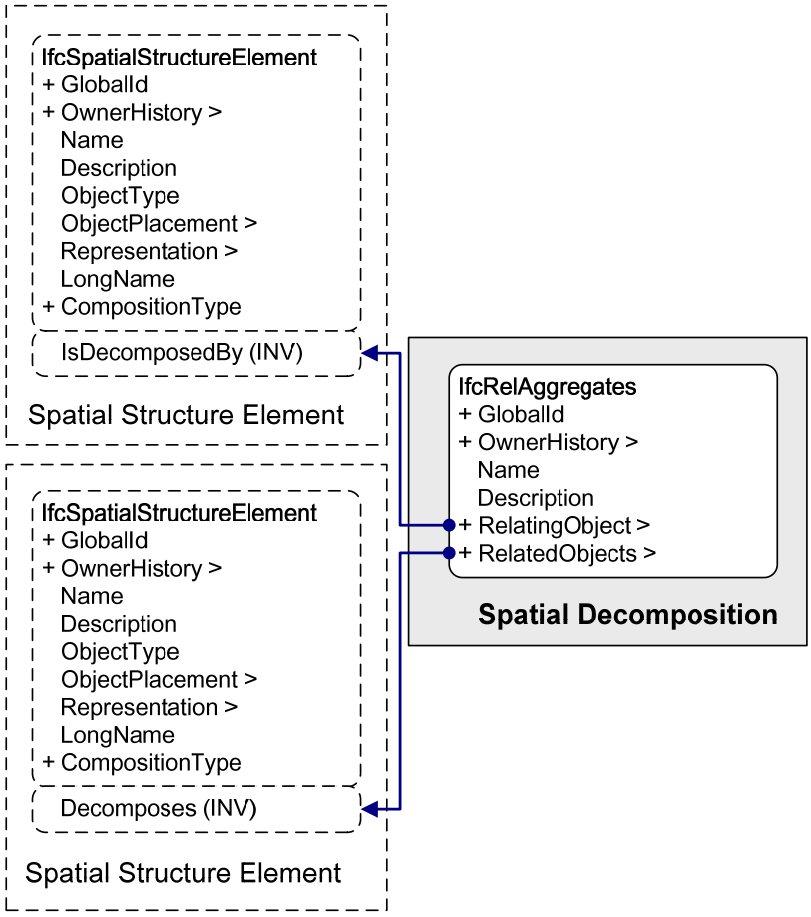
Reference	GSC-042	**Version**	1.0	**Status**	Proposal
Relationships					
History	9th June, 2008				
Authors	Matthias Weise (mw@aec3.de)				
Document Owner	AEC3 (with friendly support by the German research initiative “ZukunftBau”)				

Usage in view definition diagram



Remark for MVD harmonization: see also VBL-404, VBL-405

Instantiation diagram



Please note that *IfcSpatialStructureElement* is an abstract supertype of the concepts *“Site”*, *“Building”*, *“BuildingStorey”* and *“Space”*. Thus, it cannot be instantiated as suggested in the instantiation diagram.

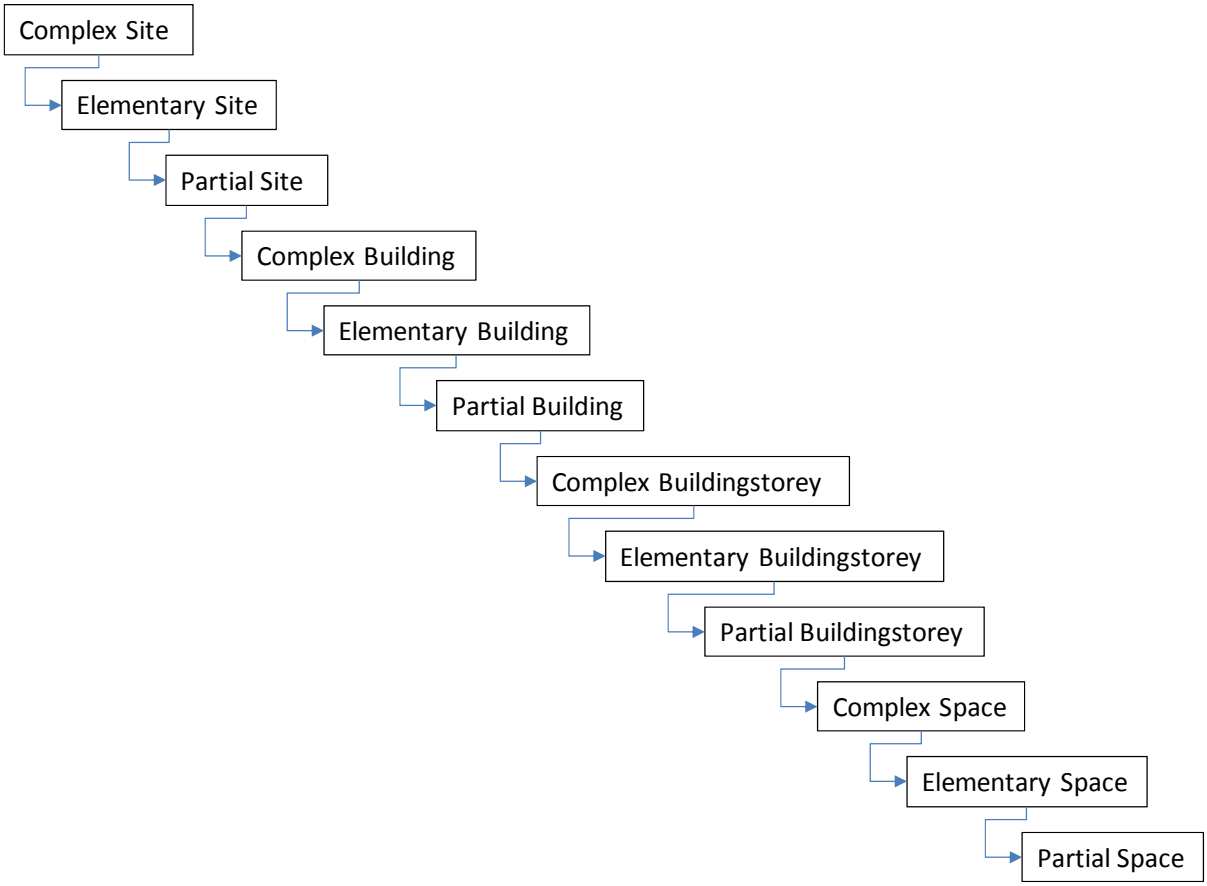
Implementation agreements

IfcRelAggregates

Attribute	Implementation agreements
GlobalId	Must be provided, but is allowed to change
OwnerHistory	Must be provided, but may contain (reusable) dummy value
Name	Reserved
Description	Reserved

RelatingObject	Must be provided – reference to the parent node of the spatial structure
RelatedObjects	Must be provided – reference to the child node of the spatial structure

There are 4 types of spatial structure elements, namely site, building, building storey and space. Additionally, each of these types can be classified as complex, element or partial. Thus, there are 12 types of spatial structure elements that can be used to define a spatial structure as shown in the figure below. But not all types are necessary to define a spatial structure. However, the hierarchy is not allowed to change, i.e. an element that is shown below another element can never be its parent node in the spatial structure (direct or indirect).



Example

```
#10= IFCRELAGGREGATES('cwgUeGRq4TsV1W5nm0d8F0', #2, $, $, #11, (#12));
#11= IFCSITE('0KMpiAlnb52RgQuM1CwVfd',#2,'Site','Plane
      site','LandUse',$,$,$,.ELEMENT.,(52,31,0),(13,24,0),$,$,$);
#12= IFCBUILDING('sISCCgKx4TkF9N05m0d8oG', #2, '1056', $, $, $, $, 'Building',
      .ELEMENT., $, $, $);
#20= IFCRELAGGREGATES('cwk90GRq4TsV1W5nm0d8F0', #2, $, $, #12, (#21));
#21= IFCBUILDINGSTOREY('sIYIqAKx4TkF9N05m0d8oG', #2, 'EG', $, $, $, $, 'First
      floor', .ELEMENT., $);
#31= IFCRELAGGREGATES('cwnpOmRq4TsV1W5nm0d8F0', #2, $, $, #21, (#32, #33));
#32= IFCSPACE('weYIqQKx4TkF9N05m0d8oG', #2, 'EG.001', $, 'Raum', $, $, 'Raum 001',
      .ELEMENT., .INTERNAL., 0.0);
#33= IFCSPACE('sIYIqQKx4TkF9N05m0d8oG', #2, 'EG.002', $, 'Raum', $, $, 'Raum 002',
      .ELEMENT., .INTERNAL., 0.0);
#2= IFCOWNERHISTORY(#5, #6, $, .ADDED., 0, $, $, 1207828354);
#3= IFCPERSON('Matthias Weise', '', '', $, $, $, $, $);
#4= IFCORGANIZATION('', '', '', $, $);
#5= IFCPERSONANDORGANIZATION(#3, #4, $);
#6= IFCAPPLICATION(#4, 'IFC-Application X', 'IFC-Exporter V2.3', 'Company Y');
```

All values that are needed to define the spatial structure are marked with bold letters.

The example shows a site (#11) that is decomposed by a building (#12), which itself is decomposed by a building storey (#21). The building storey is finally decomposed by two rooms (#32, #33). All elements are classified as “element” and are an example for the concept *“Spatial Structure Element”*.

They are connected by relationships of the type *IfcRelAggregates* (#10, #20, #31).

Example (ifcXML)

```
<IfcRelAggregates id="ID10">
       <GlobalId>cwgUeGRq4TsV1W5nm0d8F0</GlobalId>
       <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
       </OwnerHistory>
       <RelatingObject>
            <IfcSite xsi:nil="true" ref="ID11"/>
       </RelatingObject>
       <RelatedObjects ex:cType="set">
            <IfcBuilding pos="0" xsi:nil="true" ref="ID12"/>
       </RelatedObjects>
</IfcRelAggregates>
<IfcSite id="ID11">
       <GlobalId>0KMpiAlnb52RgQuM1CwVfd</GlobalId>
       <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
       </OwnerHistory>
       <Name>Site</Name>
       <Description>Plane site</Description>
       <ObjectType>LandUse</ObjectType>
       <CompositionType>element</CompositionType>
       <RefLatitude ex:cType="list">
            <ex:long-wrapper pos="0">52</ex:long-wrapper>
            <ex:long-wrapper pos="1">31</ex:long-wrapper>
            <ex:long-wrapper pos="2">0</ex:long-wrapper>
       </RefLatitude>
       <RefLongitude ex:cType="list">
            <ex:long-wrapper pos="0">13</ex:long-wrapper>
            <ex:long-wrapper pos="1">24</ex:long-wrapper>
            <ex:long-wrapper pos="2">0</ex:long-wrapper>
       </RefLongitude>
</IfcSite>
<IfcBuilding id="ID12">
       <GlobalId>sISCCgKx4TkF9N05m0d8oG</GlobalId>
       <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
       </OwnerHistory>
       <Name>1056</Name>
       <LongName>Building</LongName>
       <CompositionType>element</CompositionType>
</IfcBuilding>
<IfcRelAggregates id="ID20">
       <GlobalId>cwk90GRq4TsV1W5nm0d8F0</GlobalId>
       <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
       </OwnerHistory>
       <RelatingObject>
            <IfcBuilding xsi:nil="true" ref="ID12"/>
       </RelatingObject>
       <RelatedObjects ex:cType="set">
            <IfcBuildingStorey pos="0" xsi:nil="true" ref="ID21"/>
       </RelatedObjects>
</IfcRelAggregates>
<IfcBuildingStorey id="ID21">
       <GlobalId>sIYIqAKx4TkF9N05m0d8oG</GlobalId>
       <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
       </OwnerHistory>
       <Name>EG</Name>
       <LongName>First floor</LongName>
       <CompositionType>element</CompositionType>
</IfcBuildingStorey>
<IfcRelAggregates id="ID31">
       <GlobalId>cwnpOmRq4TsV1W5nm0d8F0</GlobalId>
       <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
       </OwnerHistory>
```

```
        <RelatingObject>
             <IfcBuildingStorey xsi:nil="true" ref="ID21"/>
        </RelatingObject>
        <RelatedObjects ex:cType="set">
             <IfcSpace pos="0" xsi:nil="true" ref="ID32"/>
             <IfcSpace pos="1" xsi:nil="true" ref="ID33"/>
        </RelatedObjects>
</IfcRelAggregates>
<IfcSpace id="ID32">
        <GlobalId>weYIqQKx4TkF9N05m0d8oG</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>EG.001</Name>
        <ObjectType>Raum</ObjectType>
        <LongName>Raum 001</LongName>
        <CompositionType>element</CompositionType>
        <InteriorOrExteriorSpace>internal</InteriorOrExteriorSpace>
        <ElevationWithFlooring>0.</ElevationWithFlooring>
</IfcSpace>
<IfcSpace id="ID33">
        <GlobalId>sIYIqQKx4TkF9N05m0d8oG</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>EG.002</Name>
        <ObjectType>Raum</ObjectType>
        <LongName>Raum 002</LongName>
        <CompositionType>element</CompositionType>
        <InteriorOrExteriorSpace>internal</InteriorOrExteriorSpace>
        <ElevationWithFlooring>0.</ElevationWithFlooring>
</IfcSpace>
<IfcOwnerHistory id="ID2">
        <OwningUser>
             <IfcPersonAndOrganization xsi:nil="true" ref="ID5"/>
        </OwningUser>
        <OwningApplication>
             <IfcApplication xsi:nil="true" ref="ID6"/>
        </OwningApplication>
        <ChangeAction>added</ChangeAction>
        <LastModifiedDate>0</LastModifiedDate>
        <CreationDate>1207828354</CreationDate>
</IfcOwnerHistory>
<IfcPerson id="ID3">
        <Id>Matthias Weise</Id>
        <FamilyName></FamilyName>
        <GivenName></GivenName>
</IfcPerson>
<IfcOrganization id="ID4">
        <Id></Id>
        <Name></Name>
        <Description></Description>
</IfcOrganization>
<IfcPersonAndOrganization id="ID5">
        <ThePerson>
             <IfcPerson xsi:nil="true" ref="ID3"/>
        </ThePerson>
        <TheOrganization>
             <IfcOrganization xsi:nil="true" ref="ID4"/>
        </TheOrganization>
</IfcPersonAndOrganization>
<IfcApplication id="ID6">
        <ApplicationDeveloper>
             <IfcOrganization xsi:nil="true" ref="ID4"/>
        </ApplicationDeveloper>
        <Version>IFC-Application X</Version>
        <ApplicationFullName>IFC-Exporter V2.3</ApplicationFullName>
        <ApplicationIdentifier>Company Y</ApplicationIdentifier>
</IfcApplication>
```

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.

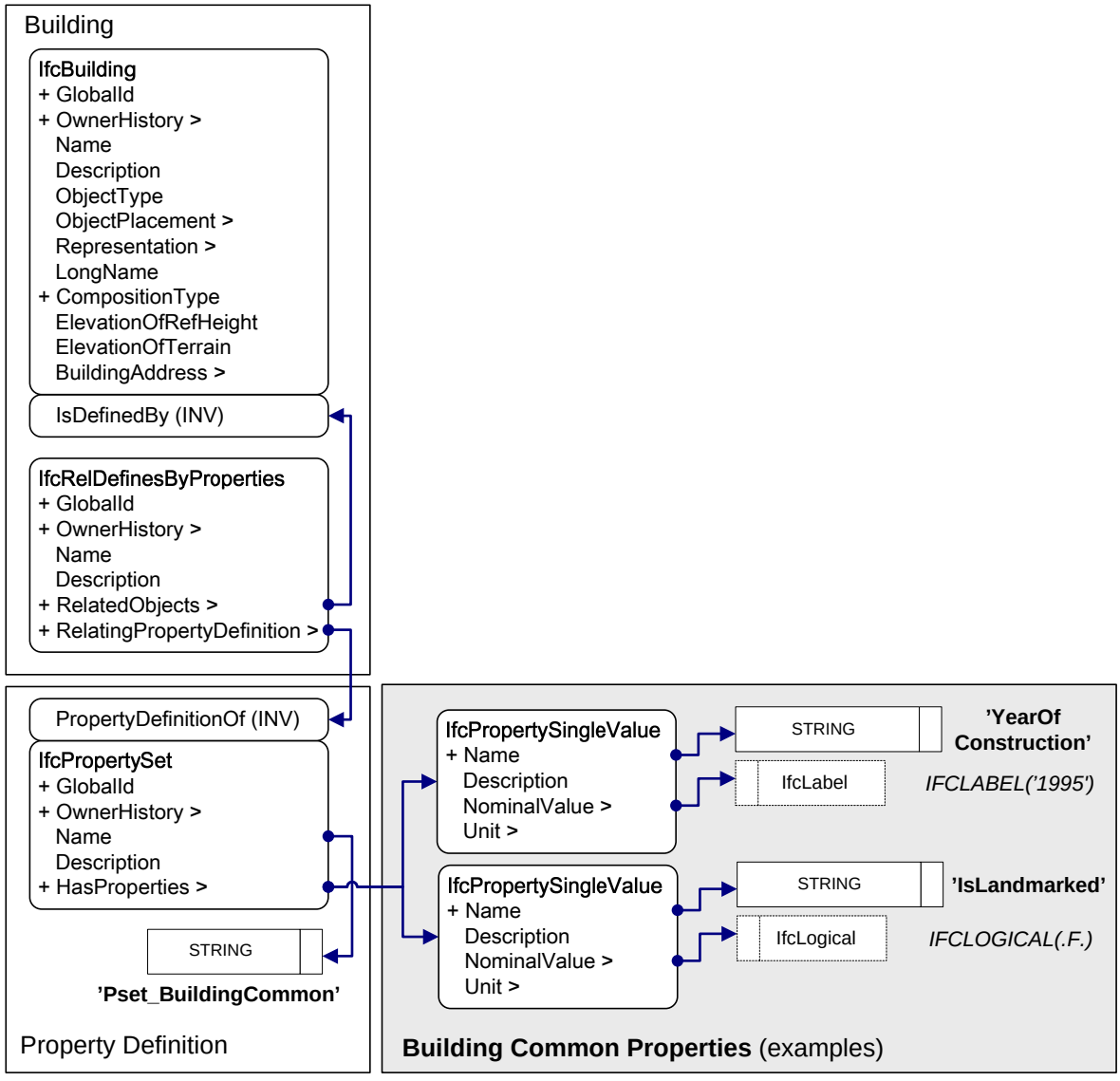
IFC Release Specific Concept Description (IFC2x3)

Building Common Properties

Reference	GSC-084	**Version**	1.0	**Status**	Proposal
Relationships					
History	9th June, 2008				
Authors	Matthias Weise (mw@aec3.de)				
Document Owner	AEC3 (with friendly support by the German research initiative “ZukunftBau”)				

Usage in view definition diagram

Instantiation diagram



Implementation agreements

IfcPropertySet

Attribute	Implementation agreements
GlobalId	Must be provided, but is allowed to change

OwnerHistory	Must be provided, but may contain dummy value
Name	Must be 'Pset_BuildingCommon'
Description	Reserved
HasProperties	Must be provided - set of common building properties
PropertyDefinitionOf (INV)	Must be provided - link to the relationship that defines the connection to the building

IfcPropertySingleValue

Attribute	Implementation agreements
Name	Must be provided – shall enable to uniquely identify the property value (A list of common building properties is given in the table below.)
Description	Reserved
NominalValue	Must be provided
Unit	Optional – only necessary if the property requires a unit and the project unit is not suitable

Pset Building Common Property Definitions

PropertySet	Property	Type/Description
Pset_BuildingCommon	BuildingID	IfcIdentifier
	..	..
Pset_BuildingCommon	YearOfConstruction	IfcLabel
Pset_BuildingCommon	IsLandmarked	IfcLogical

Example (spf)

```
#100= IFCBUILDING('sISCCgKx4TkF9N05m0d8oG', #2, '1056', $, $, $, $, 'Bauwerk',
      .ELEMENT., $, $, $);
#101= IFCRELDEFINESBYPROPERTIES('2K5FvWlVz8BewqgTQUfMYL',#2,$,$,(#100),#102);
#102= IFCPROPERTYSET('09OO0kRDDDnuATp7E65iLQ',#2,'Pset_BuildingCommon',$,(#103,
      #104));
#103= IFCPROPERTYSINGLEVALUE('YearOfConstruction',$,IFCLABEL('1995'),$);
#104= IFCPROPERTYSINGLEVALUE('IsLandmarked',$,IFCLOGICAL(.F.),$);
#2= IFCOWNERHISTORY(#5, #6, $, .ADDED., 0, $, $, 1207828354);
#3= IFCPERSON('Matthias Weise', '', '', $, $, $, $, $);
#4= IFCORGANIZATION('', '', '', $, $);
#5= IFCPERSONANDORGANIZATION(#3, #4, $);
#6= IFCAPPLICATION(#4, 'IFC-Application X', 'IFC-Exporter V2.3', 'Company Y');
```

All values that are needed to define common building properties and to attach them to a *"Building"* are marked with bold letters.

The example shows the definition of a set of common properties of a building (#100). It is collected by a 'property set object' (#102) that is attached to the building by *IfcRelDefinesByProperties* (#101).

Example (ifcXML)

```
<IfcBuilding id="ID100">
      <GlobalId>sISCCgKx4TkF9N05m0d8oG</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <Name>1056</Name>
      <LongName>Bauwerk</LongName>
      <CompositionType>element</CompositionType>
</IfcBuilding>
<IfcRelDefinesByProperties id="ID101">
      <GlobalId>2K5FvWlVz8BewqgTQUfMYL</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <RelatedObjects ex:cType="set">
            <IfcBuilding pos="0" xsi:nil="true" ref="ID100"/>
      </RelatedObjects>
```

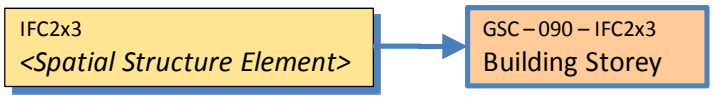
```
        <RelatingPropertyDefinition>
              <IfcPropertySet xsi:nil="true" ref="ID102"/>
        </RelatingPropertyDefinition>
  </IfcRelDefinesByProperties>
  <IfcPropertySet id="ID102">
        <GlobalId>09OO0kRDDDnuATp7E65iLQ</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Pset_BuildingCommon</Name>
        <HasProperties ex:cType="set">
              <IfcPropertySingleValue pos="0" xsi:nil="true" ref="ID103"/>
              <IfcPropertySingleValue pos="1" xsi:nil="true" ref="ID104"/>
        </HasProperties>
  </IfcPropertySet>
  <IfcPropertySingleValue id="ID103">
        <Name>YearOfConstruction</Name>
        <NominalValue>
              <IfcLabel>1995</IfcLabel>
        </NominalValue>
  </IfcPropertySingleValue>
  <IfcPropertySingleValue id="ID104">
        <Name>IsLandmarked</Name>
        <NominalValue>
              <IfcLogical>false</IfcLogical>
        </NominalValue>
  </IfcPropertySingleValue>
  <IfcOwnerHistory id="ID2">
        <OwningUser>
              <IfcPersonAndOrganization xsi:nil="true" ref="ID5"/>
        </OwningUser>
        <OwningApplication>
              <IfcApplication xsi:nil="true" ref="ID6"/>
        </OwningApplication>
        <ChangeAction>added</ChangeAction>
        <LastModifiedDate>0</LastModifiedDate>
        <CreationDate>1207828354</CreationDate>
  </IfcOwnerHistory>
  <IfcPerson id="ID3">
        <Id>Matthias Weise</Id>
        <FamilyName></FamilyName>
        <GivenName></GivenName>
  </IfcPerson>
  <IfcOrganization id="ID4">
        <Id></Id>
        <Name></Name>
        <Description></Description>
  </IfcOrganization>
  <IfcPersonAndOrganization id="ID5">
        <ThePerson>
              <IfcPerson xsi:nil="true" ref="ID3"/>
        </ThePerson>
        <TheOrganization>
              <IfcOrganization xsi:nil="true" ref="ID4"/>
        </TheOrganization>
  </IfcPersonAndOrganization>
  <IfcApplication id="ID6">
        <ApplicationDeveloper>
              <IfcOrganization xsi:nil="true" ref="ID4"/>
        </ApplicationDeveloper>
        <Version>IFC-Application X</Version>
        <ApplicationFullName>IFC-Exporter V2.3</ApplicationFullName>
        <ApplicationIdentifier>Company Y</ApplicationIdentifier>
  </IfcApplication>
```

IFC Release Specific Concept Description (IFC2x3)

Building Storey

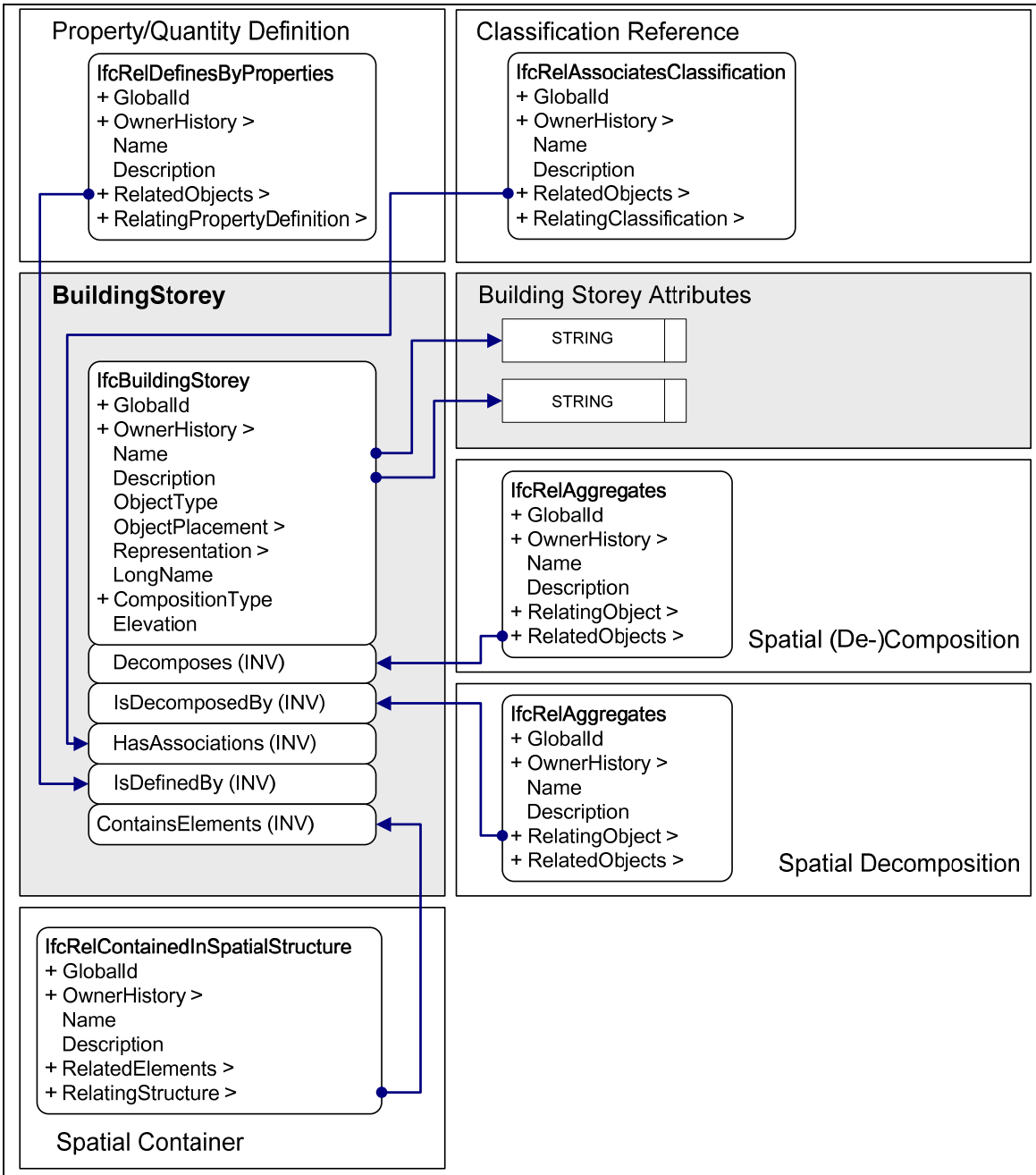
Reference	GSC-090	**Version**	1.1	**Status**	Proposal
Relationships					
History	20th April, 2009				
Authors	Matthias Weise (mw@aec3.de)				
Document Owner	AEC3 (with friendly support by the German research initiative “ZukunftBau”)				

Usage in view definition diagram



Please note that there might be further agreements for the *“Building Storey”* concept that are not shown here. In particular, there might be separate concept definitions for specific properties, quantities and classifications.

Instantiation diagram



Implementation agreements

IfcBuildingStorey

Attribute	Implementation agreements
GlobalId	Must be provided
OwnerHistory	Must be provided
Name	Short name of the building storey (may follows specific coding rules)
Description	Human readable name
Object Type	Reserved
Object Placement	Reserved
Representation	Reserved
LongName	Reserved
Composition Type	Should be - COMPLEX, in case of a ‘complex building storey’ - ELEMENT, in case of an ‘elementary building storey’ - PARTIAL, in case of a ‘partial building storey’

	Please note that the composition type restricts the spatial decomposition.
Elevation	No agreements needed
Decomposes (INV)	Reference to the parent building storey or building
IsDecomposedBy (INV)	Reference to the child nodes (building storey or space) of the spatial structure
HasAssociations (INV)	No agreements needed
IsDefinedBy (INV)	Reference to properties or quantities (please see additional implementation agreements)
ContainsElements (INV)	Reference to elements that are contained in the building storey (Further information can be found at the elements that might be contained in a spatial structure. Please also note the differences between containment and spatial decomposition.)

Example (spf)

```
#111= IFCBUILDINGSTOREY('2rAd0PG815zwRG$PbRquLR',#2,
      'First floor',$,$,$,$,$,.ELEMENT.,3.1);
#106= IFCBUILDING('30V5XJ5d5ApRzfhSGEj6Q2',#2,'NBH-Haus-J.1',
      'Neues Bauen am Horn - Baufeld J - Haus 1',$,$,$,$,.ELEMENT.,$,$,$);
#108= IFCRELAGGREGATES('3HOv58cYbDBAu7vMbay3W7',#2,'BuildingContainer',
      'BuildingContainer For Buildingstories',#106,(#111));
#112= IFCSPACE('3$f2p7VyLB7eox67SA_zKE',#2,'1',$,$,$,$,'Kitchen',
      .ELEMENT.,.INTERNAL.,$);
#113= IFCSPACE('4Tf2p7VyLB7eox67SA_zKE',#2,'2',$,$,$,$,'Living room',
      .ELEMENT.,.INTERNAL.,$);
#109= IFCRELAGGREGATES('6IOv58cYbDBAu7vMbay3W7',#2,'BuildingStoreyContainer',
      'BuildingContainer For Spaces',#111,(#112,#113));
#2= IFCOWNERHISTORY(#5, #6, $, .ADDED., 0, $, $, 1207828354);
#3= IFCPERSON('Matthias Weise', '', '', $, $, $, $, $);
#4= IFCORGANIZATION('', '', '', $, $);
#5= IFCPERSONANDORGANIZATION(#3, #4, $);
#6= IFCAPPLICATION(#4, 'IFC-Application X', 'IFC-Exporter V2.3', 'Company Y');
```

Example (ifcXML)

```
<IfcBuilding id="ID106">
      <GlobalId>30V5XJ5d5ApRzfhSGEj6Q2</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <Name>NBH-Haus-J.1</Name>
      <Description>Neues Bauen am Horn - Baufeld J - Haus 1</Description>
      <CompositionType>element</CompositionType>
</IfcBuilding>
<IfcRelAggregates id="ID108">
      <GlobalId>3HOv58cYbDBAu7vMbay3W7</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <Name>BuildingContainer</Name>
      <Description>BuildingContainer For Buildingstories</Description>
      <RelatingObject>
            <IfcBuilding xsi:nil="true" ref="ID106"/>
      </RelatingObject>
      <RelatedObjects ex:cType="set">
            <IfcBuildingStorey pos="0" xsi:nil="true" ref="ID111"/>
      </RelatedObjects>
</IfcRelAggregates>
<IfcRelAggregates id="ID109">
      <GlobalId>6IOv58cYbDBAu7vMbay3W7</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <Name>BuildingStoreyContainer</Name>
      <Description>BuildingContainer For Spaces</Description>
      <RelatingObject>
            <IfcBuildingStorey xsi:nil="true" ref="ID111"/>
```

```
        </RelatingObject>
        <RelatedObjects ex:cType="set">
             <IfcSpace pos="0" xsi:nil="true" ref="ID112"/>
             <IfcSpace pos="1" xsi:nil="true" ref="ID113"/>
        </RelatedObjects>
</IfcRelAggregates>
<IfcBuildingStorey id="ID111">
        <GlobalId>2rAd0PG815zwRG$PbRquLR</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>First floor</Name>
        <CompositionType>element</CompositionType>
        <Elevation>3.1</Elevation>
</IfcBuildingStorey>
<IfcSpace id="ID112">
        <GlobalId>3$f2p7VyLB7eox67SA_zKE</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>1</Name>
        <LongName>Kitchen</LongName>
        <CompositionType>element</CompositionType>
        <InteriorOrExteriorSpace>internal</InteriorOrExteriorSpace>
</IfcSpace>
<IfcSpace id="ID113">
        <GlobalId>4Tf2p7VyLB7eox67SA_zKE</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>2</Name>
        <LongName>Living room</LongName>
        <CompositionType>element</CompositionType>
        <InteriorOrExteriorSpace>internal</InteriorOrExteriorSpace>
</IfcSpace>
<IfcOwnerHistory id="ID2">
        <OwningUser>
             <IfcPersonAndOrganization xsi:nil="true" ref="ID5"/>
        </OwningUser>
        <OwningApplication>
             <IfcApplication xsi:nil="true" ref="ID6"/>
        </OwningApplication>
        <ChangeAction>added</ChangeAction>
        <LastModifiedDate>0</LastModifiedDate>
        <CreationDate>1207828354</CreationDate>
</IfcOwnerHistory>
<IfcPerson id="ID3">
        <Id>Matthias Weise</Id>
        <FamilyName></FamilyName>
        <GivenName></GivenName>
</IfcPerson>
<IfcOrganization id="ID4">
        <Id></Id>
        <Name></Name>
        <Description></Description>
</IfcOrganization>
<IfcPersonAndOrganization id="ID5">
        <ThePerson>
             <IfcPerson xsi:nil="true" ref="ID3"/>
        </ThePerson>
        <TheOrganization>
             <IfcOrganization xsi:nil="true" ref="ID4"/>
        </TheOrganization>
</IfcPersonAndOrganization>
<IfcApplication id="ID6">
        <ApplicationDeveloper>
             <IfcOrganization xsi:nil="true" ref="ID4"/>
        </ApplicationDeveloper>
        <Version>IFC-Application X</Version>
        <ApplicationFullName>IFC-Exporter V2.3</ApplicationFullName>
        <ApplicationIdentifier>Company Y</ApplicationIdentifier>
```

```
  </IfcApplication>
```

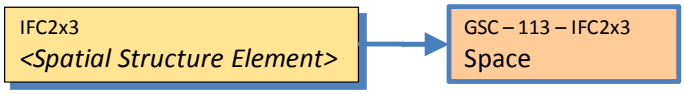
This document uses the official IFC Model View Definition Format version 1.1.0. of the IAI (www.iai-international.org)
The content of this document has to be certified by the IAI before becoming part of an official IFC Model View Definition.

IFC Release Specific Concept Description (IFC2x3)

Space

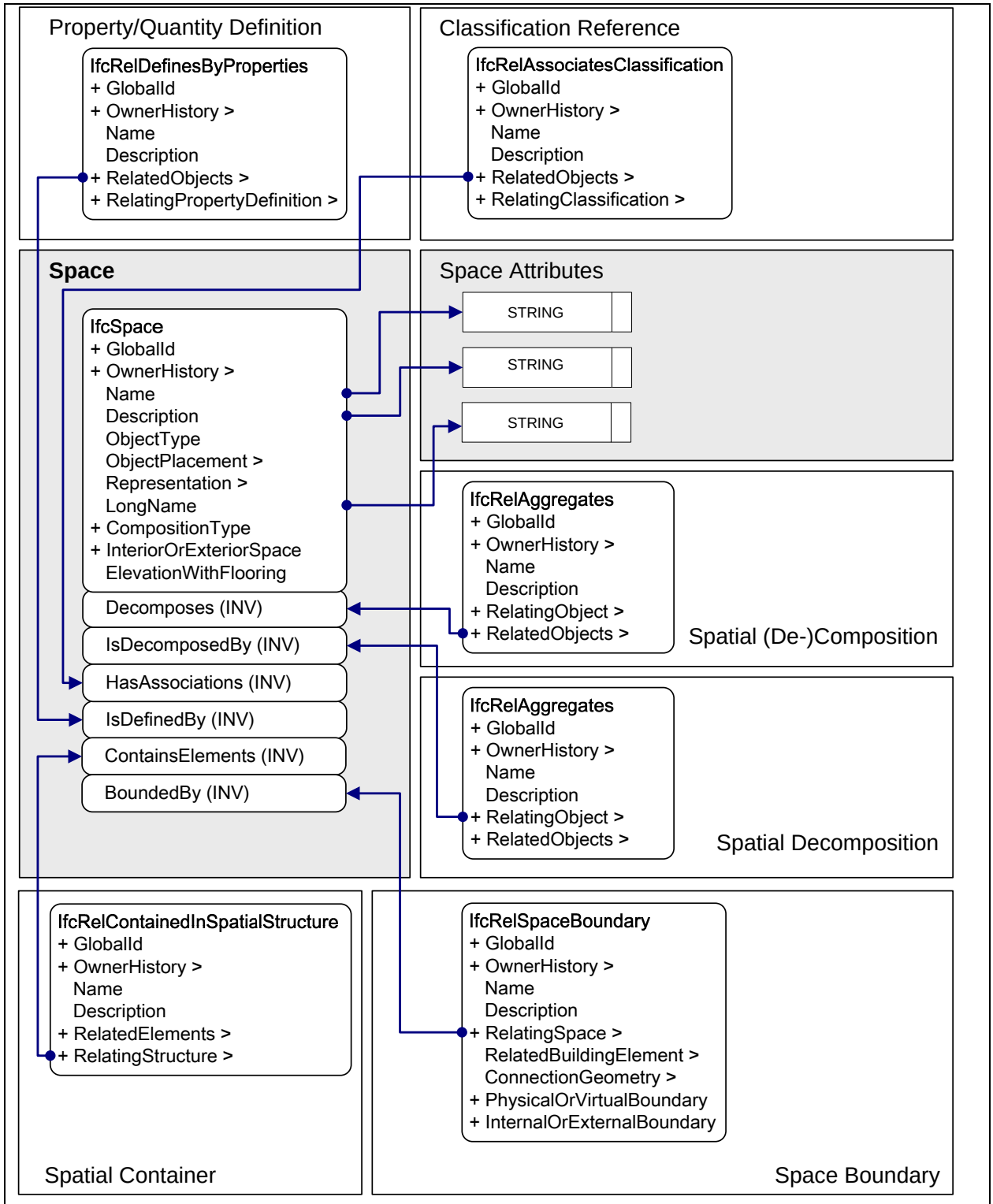
Reference	GSC-113	**Version**	1.1	**Status**	Proposal
Relationships					
History	9th June, 2008 7th October, 2009 (covering concept removed)				
Authors	Matthias Weise (mw@aec3.de)				
Document Owner	AEC3 (with friendly support by the German research initiative “ZukunftBau”)				

Usage in view definition diagram



Please note that there might be further agreements for the *“Space”* concept that are not shown here. In particular, there might be separate concept definitions for specific properties, quantities and classifications.

Instantiation diagram



Implementation agreements

IfcSpace

Attribute	Implementation agreements
GlobalId	Must be provided
OwnerHistory	Must be provided
Name	Short name of the space (may follows specific coding rules)
Description	Human readable name
Object Type	Reserved
Object Placement	Reserved

Representation	Reserved
LongName	Long name
Composition Type	Should be - COMPLEX, in case of a ‘complex space’ - ELEMENT, in case of an ‘elementary space’ - PARTIAL, in case of a ‘partial space’ Please note that the composition type restricts the spatial decomposition.
InteriorOrExteriorSpace	No agreements needed
ElevationWithFlooring	No agreements needed
Decomposes (INV)	Reference to the parent space or building storey
IsDecomposedBy (INV)	Reference to the child nodes (space) of the spatial structure
HasAssociations (INV)	Classification of the space (please see additional implementation agreements)
IsDefinedBy (INV)	Reference to properties or quantities (please see additional implementation agreements)
ContainsElements (INV)	Reference to elements that are contained in the space
BoundedBy (INV)	Reference to space boundaries

Example (spf)

```
#113= IFCSPACE('4Tf2p7VyLB7eox67SA_zKE',#2,'2',$,$,$,$,
       'Living room',.ELEMENT.,.INTERNAL.,$);
#111= IFCBUILDINGSTOREY('2rAd0PG815zwRG$PbRquLR',#2,
       'First floor',$,$,$,$,$,.ELEMENT.,3.1);
#106= IFCBUILDING('30V5XJ5d5ApRzfhSGEj6Q2',#2,'NBH-Haus-J.1',
       'Neues Bauen am Horn - Baufeld J - Haus 1',$,$,$,$,.ELEMENT.,$,$,$);
#108= IFCRELAGGREGATES('3HOv58cYbDBAu7vMbay3W7',#2,'BuildingContainer',
       'BuildingContainer For Buildingstories',#106,(#111));
#109= IFCRELAGGREGATES('6IOv58cYbDBAu7vMbay3W7',#2,'BuildingStoreyContainer',
       'BuildingContainer For Spaces',#111,(#113));
#2= IFCOWNERHISTORY(#5, #6, $, .ADDED., 0, $, $, 1207828354);
#3= IFCPERSON('Matthias Weise', '', '', $, $, $, $, $);
#4= IFCORGANIZATION('', '', '', $, $);
#5= IFCPERSONANDORGANIZATION(#3, #4, $);
#6= IFCAPPLICATION(#4, 'IFC-Application X', 'IFC-Exporter V2.3', 'Company Y');
```

Example (ifcXML)

```
<IfcOwnerHistory id="ID2">
       <OwningUser>
            <IfcPersonAndOrganization xsi:nil="true" ref="ID5"/>
       </OwningUser>
       <OwningApplication>
            <IfcApplication xsi:nil="true" ref="ID6"/>
       </OwningApplication>
       <ChangeAction>added</ChangeAction>
       <LastModifiedDate>0</LastModifiedDate>
       <CreationDate>1207828354</CreationDate>
</IfcOwnerHistory>
<IfcPerson id="ID3">
       <Id>Matthias Weise</Id>
       <FamilyName></FamilyName>
       <GivenName></GivenName>
</IfcPerson>
<IfcOrganization id="ID4">
       <Id></Id>
       <Name></Name>
       <Description></Description>
</IfcOrganization>
<IfcPersonAndOrganization id="ID5">
       <ThePerson>
            <IfcPerson xsi:nil="true" ref="ID3"/>
       </ThePerson>
       <TheOrganization>
            <IfcOrganization xsi:nil="true" ref="ID4"/>
```

```
        </TheOrganization>
</IfcPersonAndOrganization>
<IfcApplication id="ID6">
        <ApplicationDeveloper>
              <IfcOrganization xsi:nil="true" ref="ID4"/>
        </ApplicationDeveloper>
        <Version>IFC-Application X</Version>
        <ApplicationFullName>IFC-Exporter V2.3</ApplicationFullName>
        <ApplicationIdentifier>Company Y</ApplicationIdentifier>
</IfcApplication>
<IfcBuilding id="ID106">
        <GlobalId>30V5XJ5d5ApRzfhSGEj6Q2</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>NBH-Haus-J.1</Name>
        <Description>Neues Bauen am Horn - Baufeld J - Haus 1</Description>
        <CompositionType>element</CompositionType>
</IfcBuilding>
<IfcRelAggregates id="ID108">
        <GlobalId>3HOv58cYbDBAu7vMbay3W7</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>BuildingContainer</Name>
        <Description>BuildingContainer For Buildingstories</Description>
        <RelatingObject>
              <IfcBuilding xsi:nil="true" ref="ID106"/>
        </RelatingObject>
        <RelatedObjects ex:cType="set">
              <IfcBuildingStorey pos="0" xsi:nil="true" ref="ID111"/>
        </RelatedObjects>
</IfcRelAggregates>
<IfcRelAggregates id="ID109">
        <GlobalId>6IOv58cYbDBAu7vMbay3W7</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>BuildingStoreyContainer</Name>
        <Description>BuildingContainer For Spaces</Description>
        <RelatingObject>
              <IfcBuildingStorey xsi:nil="true" ref="ID111"/>
        </RelatingObject>
        <RelatedObjects ex:cType="set">
              <IfcSpace pos="0" xsi:nil="true" ref="ID113"/>
        </RelatedObjects>
</IfcRelAggregates>
<IfcBuildingStorey id="ID111">
        <GlobalId>2rAd0PG815zwRG$PbRquLR</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>First floor</Name>
        <CompositionType>element</CompositionType>
        <Elevation>3.1</Elevation>
</IfcBuildingStorey>
<IfcSpace id="ID113">
        <GlobalId>4Tf2p7VyLB7eox67SA_zKE</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>2</Name>
        <LongName>Living room</LongName>
        <CompositionType>element</CompositionType>
        <InteriorOrExteriorSpace>internal</InteriorOrExteriorSpace>
</IfcSpace>
```

IFC Release Specific Concept Description (IFC2x3)

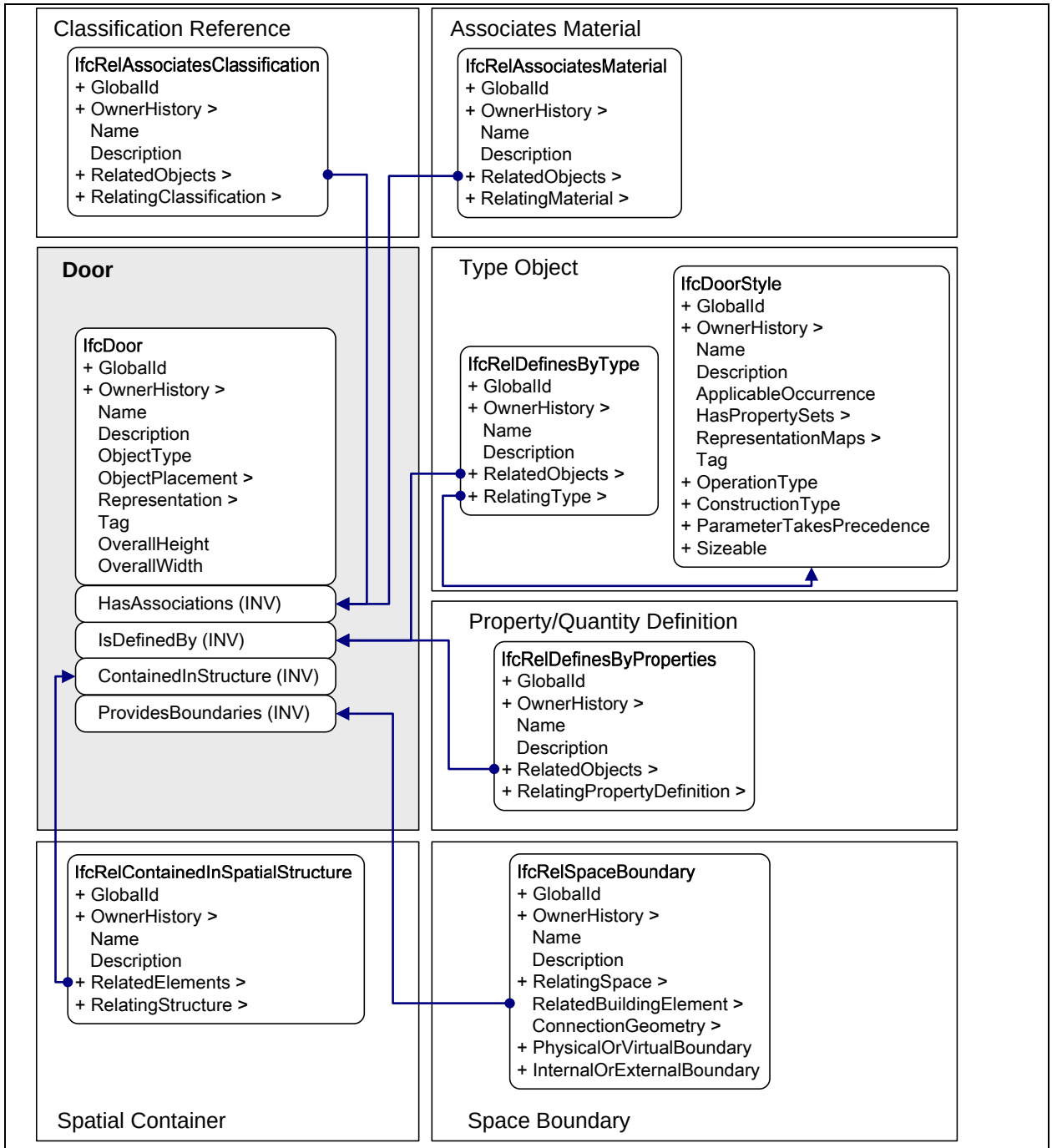
Door

Reference	GSC-125	**Version**	1.0	**Status**	Proposal
Relationships					
History	9th June, 2008				
Authors	Matthias Weise (mw@aec3.de)				
Document Owner	AEC3 (with friendly support by the German research initiative “ZukunftBau”)				

Usage in view definition diagram

Please note that there might be further agreements for the *“Door”* concept that are not shown here. In particular, there might be separate concept definitions for specific properties, quantities and classifications. There are also additional (inverse) relationships that are not shown here but might be used to add further information or to define specific relationships to other elements.

Instantiation diagram



Implementation agreements

IfcDoor

Attribute	Implementation agreements
GlobalId	Must be provided
OwnerHistory	Must be provided
Name	Reserved
Description	Reserved
ObjectType	Reserved
ObjectPlacement	No agreements needed
Representation	No agreements needed
Tag	Reserved
OverallHeight	No agreements
OverallWidth	No agreements

HasAssociations (INV)	Optional, may contain instances of IfcRelAssociatesClassification that further classify the door according to a classification system and/or IfcRelAssociatesMaterial that provides information about the material
IsDefinedBy (INV)	Optional, may contain instances of IfcRelDefinesByProperties that further define the door with additional properties/quantities, and/or IfcRelDefinesByType that refers to the door style (type object)
ContainedInStructure (INV)	Optional, may define the spatial structure (most likely the space or building storey) in which the door is contained (see also ProvidesBoundaries) Please note that containment might also be defined via the wall to which the door belongs.
ProvidesBoundaries (INV)	Optional, may define the space that is bounded by the door

..

Example (spf)

```
#100= IFCDOOR('1N6AM49mPF_QLJuXpLNYt1',#15,'T103',$,$,$,$,$,2.01,0.75);
#101= IFCDOORLININGPROPERTIES('1WLuCO_IL5R9J0BIowj2uP',#15,$,$,0.23,0.05,
      $,$,$,$,$,$,$,$,$);
#102= IFCDOORPANELPROPERTIES('0eoUjtRrX12xDCFYg8Q2J5',#15,$,$,0.045,.SWINGING.,
      $,.MIDDLE.,$);
#103= IFCDOORSTYLE('2OZQafot53QR2V1VwPTKAn',#15,
      'Frame door',$,$,(#101,#102),$,$,.SINGLE_SWING_LEFT.,.NOTDEFINED.,.F.,.F.);
#104= IFCRELDEFINESBYTYPE('0SuYMDmmH1Lv8fVlwq8_wV',#15,
      'Frame door type',$,(#100),#103);
#109= IFCMATERIAL('Wood');
#110= IFCRELASSOCIATESMATERIAL('0iKTtg9xP6buf6Pf7_2fSN',#2,$,$,(#100),#109);
#111= IFCPROPERTYSET('1KWmeMlorCeABBAQ0CbtFj',#2,'Pset_WindowCommon',$,
      (#113,#114,#115));
#112= IFCRELDEFINESBYPROPERTIES('1inGsaLULC78ImgdLZI9Kc',#2,$,$,(#100),#111);
#113= IFCPROPERTYSINGLEVALUE('FireRating',$,IFCLABEL('F30'),$);
#114= IFCPROPERTYSINGLEVALUE('GlazingAreaFraction',$,
      IFCPOSITIVERATIOMEASURE(0.1),$);
#115= IFCPROPERTYSINGLEVALUE('IsExterior',$,IFCBOOLEAN(.T.),$);
#2= IFCOWNERHISTORY(#5, #6, $, .ADDED., 0, $, $, 1207828354);
#3= IFCPERSON('Matthias Weise', '', '', $, $, $, $, $);
#4= IFCORGANIZATION('', '', '', $, $);
#5= IFCPERSONANDORGANIZATION(#3, #4, $);
#6= IFCAPPLICATION(#4, 'IFC-Application X', 'IFC-Exporter V2.3', 'Company Y');
```

Example (ifcXML)

```
<IfcOwnerHistory id="ID2">
      <OwningUser>
            <IfcPersonAndOrganization xsi:nil="true" ref="ID5"/>
      </OwningUser>
      <OwningApplication>
            <IfcApplication xsi:nil="true" ref="ID6"/>
      </OwningApplication>
      <ChangeAction>added</ChangeAction>
      <LastModifiedDate>0</LastModifiedDate>
      <CreationDate>1207828354</CreationDate>
</IfcOwnerHistory>
<IfcPerson id="ID3">
      <Id>Matthias Weise</Id>
      <FamilyName></FamilyName>
      <GivenName></GivenName>
</IfcPerson>
<IfcOrganization id="ID4">
      <Id></Id>
      <Name></Name>
      <Description></Description>
</IfcOrganization>
<IfcPersonAndOrganization id="ID5">
      <ThePerson>
            <IfcPerson xsi:nil="true" ref="ID3"/>
```

```
        </ThePerson>
        <TheOrganization>
             <IfcOrganization xsi:nil="true" ref="ID4"/>
        </TheOrganization>
</IfcPersonAndOrganization>
<IfcApplication id="ID6">
        <ApplicationDeveloper>
             <IfcOrganization xsi:nil="true" ref="ID4"/>
        </ApplicationDeveloper>
        <Version>IFC-Application X</Version>
        <ApplicationFullName>IFC-Exporter V2.3</ApplicationFullName>
        <ApplicationIdentifier>Company Y</ApplicationIdentifier>
</IfcApplication>
<IfcDoor id="ID100">
        <GlobalId>1N6AM49mPF_QLJuXpLNYt1</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>T103</Name>
        <OverallHeight>2.01</OverallHeight>
        <OverallWidth>0.75</OverallWidth>
</IfcDoor>
<IfcDoorLiningProperties id="ID101">
        <GlobalId>1WLuCO_IL5R9J0BIowj2uP</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <LiningDepth>0.23</LiningDepth>
        <LiningThickness>0.05</LiningThickness>
</IfcDoorLiningProperties>
<IfcDoorPanelProperties id="ID102">
        <GlobalId>0eoUjtRrX12xDCFYg8Q2J5</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <PanelDepth>0.045</PanelDepth>
        <PanelOperation>swinging</PanelOperation>
        <PanelPosition>middle</PanelPosition>
</IfcDoorPanelProperties>
<IfcDoorStyle id="ID103">
        <GlobalId>2OZQafot53QR2V1VwPTKAn</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Frame door</Name>
        <HasPropertySets ex:cType="set">
             <IfcDoorLiningProperties pos="0" xsi:nil="true" ref="ID101"/>
             <IfcDoorPanelProperties pos="1" xsi:nil="true" ref="ID102"/>
        </HasPropertySets>
        <OperationType>single_swing_left</OperationType>
        <ConstructionType>notdefined</ConstructionType>
        <ParameterTakesPrecedence>false</ParameterTakesPrecedence>
        <Sizeable>false</Sizeable>
</IfcDoorStyle>
<IfcRelDefinesByType id="ID104">
        <GlobalId>0SuYMDmmH1Lv8fVlwq8_wV</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Frame door type</Name>
        <RelatedObjects ex:cType="set">
             <IfcDoor pos="0" xsi:nil="true" ref="ID100"/>
        </RelatedObjects>
        <RelatingType>
             <IfcDoorStyle xsi:nil="true" ref="ID103"/>
        </RelatingType>
</IfcRelDefinesByType>
<IfcMaterial id="ID109">
        <Name>Wood</Name>
</IfcMaterial>
<IfcRelAssociatesMaterial id="ID110">
```

```
        <GlobalId>0iKTtg9xP6buf6Pf7_2fSN</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <RelatedObjects ex:cType="set">
              <IfcDoor pos="0" xsi:nil="true" ref="ID100"/>
        </RelatedObjects>
        <RelatingMaterial>
              <IfcMaterial xsi:nil="true" ref="ID109"/>
        </RelatingMaterial>
  </IfcRelAssociatesMaterial>
  <IfcPropertySet id="ID111">
        <GlobalId>1KWmeMlorCeABBAQ0CbtFj</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Pset_WindowCommon</Name>
        <HasProperties ex:cType="set">
              <IfcPropertySingleValue pos="0" xsi:nil="true" ref="ID113"/>
              <IfcPropertySingleValue pos="1" xsi:nil="true" ref="ID114"/>
              <IfcPropertySingleValue pos="2" xsi:nil="true" ref="ID115"/>
        </HasProperties>
  </IfcPropertySet>
  <IfcRelDefinesByProperties id="ID112">
        <GlobalId>1inGsaLULC78ImgdLZI9Kc</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <RelatedObjects ex:cType="set">
              <IfcDoor pos="0" xsi:nil="true" ref="ID100"/>
        </RelatedObjects>
        <RelatingPropertyDefinition>
              <IfcPropertySet xsi:nil="true" ref="ID111"/>
        </RelatingPropertyDefinition>
  </IfcRelDefinesByProperties>
  <IfcPropertySingleValue id="ID113">
        <Name>FireRating</Name>
        <NominalValue>
              <IfcLabel>F30</IfcLabel>
        </NominalValue>
  </IfcPropertySingleValue>
  <IfcPropertySingleValue id="ID114">
        <Name>GlazingAreaFraction</Name>
        <NominalValue>
              <IfcPositiveRatioMeasure>0.1</IfcPositiveRatioMeasure>
        </NominalValue>
  </IfcPropertySingleValue>
  <IfcPropertySingleValue id="ID115">
        <Name>IsExterior</Name>
        <NominalValue>
              <IfcBoolean>true</IfcBoolean>
        </NominalValue>
  </IfcPropertySingleValue>
```

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IFC Release Specific Concept Description (IFC2x3)

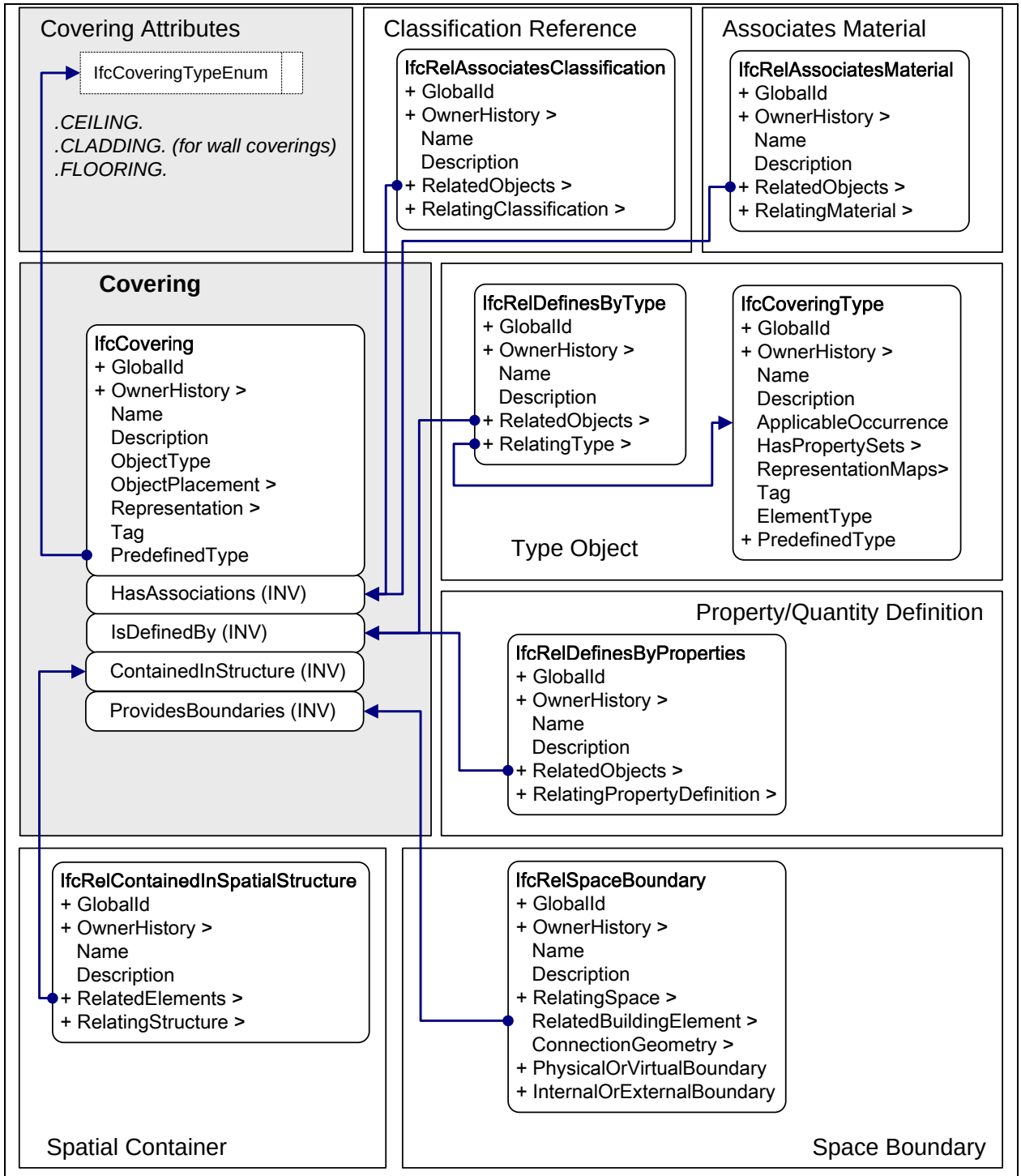
Covering

Reference	GSC-148	**Version**	1.1	**Status**	Proposal
Relationships					
History	9th June, 2008 7th October, 2009 (covering concept removed)				
Authors	Matthias Weise (mw@aec3.de)				
Document Owner	AEC3 (with friendly support by the German research initiative “ZukunftBau”)				

Usage in view definition diagram

Please note that there might be further agreements for the *“Covering”* concept that are not shown here. In particular, there might be separate concept definitions for specific properties, quantities and classifications. There are also additional (inverse) relationships that are not shown here but might be used to add further information or to define specific relationships to other elements.

Instantiation diagram



Implementation agreements

IfcCovering

Attribute	Implementation agreements
GlobalId	Must be provided
OwnerHistory	Must be provided
Name	Reserved
Description	Reserved
ObjectType	Reserved
ObjectPlacement	No agreements needed
Representation	No agreements needed
Tag	Reserved

PredefinedType	Shall be selected according to the element type that it covers - CEILING (covering of IfcSlab that is the ceiling of a space) - CLADDING (covering of walls) - FLOORING (covering of IfcSlab that is the floor of a space) There more covering types, but only above three are considered to be used in this context.
HasAssociations (INV)	Optional, may contain instances of IfcRelAssociatesClassification that further classify the covering according to a classification system and/or IfcRelAssociatesMaterial that provides information about the material
IsDefinedBy (INV)	Optional, may contain instances of IfcRelDefinesByProperties that further define the covering with additional properties/quantities, and/or IfcRelDefinesByType that refers to a covering type
ContainedInStructure (INV)	Optional, may define the spatial structure (most likely the space or building storey) in which the covering is contained (see also ProvidesBoundaries)
ProvidesBoundaries (INV)	Optional, may define the space that is bounded by the covering

…

Example (spf)

```
#102= IFCCOVERING('$nsOeF_t4TobLUH6m0d8Fm', #2, 'Covering example', $, $, $, $, $,
      .CLADDING.);
#101= IFCRELCONTAINEDINSPATIALSTRUCTURE ('cwgUeGRq4TsV1W5nm0d8F0',#2,$,$,(#102),
      #100);
#100= IFCSPACE('4Tf2p7VyLB7eox67SA_zKE',#2,'2',$,$,$,$,'Living
      room',.ELEMENT.,.INTERNAL.,$);
#103= IFCRELDEFINESBYTYPE('cwqFemRq4TsV1W5nm0d8F0', #2, $, $, (#100), #104);
#104= IFCCOVERINGTYPE('cwqFeWRq4TsV1W5nm0d8F0', #2, 'Covering type example', $, $,
      $, $, ' ', $, .CLADDING.);
#105= IFCQUANTITYAREA('NetArea',$,#106,16.5);
#106= IFCSIUNIT(*,.AREAUNIT.,$,.SQUARE_METRE.);
#107= IFCELEMENTQUANTITY('1scWlSxSf3TOXzYi$H3NZC',#2,'CoveringCommonQuantities',
      $,'',(#105));
#108= IFCRELDEFINESBYPROPERTIES('1DDDIOyW16bfZwIs31XdDs',#2,$,$,(#102),#107);
#109= IFCMATERIAL('Wall paper');
#110= IFCRELASSOCIATESMATERIAL('0iKTtg9xP6buf6Pf7_2fSN',#2,$,$,(#102),#109);
#111= IFCCLASSIFICATION('BFR','2006',$,'German Building Guidelines for the
      Documentation of Building Master Data');
#112= IFCCLASSIFICATIONREFERENCE($,'Z/G3/45/3','wall covering type 3',#111);
#113= IFCRELASSOCIATESCLASSIFICATION('1dejvVx$X0Gxhf6JmbZRfh',#2,$,$,(#104),#112);
#2= IFCOWNERHISTORY(#5, #6, $, .ADDED., 0, $, $, 1207828354);
#3= IFCPERSON('Matthias Weise', '', '', $, $, $, $, $);
#4= IFCORGANIZATION('', '', '', $, $);
#5= IFCPERSONANDORGANIZATION(#3, #4, $);
#6= IFCAPPLICATION(#4, 'IFC-Application X', 'IFC-Exporter V2.3', 'Company Y');
```

Example (ifcXML)

```
<IfcSpace id="ID100">
      <GlobalId>4Tf2p7VyLB7eox67SA_zKE</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <Name>2</Name>
      <LongName>Living room</LongName>
      <CompositionType>element</CompositionType>
      <InteriorOrExteriorSpace>internal</InteriorOrExteriorSpace>
</IfcSpace>
<IfcRelContainedInSpatialStructure id="ID101">
      <GlobalId>cwgUeGRq4TsV1W5nm0d8F0</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <RelatedElements ex:cType="set">
            <IfcCovering pos="0" xsi:nil="true" ref="ID102"/>
```

```
        </RelatedElements>
        <RelatingStructure>
              <IfcSpace xsi:nil="true" ref="ID100"/>
        </RelatingStructure>
  </IfcRelContainedInSpatialStructure>
  <IfcCovering id="ID102">
        <GlobalId>$nsOeF_t4TobLUH6m0d8Fm</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Covering example</Name>
        <PredefinedType>cladding</PredefinedType>
  </IfcCovering>
  <IfcRelDefinesByType id="ID103">
        <GlobalId>cwqFemRq4TsV1W5nm0d8F0</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <RelatedObjects ex:cType="set">
              <IfcSpace pos="0" xsi:nil="true" ref="ID100"/>
        </RelatedObjects>
        <RelatingType>
              <IfcCoveringType xsi:nil="true" ref="ID104"/>
        </RelatingType>
  </IfcRelDefinesByType>
  <IfcCoveringType id="ID104">
        <GlobalId>cwqFeWRq4TsV1W5nm0d8F0</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Covering type example</Name>
        <Tag> </Tag>
        <PredefinedType>cladding</PredefinedType>
  </IfcCoveringType>
  <IfcQuantityArea id="ID105">
        <Name>NetArea</Name>
        <Unit>
              <IfcSIUnit xsi:nil="true" ref="ID106"/>
        </Unit>
        <AreaValue>16.5</AreaValue>
  </IfcQuantityArea>
  <IfcSIUnit id="ID106">
        <UnitType>areaunit</UnitType>
        <Name>square_metre</Name>
  </IfcSIUnit>
  <IfcElementQuantity id="ID107">
        <GlobalId>1scWlSxSf3TOXzYi$H3NZC</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>CoveringCommonQuantities</Name>
        <MethodOfMeasurement></MethodOfMeasurement>
        <Quantities ex:cType="set">
              <IfcQuantityArea pos="0" xsi:nil="true" ref="ID105"/>
        </Quantities>
  </IfcElementQuantity>
  <IfcRelDefinesByProperties id="ID108">
        <GlobalId>1DDDIOyW16bfZwIs31XdDs</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <RelatedObjects ex:cType="set">
              <IfcCovering pos="0" xsi:nil="true" ref="ID102"/>
        </RelatedObjects>
        <RelatingPropertyDefinition>
              <IfcElementQuantity xsi:nil="true" ref="ID107"/>
        </RelatingPropertyDefinition>
  </IfcRelDefinesByProperties>
  <IfcMaterial id="ID109">
        <Name>Wall paper</Name>
  </IfcMaterial>
```

```
<IfcRelAssociatesMaterial id="ID110">
	<GlobalId>0iKTtg9xP6buf6Pf7_2fSN</GlobalId>
	<OwnerHistory>
		<IfcOwnerHistory xsi:nil="true" ref="ID2"/>
	</OwnerHistory>
	<RelatedObjects ex:cType="set">
		<IfcCovering pos="0" xsi:nil="true" ref="ID102"/>
	</RelatedObjects>
	<RelatingMaterial>
		<IfcMaterial xsi:nil="true" ref="ID109"/>
	</RelatingMaterial>
</IfcRelAssociatesMaterial>
<IfcClassification id="ID111">
	<Source>BFR</Source>
	<Edition>2006</Edition>
	<Name>German Building Guidelines for the Documentation of Building Master
	Data</Name>
</IfcClassification>
<IfcClassificationReference id="ID112">
	<ItemReference>Z/G3/45/3</ItemReference>
	<Name>wall covering type 3</Name>
	<ReferencedSource>
		<IfcClassification xsi:nil="true" ref="ID111"/>
	</ReferencedSource>
</IfcClassificationReference>
<IfcRelAssociatesClassification id="ID113">
	<GlobalId>1dejvVx$X0Gxhf6JmbZRfh</GlobalId>
	<OwnerHistory>
		<IfcOwnerHistory xsi:nil="true" ref="ID2"/>
	</OwnerHistory>
	<RelatedObjects ex:cType="set">
		<IfcCoveringType pos="0" xsi:nil="true" ref="ID104"/>
	</RelatedObjects>
	<RelatingClassification>
		<IfcClassificationReference xsi:nil="true" ref="ID112"/>
	</RelatingClassification>
</IfcRelAssociatesClassification>
<IfcOwnerHistory id="ID2">
	<OwningUser>
		<IfcPersonAndOrganization xsi:nil="true" ref="ID5"/>
	</OwningUser>
	<OwningApplication>
		<IfcApplication xsi:nil="true" ref="ID6"/>
	</OwningApplication>
	<ChangeAction>added</ChangeAction>
	<LastModifiedDate>0</LastModifiedDate>
	<CreationDate>1207828354</CreationDate>
</IfcOwnerHistory>
<IfcPerson id="ID3">
	<Id>Matthias Weise</Id>
	<FamilyName></FamilyName>
	<GivenName></GivenName>
</IfcPerson>
<IfcOrganization id="ID4">
	<Id></Id>
	<Name></Name>
	<Description></Description>
</IfcOrganization>
<IfcPersonAndOrganization id="ID5">
	<ThePerson>
		<IfcPerson xsi:nil="true" ref="ID3"/>
	</ThePerson>
	<TheOrganization>
		<IfcOrganization xsi:nil="true" ref="ID4"/>
	</TheOrganization>
</IfcPersonAndOrganization>
<IfcApplication id="ID6">
	<ApplicationDeveloper>
		<IfcOrganization xsi:nil="true" ref="ID4"/>
	</ApplicationDeveloper>
	<Version>IFC-Application X</Version>
```

```
        <ApplicationFullName>IFC-Exporter V2.3</ApplicationFullName>
        <ApplicationIdentifier>Company Y</ApplicationIdentifier>
 </IfcApplication>
```

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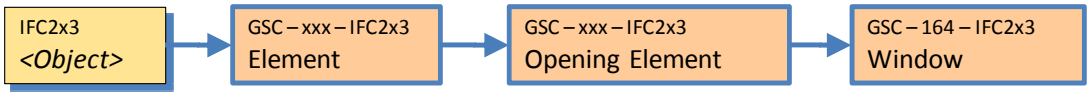
IFC Release Specific Concept Description (IFC2x3)

Window

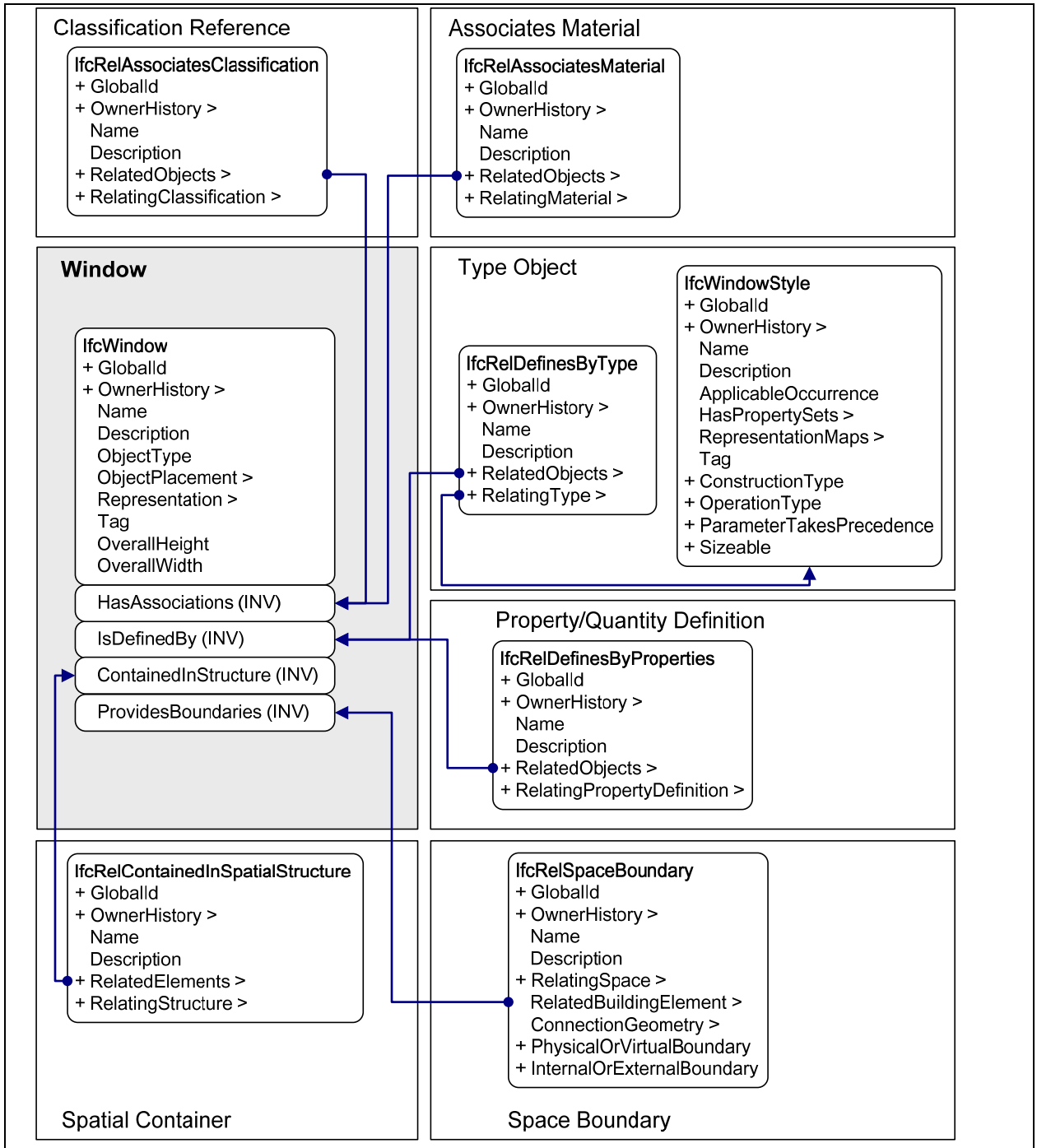
Reference	GSC-164	**Version**	1.0	**Status**	Proposal
Relationships					
History	9th June, 2008				
Authors	Matthias Weise (mw@aec3.de)				
Document Owner	AEC3 (with friendly support by the German research initiative “ZukunftBau”)				

Usage in view definition diagram



Please note that there might be further agreements for the *“Window”* concept that are not shown here. In particular, there might be separate concept definitions for specific properties, quantities and classifications. There are also additional (inverse) relationships that are not shown here but might be used to add further information or to define specific relationships to other elements.

Instantiation diagram



Implementation agreements

IfcWindow

Attribute	Implementation agreements
GlobalId	Must be provided
OwnerHistory	Must be provided
Name	Reserved
Description	Reserved
ObjectType	Reserved
ObjectPlacement	No agreements needed
Representation	No agreements needed
Tag	Reserved
OverallHeight	No agreements

OverallWidth	No agreements
HasAssociations (INV)	Optional, may contain instances of IfcRelAssociatesClassification that further classify the window according to a classification system and/or IfcRelAssociatesMaterial that provides information about the material
IsDefinedBy (INV)	Optional, may contain instances of IfcRelDefinesByProperties that further define the window with additional properties/quantities, and/or IfcRelDefinesByType that refers to the window style (type object)
ContainedInStructure (INV)	Optional, may define the spatial structure (most likely the space or building storey) in which the window is contained (see also ProvidesBoundaries) Please note that containment might also be defined via the wall to which the window belongs.
ProvidesBoundaries (INV)	Optional, may define the space that is bounded by the window
..	

Example (spf)

```
#100= IFCWINDOW('1buOsalk59WxAUsVt$0hEp',#2,'F202',$,$,$,$,$,2.5,0.75);
#101= IFCWINDOWLININGPROPERTIES('1uHCCCUgP69O6NuIcicx8q',#2,$,$,0.05,0.05,
      $,$,$,$,$,$,$);
#102= IFCWINDOWPANELPROPERTIES('19sUYzCDP0lxD1q0utVF91',#2,$,$,.NOTDEFINED.,
      .MIDDLE.,0.05,0.07,$);
#103= IFCWINDOWSTYLE('3o$XIFpmD5swrzOhGSrTy8',#2,
      'Fixed glazing',$,$,(#101,#102),$,$,.NOTDEFINED.,.SINGLE_PANEL.,.F.,.F.);
#104= IFCRELDEFINESBYTYPE('348C6GbJb7Thki5llQxQ$z',#2,
      'Fixed glazing',$,(#100),#103);
#109= IFCMATERIAL('Wood');
#110= IFCRELASSOCIATESMATERIAL('0iKTtg9xP6buf6Pf7_2fSN',#2,$,$,(#100),#109);
#111= IFCPROPERTYSET('1KWmeMlorCeABBAQ0CbtFj',#2,'Pset_WindowCommon',$,
      (#113,#114,#115));
#112= IFCRELDEFINESBYPROPERTIES('1inGsaLULC78ImgdLZI9Kc',#2,$,$,(#100),#111);
#113= IFCPROPERTYSINGLEVALUE('FireRating',$,IFCLABEL('F30'),$);
#114= IFCPROPERTYSINGLEVALUE('GlazingAreaFraction',$,
      IFCPOSITIVERATIOMEASURE(0.8),$);
#115= IFCPROPERTYSINGLEVALUE('IsExterior',$,IFCBOOLEAN(.T.),$);
#2= IFCOWNERHISTORY(#5, #6, $, .ADDED., 0, $, $, 1207828354);
#3= IFCPERSON('Matthias Weise', '', '', $, $, $, $, $);
#4= IFCORGANIZATION('', '', '', $, $);
#5= IFCPERSONANDORGANIZATION(#3, #4, $);
#6= IFCAPPLICATION(#4, 'IFC-Application X', 'IFC-Exporter V2.3', 'Company Y');
```

Example (ifcXML)

```
<IfcWindow id="ID100">
      <GlobalId>1buOsalk59WxAUsVt$0hEp</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <Name>F202</Name>
      <OverallHeight>2.5</OverallHeight>
      <OverallWidth>0.75</OverallWidth>
</IfcWindow>
<IfcWindowLiningProperties id="ID101">
      <GlobalId>1uHCCCUgP69O6NuIcicx8q</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <LiningDepth>0.05</LiningDepth>
      <LiningThickness>0.05</LiningThickness>
</IfcWindowLiningProperties>
<IfcWindowPanelProperties id="ID102">
      <GlobalId>19sUYzCDP0lxD1q0utVF91</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <OperationType>notdefined</OperationType>
```

```
        <PanelPosition>middle</PanelPosition>
        <FrameDepth>0.05</FrameDepth>
        <FrameThickness>0.07</FrameThickness>
  </IfcWindowPanelProperties>
  <IfcWindowStyle id="ID103">
        <GlobalId>3o$XIFpmD5swrzOhGSrTy8</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Fixed glazing</Name>
        <HasPropertySets ex:cType="set">
              <IfcWindowLiningProperties pos="0" xsi:nil="true" ref="ID101"/>
              <IfcWindowPanelProperties pos="1" xsi:nil="true" ref="ID102"/>
        </HasPropertySets>
        <ConstructionType>notdefined</ConstructionType>
        <OperationType>single_panel</OperationType>
        <ParameterTakesPrecedence>false</ParameterTakesPrecedence>
        <Sizeable>false</Sizeable>
  </IfcWindowStyle>
  <IfcRelDefinesByType id="ID104">
        <GlobalId>348C6GbJb7Thki5llQxQ$z</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Fixed glazing</Name>
        <RelatedObjects ex:cType="set">
              <IfcWindow pos="0" xsi:nil="true" ref="ID100"/>
        </RelatedObjects>
        <RelatingType>
              <IfcWindowStyle xsi:nil="true" ref="ID103"/>
        </RelatingType>
  </IfcRelDefinesByType>
  <IfcMaterial id="ID109">
        <Name>Wood</Name>
  </IfcMaterial>
  <IfcRelAssociatesMaterial id="ID110">
        <GlobalId>0iKTtg9xP6buf6Pf7_2fSN</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <RelatedObjects ex:cType="set">
              <IfcWindowPanelProperties pos="0" xsi:nil="true" ref="ID100"/>
        </RelatedObjects>
        <RelatingMaterial>
              <IfcMaterial xsi:nil="true" ref="ID109"/>
        </RelatingMaterial>
  </IfcRelAssociatesMaterial>
  <IfcPropertySet id="ID111">
        <GlobalId>1KWmeMlorCeABBAQ0CbtFj</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Pset_WindowCommon</Name>
        <HasProperties ex:cType="set">
              <IfcPropertySingleValue pos="0" xsi:nil="true" ref="ID113"/>
              <IfcPropertySingleValue pos="1" xsi:nil="true" ref="ID114"/>
              <IfcPropertySingleValue pos="2" xsi:nil="true" ref="ID115"/>
        </HasProperties>
  </IfcPropertySet>
  <IfcRelDefinesByProperties id="ID112">
        <GlobalId>1inGsaLULC78ImgdLZI9Kc</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <RelatedObjects ex:cType="set">
              <IfcWindow pos="0" xsi:nil="true" ref="ID100"/>
        </RelatedObjects>
        <RelatingPropertyDefinition>
              <IfcPropertySet xsi:nil="true" ref="ID111"/>
        </RelatingPropertyDefinition>
  </IfcRelDefinesByProperties>
```

```
<IfcPropertySingleValue id="ID113">
	<Name>FireRating</Name>
	<NominalValue>
		<IfcLabel>F30</IfcLabel>
	</NominalValue>
</IfcPropertySingleValue>
<IfcPropertySingleValue id="ID114">
	<Name>GlazingAreaFraction</Name>
	<NominalValue>
		<IfcPositiveRatioMeasure>0.8</IfcPositiveRatioMeasure>
	</NominalValue>
</IfcPropertySingleValue>
<IfcPropertySingleValue id="ID115">
	<Name>IsExterior</Name>
	<NominalValue>
		<IfcBoolean>true</IfcBoolean>
	</NominalValue>
</IfcPropertySingleValue>
<IfcOwnerHistory id="ID2">
	<OwningUser>
		<IfcPersonAndOrganization xsi:nil="true" ref="ID5"/>
	</OwningUser>
	<OwningApplication>
		<IfcApplication xsi:nil="true" ref="ID6"/>
	</OwningApplication>
	<ChangeAction>added</ChangeAction>
	<LastModifiedDate>0</LastModifiedDate>
	<CreationDate>1207828354</CreationDate>
</IfcOwnerHistory>
<IfcPerson id="ID3">
	<Id>Matthias Weise</Id>
	<FamilyName></FamilyName>
	<GivenName></GivenName>
</IfcPerson>
<IfcOrganization id="ID4">
	<Id></Id>
	<Name></Name>
	<Description></Description>
</IfcOrganization>
<IfcPersonAndOrganization id="ID5">
	<ThePerson>
		<IfcPerson xsi:nil="true" ref="ID3"/>
	</ThePerson>
	<TheOrganization>
		<IfcOrganization xsi:nil="true" ref="ID4"/>
	</TheOrganization>
</IfcPersonAndOrganization>
<IfcApplication id="ID6">
	<ApplicationDeveloper>
		<IfcOrganization xsi:nil="true" ref="ID4"/>
	</ApplicationDeveloper>
	<Version>IFC-Application X</Version>
	<ApplicationFullName>IFC-Exporter V2.3</ApplicationFullName>
	<ApplicationIdentifier>Company Y</ApplicationIdentifier>
</IfcApplication>
```

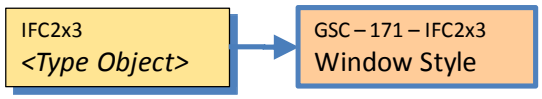
This document uses the official IFC Model View Definition Format version 1.1.0. of the IAI (www.iai-international.org)
The content of this document has to be certified by the IAI before becoming part of an official IFC Model View Definition.

IFC Release Specific Concept Description (IFC2x3)

Window Style

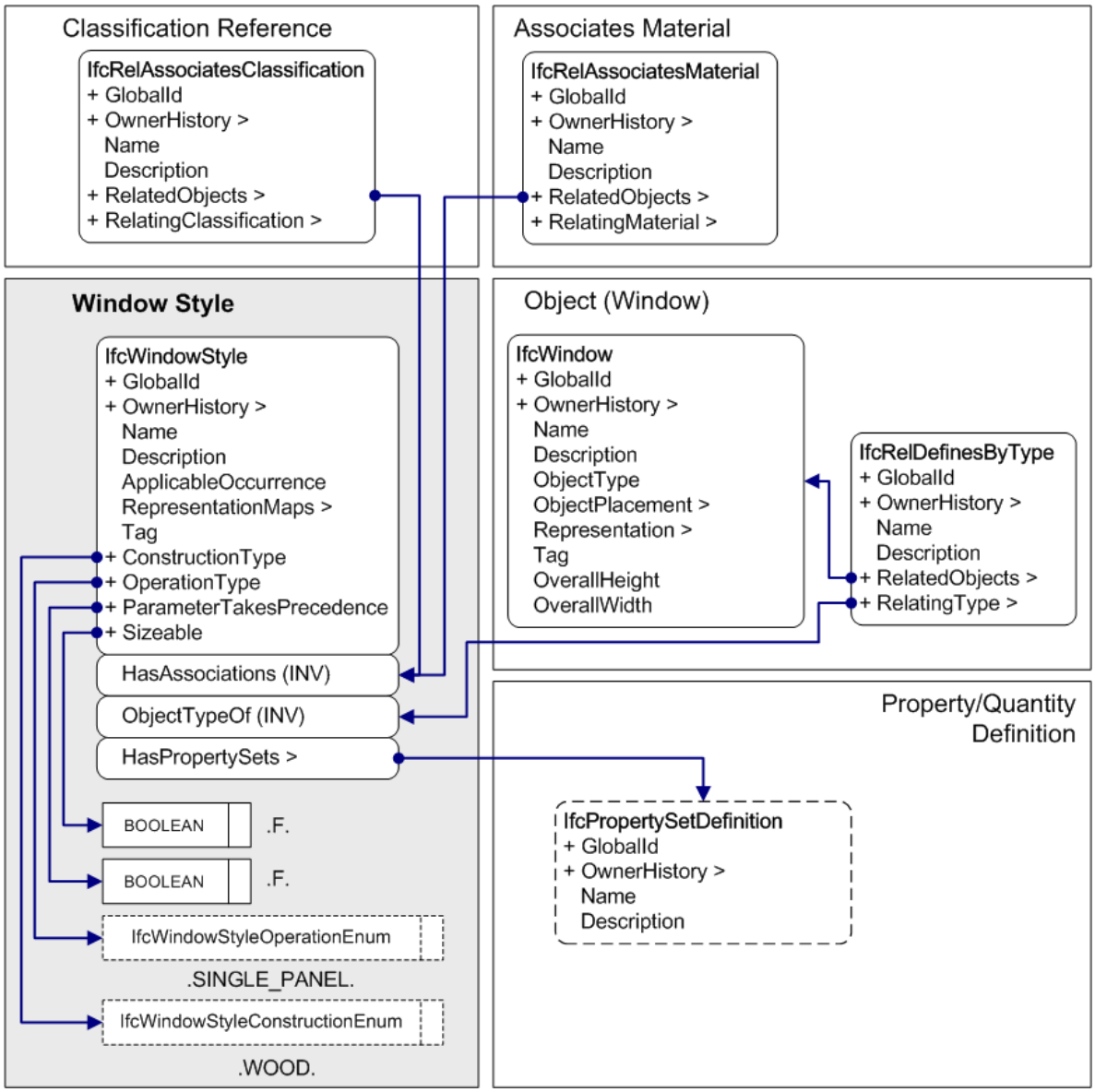
Reference	GSC-171	**Version**	1.1	**Status**	Proposal
Relationships					
History	20th April, 2009 (changed instantiation diagram -> property definition)				
Authors	Matthias Weise (mw@aec3.de)				
Document Owner	AEC3 (with friendly support by the German research initiative “ZukunftBau”)				

Usage in view definition diagram



Please note that there might be further agreements for the *“Window Style”* concept that are not shown here. In particular, there might be separate concept definitions for specific properties, quantities and classifications. There are also additional (inverse) relationships that are not shown here but might be used to add further information.

Instantiation diagram



Implementation agreements

IfcWindowStyle

Attribute	Implementation agreements
GlobalId	Must be provided
OwnerHistory	Must be provided
Name	Reserved
Description	Reserved
ApplicableOccurrence	Reserved
HasPropertySets	No agreements needed
RepresentationMaps	No agreements needed
Tag	Reserved
ConstructionType	Must be provided
OperationType	Must be provided
ParameterTakes Precedence	Must be provided
Sizeable	Must be provided

Example (spf)

```
#100= IFCWINDOW('1buOsalk59WxAUsVt$0hEp',#2,'F202',$,$,$,$,$,2.5,0.75);
#101= IFCWINDOWLININGPROPERTIES('1uHCCCUgP69O6NuIcicx8q',#2,$,$,0.05,0.05,
      $,$,$,$,$,$,$);
#102= IFCWINDOWPANELPROPERTIES('19sUYzCDP0lxD1q0utVF91',#2,$,$,.NOTDEFINED.,
      .MIDDLE.,0.05,0.07,$);
#103= IFCWINDOWSTYLE('3o$XIFpmD5swrzOhGSrTy8',#2,
      'Fixed glazing',$,$,(#101,#102),$,$,.NOTDEFINED.,.SINGLE_PANEL.,.F.,.F.);
#104= IFCRELDEFINESBYTYPE('348C6GbJb7Thki5llQxQ$z',#2,
      'Fixed glazing',$,(#100),#103);
#109= IFCMATERIAL('Wood');
#110= IFCRELASSOCIATESMATERIAL('0iKTtg9xP6buf6Pf7_2fSN',#2,$,$,(#100),#109);
#111= IFCPROPERTYSET('1KWmeMlorCeABBAQ0CbtFj',#2,'Pset_WindowCommon',$,
      (#113,#114,#115));
#112= IFCRELDEFINESBYPROPERTIES('1inGsaLULC78ImgdLZI9Kc',#2,$,$,(#100),#111);
#113= IFCPROPERTYSINGLEVALUE('FireRating',$,IFCLABEL('F30'),$);
#114= IFCPROPERTYSINGLEVALUE('GlazingAreaFraction',$,
      IFCPOSITIVERATIOMEASURE(0.8),$);
#115= IFCPROPERTYSINGLEVALUE('IsExterior',$,IFCBOOLEAN(.T.),$);
#2= IFCOWNERHISTORY(#5, #6, $, .ADDED., 0, $, $, 1207828354);
#3= IFCPERSON('Matthias Weise', '', '', $, $, $, $, $);
#4= IFCORGANIZATION('', '', '', $, $);
#5= IFCPERSONANDORGANIZATION(#3, #4, $);
#6= IFCAPPLICATION(#4, 'IFC-Application X', 'IFC-Exporter V2.3', 'Company Y');
```

Example (ifcXML)

```
<IfcWindow id="ID100">
      <GlobalId>1buOsalk59WxAUsVt$0hEp</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <Name>F202</Name>
      <OverallHeight>2.5</OverallHeight>
      <OverallWidth>0.75</OverallWidth>
</IfcWindow>
<IfcWindowLiningProperties id="ID101">
      <GlobalId>1uHCCCUgP69O6NuIcicx8q</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <LiningDepth>0.05</LiningDepth>
      <LiningThickness>0.05</LiningThickness>
</IfcWindowLiningProperties>
<IfcWindowPanelProperties id="ID102">
```

```
        <GlobalId>19sUYzCDP0lxD1q0utVF91</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <OperationType>notdefined</OperationType>
        <PanelPosition>middle</PanelPosition>
        <FrameDepth>0.05</FrameDepth>
        <FrameThickness>0.07</FrameThickness>
  </IfcWindowPanelProperties>
  <IfcWindowStyle id="ID103">
        <GlobalId>3o$XIFpmD5swrzOhGSrTy8</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Fixed glazing</Name>
        <HasPropertySets ex:cType="set">
             <IfcWindowLiningProperties pos="0" xsi:nil="true" ref="ID101"/>
             <IfcWindowPanelProperties pos="1" xsi:nil="true" ref="ID102"/>
        </HasPropertySets>
        <ConstructionType>notdefined</ConstructionType>
        <OperationType>single_panel</OperationType>
        <ParameterTakesPrecedence>false</ParameterTakesPrecedence>
        <Sizeable>false</Sizeable>
  </IfcWindowStyle>
  <IfcRelDefinesByType id="ID104">
        <GlobalId>348C6GbJb7Thki5llQxQ$z</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Fixed glazing</Name>
        <RelatedObjects ex:cType="set">
             <IfcWindow pos="0" xsi:nil="true" ref="ID100"/>
        </RelatedObjects>
        <RelatingType>
             <IfcWindowStyle xsi:nil="true" ref="ID103"/>
        </RelatingType>
  </IfcRelDefinesByType>
  <IfcMaterial id="ID109">
        <Name>Wood</Name>
  </IfcMaterial>
  <IfcRelAssociatesMaterial id="ID110">
        <GlobalId>0iKTtg9xP6buf6Pf7_2fSN</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <RelatedObjects ex:cType="set">
             <IfcWindowPanelProperties pos="0" xsi:nil="true" ref="ID100"/>
        </RelatedObjects>
        <RelatingMaterial>
             <IfcMaterial xsi:nil="true" ref="ID109"/>
        </RelatingMaterial>
  </IfcRelAssociatesMaterial>
  <IfcPropertySet id="ID111">
        <GlobalId>1KWmeMlorCeABBAQ0CbtFj</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Pset_WindowCommon</Name>
        <HasProperties ex:cType="set">
             <IfcPropertySingleValue pos="0" xsi:nil="true" ref="ID113"/>
             <IfcPropertySingleValue pos="1" xsi:nil="true" ref="ID114"/>
             <IfcPropertySingleValue pos="2" xsi:nil="true" ref="ID115"/>
        </HasProperties>
  </IfcPropertySet>
  <IfcRelDefinesByProperties id="ID112">
        <GlobalId>1inGsaLULC78ImgdLZI9Kc</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <RelatedObjects ex:cType="set">
             <IfcWindow pos="0" xsi:nil="true" ref="ID100"/>
```

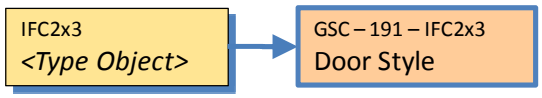
```
        </RelatedObjects>
        <RelatingPropertyDefinition>
              <IfcPropertySet xsi:nil="true" ref="ID111"/>
        </RelatingPropertyDefinition>
</IfcRelDefinesByProperties>
<IfcPropertySingleValue id="ID113">
        <Name>FireRating</Name>
        <NominalValue>
              <IfcLabel>F30</IfcLabel>
        </NominalValue>
</IfcPropertySingleValue>
<IfcPropertySingleValue id="ID114">
        <Name>GlazingAreaFraction</Name>
        <NominalValue>
              <IfcPositiveRatioMeasure>0.8</IfcPositiveRatioMeasure>
        </NominalValue>
</IfcPropertySingleValue>
<IfcPropertySingleValue id="ID115">
        <Name>IsExterior</Name>
        <NominalValue>
              <IfcBoolean>true</IfcBoolean>
        </NominalValue>
</IfcPropertySingleValue>
<IfcOwnerHistory id="ID2">
        <OwningUser>
              <IfcPersonAndOrganization xsi:nil="true" ref="ID5"/>
        </OwningUser>
        <OwningApplication>
              <IfcApplication xsi:nil="true" ref="ID6"/>
        </OwningApplication>
        <ChangeAction>added</ChangeAction>
        <LastModifiedDate>0</LastModifiedDate>
        <CreationDate>1207828354</CreationDate>
</IfcOwnerHistory>
<IfcPerson id="ID3">
        <Id>Matthias Weise</Id>
        <FamilyName></FamilyName>
        <GivenName></GivenName>
</IfcPerson>
<IfcOrganization id="ID4">
        <Id></Id>
        <Name></Name>
        <Description></Description>
</IfcOrganization>
<IfcPersonAndOrganization id="ID5">
        <ThePerson>
              <IfcPerson xsi:nil="true" ref="ID3"/>
        </ThePerson>
        <TheOrganization>
              <IfcOrganization xsi:nil="true" ref="ID4"/>
        </TheOrganization>
</IfcPersonAndOrganization>
<IfcApplication id="ID6">
        <ApplicationDeveloper>
              <IfcOrganization xsi:nil="true" ref="ID4"/>
        </ApplicationDeveloper>
        <Version>IFC-Application X</Version>
        <ApplicationFullName>IFC-Exporter V2.3</ApplicationFullName>
        <ApplicationIdentifier>Company Y</ApplicationIdentifier>
</IfcApplication>
```

IFC Release Specific Concept Description (IFC2x3)

Door Style

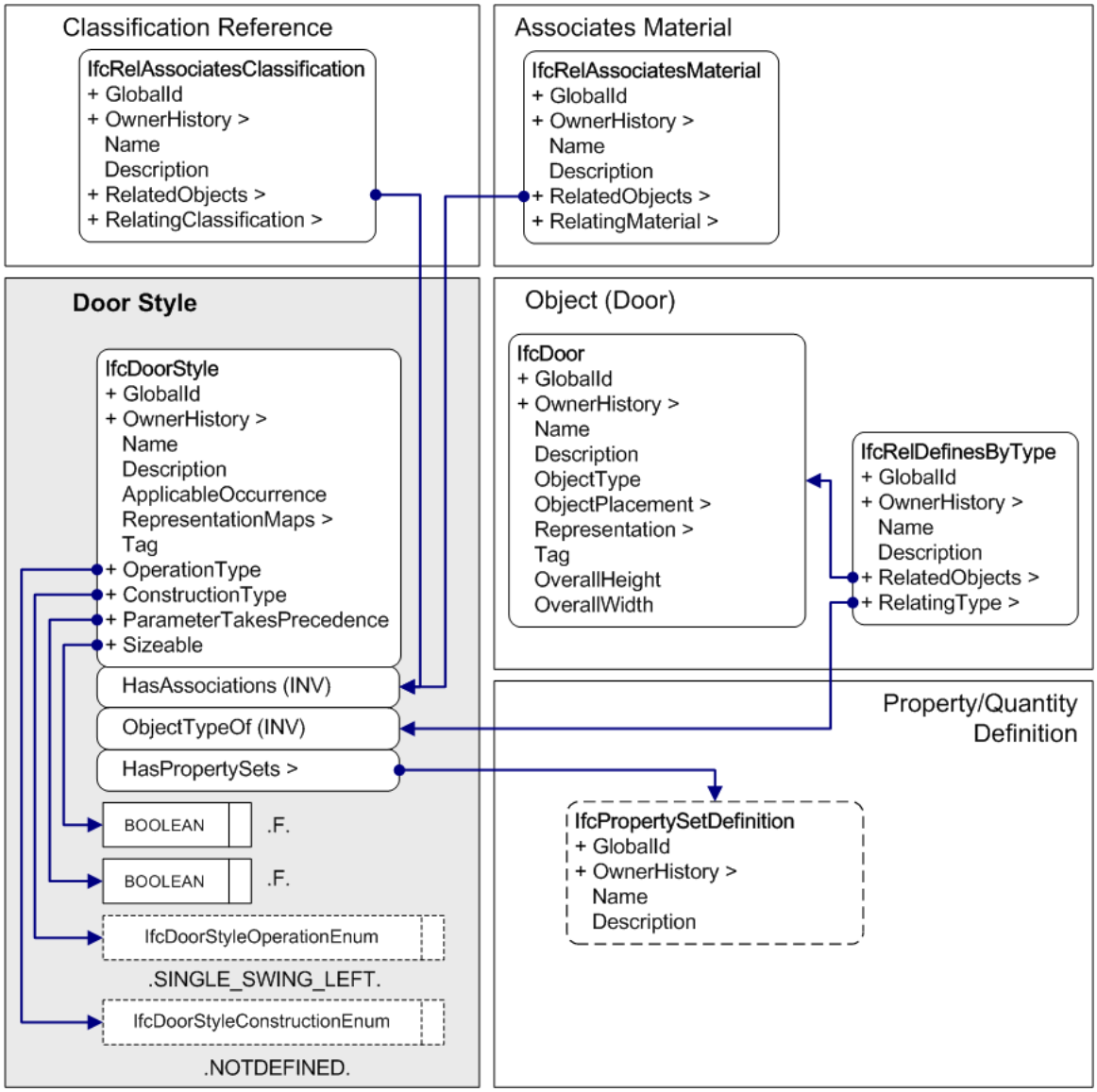
Reference	GSC-191	**Version**	1.1	**Status**	Proposal
Relationships					
History	20th April, 2009 (changed instantiation diagram -> property definition)				
Authors	Matthias Weise (mw@aec3.de)				
Document Owner	AEC3 (with friendly support by the German research initiative “ZukunftBau”)				

Usage in view definition diagram



Please note that there might be further agreements for the *“Door Style”* concept that are not shown here. In particular, there might be separate concept definitions for specific properties, quantities and classifications. There are also additional (inverse) relationships that are not shown here but might be used to add further information.

Instantiation diagram



Implementation agreements

IfcDoorStyle

Attribute	Implementation agreements
GlobalId	Must be provided
OwnerHistory	Must be provided
Name	Reserved
Description	Reserved
ApplicableOccurrence	Reserved
HasPropertySets	No agreements needed
RepresentationMaps	No agreements needed
Tag	Reserved
ConstructionType	Must be provided
OperationType	Must be provided
ParameterTakes Precedence	Must be provided
Sizeable	Must be provided

Example (spf)

```
#100= IFCDOOR('1N6AM49mPF_QLJuXpLNYt1',#2,'T103',$,$,$,$,$,2.01,0.75);
#101= IFCDOORLININGPROPERTIES('1WLuCO_IL5R9J0BIowj2uP',#2,$,$,0.23,0.05,
      $,$,$,$,$,$,$,$,$);
#102= IFCDOORPANELPROPERTIES('0eoUjtRrX12xDCFYg8Q2J5',#2,$,$,0.045,.SWINGING.,
      $,.MIDDLE.,$);
#103= IFCDOORSTYLE('2OZQafot53QR2V1VwPTKAn',#2,'Frame
      door',$,$,(#101,#102),$,$,.SINGLE_SWING_LEFT.,.NOTDEFINED.,.F.,.F.);
#104= IFCRELDEFINESBYTYPE('0SuYMDmmH1Lv8fVlwq8_wV',#2,
      'Frame door type',$,(#100),#103);
#109= IFCMATERIAL('Wood');
#110= IFCRELASSOCIATESMATERIAL('0iKTtg9xP6buf6Pf7_2fSN',#2,$,$,(#100),#109);
#111= IFCPROPERTYSET('1KWmeMlorCeABBAQ0CbtFj',#2,'Pset_WindowCommon',$,
      (#113,#114,#115));
#112= IFCRELDEFINESBYPROPERTIES('1inGsaLULC78ImgdLZI9Kc',#2,$,$,(#100),#111);
#113= IFCPROPERTYSINGLEVALUE('FireRating',$,IFCLABEL('F30'),$);
#114= IFCPROPERTYSINGLEVALUE('GlazingAreaFraction',$,
      IFCPOSITIVERATIOMEASURE(0.1),$);
#115= IFCPROPERTYSINGLEVALUE('IsExterior',$,IFCBOOLEAN(.T.),$);
#2= IFCOWNERHISTORY(#5, #6, $, .ADDED., 0, $, $, 1207828354);
#3= IFCPERSON('Matthias Weise', '', '', $, $, $, $, $);
#4= IFCORGANIZATION('', '', '', $, $);
#5= IFCPERSONANDORGANIZATION(#3, #4, $);
#6= IFCAPPLICATION(#4, 'IFC-Application X', 'IFC-Exporter V2.3', 'Company Y');
```

Example (ifcXML)

```
<IfcOwnerHistory id="ID2">
      <OwningUser>
            <IfcPersonAndOrganization xsi:nil="true" ref="ID5"/>
      </OwningUser>
      <OwningApplication>
            <IfcApplication xsi:nil="true" ref="ID6"/>
      </OwningApplication>
      <ChangeAction>added</ChangeAction>
      <LastModifiedDate>0</LastModifiedDate>
      <CreationDate>1207828354</CreationDate>
</IfcOwnerHistory>
<IfcPerson id="ID3">
      <Id>Matthias Weise</Id>
      <FamilyName></FamilyName>
      <GivenName></GivenName>
</IfcPerson>
<IfcOrganization id="ID4">
      <Id></Id>
```

```
        <Name></Name>
        <Description></Description>
</IfcOrganization>
<IfcPersonAndOrganization id="ID5">
        <ThePerson>
              <IfcPerson xsi:nil="true" ref="ID3"/>
        </ThePerson>
        <TheOrganization>
              <IfcOrganization xsi:nil="true" ref="ID4"/>
        </TheOrganization>
</IfcPersonAndOrganization>
<IfcApplication id="ID6">
        <ApplicationDeveloper>
              <IfcOrganization xsi:nil="true" ref="ID4"/>
        </ApplicationDeveloper>
        <Version>IFC-Application X</Version>
        <ApplicationFullName>IFC-Exporter V2.3</ApplicationFullName>
        <ApplicationIdentifier>Company Y</ApplicationIdentifier>
</IfcApplication>
<IfcDoor id="ID100">
        <GlobalId>1N6AM49mPF_QLJuXpLNYt1</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>T103</Name>
        <OverallHeight>2.01</OverallHeight>
        <OverallWidth>0.75</OverallWidth>
</IfcDoor>
<IfcDoorLiningProperties id="ID101">
        <GlobalId>1WLuCO_IL5R9J0BIowj2uP</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <LiningDepth>0.23</LiningDepth>
        <LiningThickness>0.05</LiningThickness>
</IfcDoorLiningProperties>
<IfcDoorPanelProperties id="ID102">
        <GlobalId>0eoUjtRrX12xDCFYg8Q2J5</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <PanelDepth>0.045</PanelDepth>
        <PanelOperation>swinging</PanelOperation>
        <PanelPosition>middle</PanelPosition>
</IfcDoorPanelProperties>
<IfcDoorStyle id="ID103">
        <GlobalId>2OZQafot53QR2V1VwPTKAn</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Frame door</Name>
        <HasPropertySets ex:cType="set">
              <IfcDoorLiningProperties pos="0" xsi:nil="true" ref="ID101"/>
              <IfcDoorPanelProperties pos="1" xsi:nil="true" ref="ID102"/>
        </HasPropertySets>
        <OperationType>single_swing_left</OperationType>
        <ConstructionType>notdefined</ConstructionType>
        <ParameterTakesPrecedence>false</ParameterTakesPrecedence>
        <Sizeable>false</Sizeable>
</IfcDoorStyle>
<IfcRelDefinesByType id="ID104">
        <GlobalId>0SuYMDmmH1Lv8fVlwq8_wV</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Frame door type</Name>
        <RelatedObjects ex:cType="set">
              <IfcDoor pos="0" xsi:nil="true" ref="ID100"/>
        </RelatedObjects>
        <RelatingType>
              <IfcDoorStyle xsi:nil="true" ref="ID103"/>
```

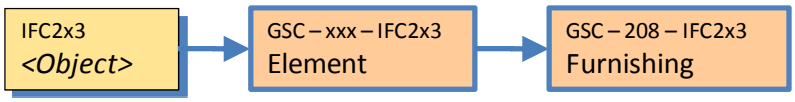
```
        </RelatingType>
</IfcRelDefinesByType>
<IfcMaterial id="ID109">
        <Name>Wood</Name>
</IfcMaterial>
<IfcRelAssociatesMaterial id="ID110">
        <GlobalId>0iKTtg9xP6buf6Pf7_2fSN</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <RelatedObjects ex:cType="set">
              <IfcDoor pos="0" xsi:nil="true" ref="ID100"/>
        </RelatedObjects>
        <RelatingMaterial>
              <IfcMaterial xsi:nil="true" ref="ID109"/>
        </RelatingMaterial>
</IfcRelAssociatesMaterial>
<IfcPropertySet id="ID111">
        <GlobalId>1KWmeMlorCeABBAQ0CbtFj</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Pset_WindowCommon</Name>
        <HasProperties ex:cType="set">
              <IfcPropertySingleValue pos="0" xsi:nil="true" ref="ID113"/>
              <IfcPropertySingleValue pos="1" xsi:nil="true" ref="ID114"/>
              <IfcPropertySingleValue pos="2" xsi:nil="true" ref="ID115"/>
        </HasProperties>
</IfcPropertySet>
<IfcRelDefinesByProperties id="ID112">
        <GlobalId>1inGsaLULC78ImgdLZI9Kc</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <RelatedObjects ex:cType="set">
              <IfcDoor pos="0" xsi:nil="true" ref="ID100"/>
        </RelatedObjects>
        <RelatingPropertyDefinition>
              <IfcPropertySet xsi:nil="true" ref="ID111"/>
        </RelatingPropertyDefinition>
</IfcRelDefinesByProperties>
<IfcPropertySingleValue id="ID113">
        <Name>FireRating</Name>
        <NominalValue>
              <IfcLabel>F30</IfcLabel>
        </NominalValue>
</IfcPropertySingleValue>
<IfcPropertySingleValue id="ID114">
        <Name>GlazingAreaFraction</Name>
        <NominalValue>
              <IfcPositiveRatioMeasure>0.1</IfcPositiveRatioMeasure>
        </NominalValue>
</IfcPropertySingleValue>
<IfcPropertySingleValue id="ID115">
        <Name>IsExterior</Name>
        <NominalValue>
              <IfcBoolean>true</IfcBoolean>
        </NominalValue>
</IfcPropertySingleValue>
```

IFC Release Specific Concept Description (IFC2x3)

Furnishing

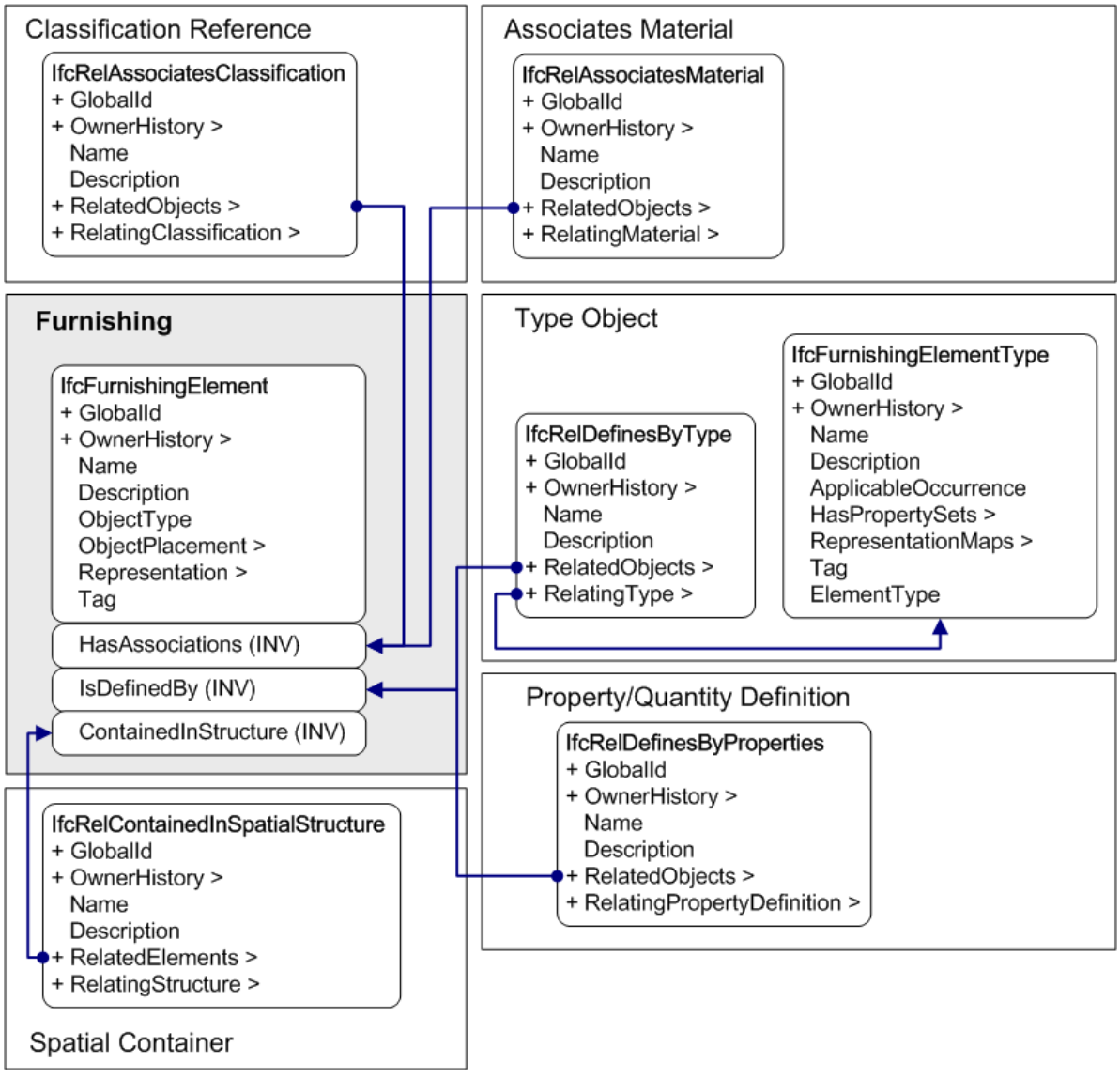
Reference	GSC-208	**Version**	1.0	**Status**	Proposal
Relationships					
History	20th April, 2009				
Authors	Matthias Weise (mw@aec3.de)				
Document Owner	AEC3 (with friendly support by the German research initiative “ZukunftBau”)				

Usage in view definition diagram



Please note that there might be further agreements for the *“Furnishing”* concept that are not shown here. In particular, there might be separate concept definitions for specific properties, quantities and classifications. There are also additional (inverse) relationships that are not shown here but might be used to add further information or to define specific relationships to other elements.

Instantiation diagram



Implementation agreements

IfcFurnishingElement

Attribute	Implementation agreements
GlobalId	Must be provided
OwnerHistory	Must be provided
Name	Reserved
Description	Reserved
ObjectType	Reserved
ObjectPlacement	No agreements needed
Representation	No agreements needed
Tag	Reserved
HasAssociations (INV)	Optional, may contain instances of IfcRelAssociatesClassification that further classify the furnishing element according to a classification system and/or IfcRelAssociatesMaterial that provides information about the material
IsDefinedBy (INV)	Optional, may contain instances of IfcRelDefinesByProperties that further define the furnishing element with additional properties/quantities, and/or IfcRelDefinesByType that refers to the furniture style (type object)
ContainedInStructure (INV)	Required, define the spatial structure (most likely the space or building storey) in which the furnishing element is contained.
..	

Example (spf)

```
#100= IFCFURNISHINGELEMENT('1N6AM49mPF_QLJuXpLNYt1',#2,'F1.Space2',$,$,$,$,$);
#103= IFCFURNITURETYPE('2OZQafot53QR2V1VwPTKAn',#2,'Table',$,$,(#111),$,$,$,
      .FACTORY.);
#104= IFCRELDEFINESBYTYPE('0SuYMDmmH1Lv8fVlwq8_wV',#2,'Table definition',$,
      (#100),#103);
#109= IFCMATERIAL('Wood');
#110= IFCRELASSOCIATESMATERIAL('0iKTtg9xP6buf6Pf7_2fSN',#2,$,$,(#100),#109);
#111= IFCPROPERTYSET('1KWmeMlorCeABBAQ0CbtFj',#2,'Pset_FurnitureTypeCommon',$,
      (#113,#114,#115));
#113= IFCPROPERTYSINGLEVALUE('NominalHeight',$,IFCPOSITIVELENGTHMEASURE(0.9),$);
#114= IFCPROPERTYSINGLEVALUE('NominalLength',$,IFCPOSITIVELENGTHMEASURE(1.6),$);
#115= IFCPROPERTYSINGLEVALUE('NominalDepth',$,IFCPOSITIVELENGTHMEASURE(0.8),$);
#130= IFCSPACE('4Tf2p7VyLB7eox67SA_zKE',#2,'2',$,$,$,$,'Living room',.ELEMENT.,
      .INTERNAL.,$);
#131= IFCRELCONTAINEDINSPATIALSTRUCTURE('1WLuCO_IL5R9J0BIowj2uP',#2,$,$,(#100),
      #130);
#2= IFCOWNERHISTORY(#5, #6, $, .ADDED., 0, $, $, 1207828354);
#3= IFCPERSON('Matthias Weise', '', '', $, $, $, $, $);
#4= IFCORGANIZATION('', '', '', $, $);
#5= IFCPERSONANDORGANIZATION(#3, #4, $);
#6= IFCAPPLICATION(#4, 'IFC-Application X', 'IFC-Exporter V2.3', 'Company Y');
```

Example (ifcXML)

```
<IfcOwnerHistory id="ID2">
      <OwningUser>
            <IfcPersonAndOrganization xsi:nil="true" ref="ID5"/>
      </OwningUser>
      <OwningApplication>
            <IfcApplication xsi:nil="true" ref="ID6"/>
      </OwningApplication>
      <ChangeAction>added</ChangeAction>
      <LastModifiedDate>0</LastModifiedDate>
      <CreationDate>1207828354</CreationDate>
</IfcOwnerHistory>
<IfcPerson id="ID3">
      <Id>Matthias Weise</Id>
      <FamilyName></FamilyName>
```

```
        <GivenName></GivenName>
</IfcPerson>
<IfcOrganization id="ID4">
        <Id></Id>
        <Name></Name>
        <Description></Description>
</IfcOrganization>
<IfcPersonAndOrganization id="ID5">
        <ThePerson>
              <IfcPerson xsi:nil="true" ref="ID3"/>
        </ThePerson>
        <TheOrganization>
              <IfcOrganization xsi:nil="true" ref="ID4"/>
        </TheOrganization>
</IfcPersonAndOrganization>
<IfcApplication id="ID6">
        <ApplicationDeveloper>
              <IfcOrganization xsi:nil="true" ref="ID4"/>
        </ApplicationDeveloper>
        <Version>IFC-Application X</Version>
        <ApplicationFullName>IFC-Exporter V2.3</ApplicationFullName>
        <ApplicationIdentifier>Company Y</ApplicationIdentifier>
</IfcApplication>
<IfcFurnishingElement id="ID100">
        <GlobalId>1N6AM49mPF_QLJuXpLNYt1</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>F1.Space2</Name>
</IfcFurnishingElement>
<IfcFurnitureType id="ID103">
        <GlobalId>2OZQafot53QR2V1VwPTKAn</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Table</Name>
        <HasPropertySets ex:cType="set">
              <IfcPropertySet pos="0" xsi:nil="true" ref="ID111"/>
        </HasPropertySets>
        <AssemblyPlace>factory</AssemblyPlace>
</IfcFurnitureType>
<IfcRelDefinesByType id="ID104">
        <GlobalId>0SuYMDmmH1Lv8fVlwq8_wV</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Table definition</Name>
        <RelatedObjects ex:cType="set">
              <IfcFurnishingElement pos="0" xsi:nil="true" ref="ID100"/>
        </RelatedObjects>
        <RelatingType>
              <IfcFurnitureType xsi:nil="true" ref="ID103"/>
        </RelatingType>
</IfcRelDefinesByType>
<IfcMaterial id="ID109">
        <Name>Wood</Name>
</IfcMaterial>
<IfcRelAssociatesMaterial id="ID110">
        <GlobalId>0iKTtg9xP6buf6Pf7_2fSN</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <RelatedObjects ex:cType="set">
              <IfcFurnishingElement pos="0" xsi:nil="true" ref="ID100"/>
        </RelatedObjects>
        <RelatingMaterial>
              <IfcMaterial xsi:nil="true" ref="ID109"/>
        </RelatingMaterial>
</IfcRelAssociatesMaterial>
<IfcPropertySet id="ID111">
        <GlobalId>1KWmeMlorCeABBAQ0CbtFj</GlobalId>
```

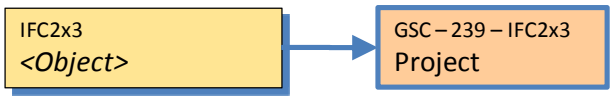
```
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Pset_FurnitureTypeCommon</Name>
        <HasProperties ex:cType="set">
              <IfcPropertySingleValue pos="0" xsi:nil="true" ref="ID113"/>
              <IfcPropertySingleValue pos="1" xsi:nil="true" ref="ID114"/>
              <IfcPropertySingleValue pos="2" xsi:nil="true" ref="ID115"/>
        </HasProperties>
  </IfcPropertySet>
  <IfcPropertySingleValue id="ID113">
        <Name>NominalHeight</Name>
        <NominalValue>
              <IfcPositiveLengthMeasure>0.9</IfcPositiveLengthMeasure>
        </NominalValue>
  </IfcPropertySingleValue>
  <IfcPropertySingleValue id="ID114">
        <Name>NominalLength</Name>
        <NominalValue>
              <IfcPositiveLengthMeasure>1.6</IfcPositiveLengthMeasure>
        </NominalValue>
  </IfcPropertySingleValue>
  <IfcPropertySingleValue id="ID115">
        <Name>NominalDepth</Name>
        <NominalValue>
              <IfcPositiveLengthMeasure>0.8</IfcPositiveLengthMeasure>
        </NominalValue>
  </IfcPropertySingleValue>
  <IfcSpace id="ID130">
        <GlobalId>4Tf2p7VyLB7eox67SA_zKE</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>2</Name>
        <LongName>Living room</LongName>
        <CompositionType>element</CompositionType>
        <InteriorOrExteriorSpace>internal</InteriorOrExteriorSpace>
  </IfcSpace>
  <IfcRelContainedInSpatialStructure id="ID131">
        <GlobalId>1WLuCO_IL5R9J0BIowj2uP</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <RelatedElements ex:cType="set">
              <IfcFurnishingElement pos="0" xsi:nil="true" ref="ID100"/>
        </RelatedElements>
        <RelatingStructure>
              <IfcSpace xsi:nil="true" ref="ID130"/>
        </RelatingStructure>
  </IfcRelContainedInSpatialStructure>
```

IFC Release Specific Concept Description (IFC2x3)

Project

Reference	GSC-239	**Version**	1.0	**Status**	Proposal
Relationships					
History	9th June, 2008				
Authors	Matthias Weise (mw@aec3.de)				
Document Owner	AEC3 (with friendly support by the German research initiative “ZukunftBau”)				

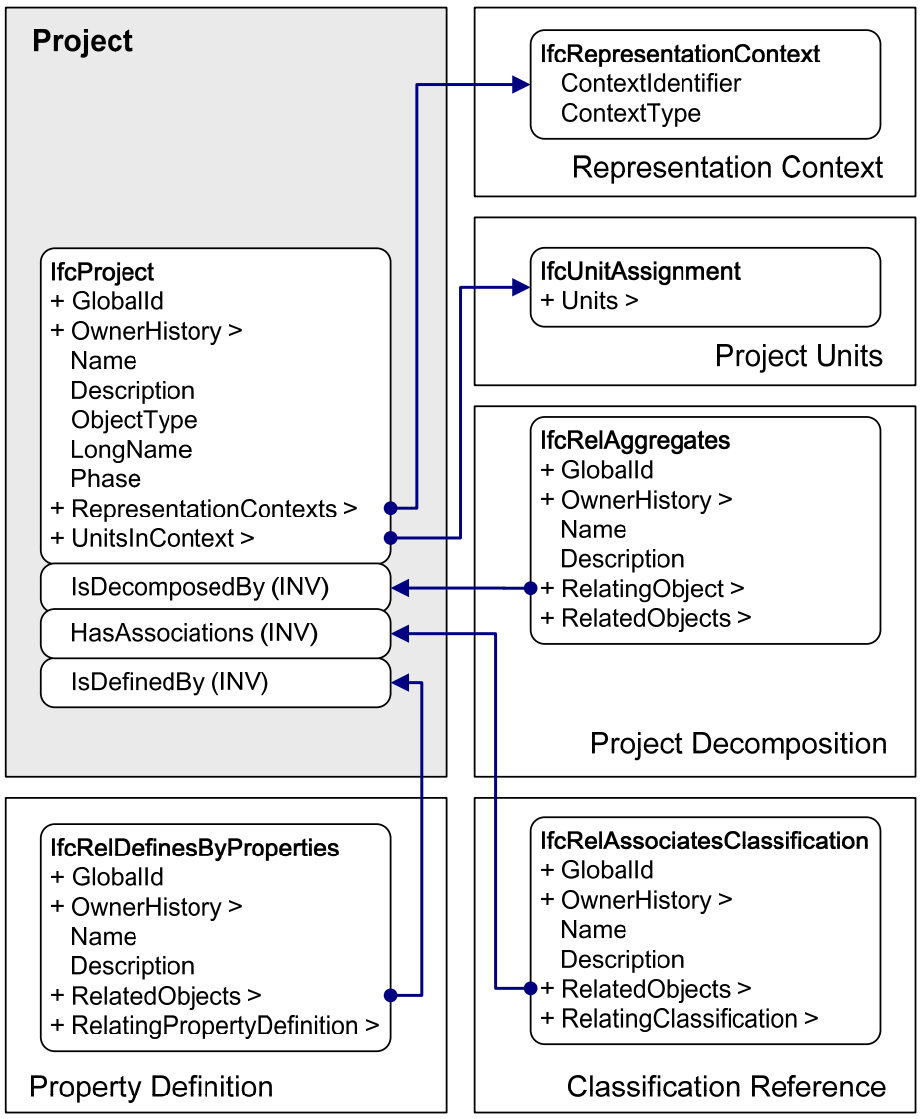
Usage in view definition diagram



Please note that there might be further agreements for the *“Project”* concept that are not shown here. In particular, there might be separate concept definitions for specific properties and classifications.

Remark for MVD harmonization: see also VBL-296, VBL-403, VBL-359, required concept description for Representation Context (VBL-132)

Instantiation diagram



Implementation agreements

IfcProject

Attribute	Implementation agreements
GlobalId	Must be provided
OwnerHistory	Must be provided
Name	Reserved
Description	Reserved
ObjectType	No agreements needed
LongName	Reserved
Phase	No agreements needed
RepresentationContext	Must be provided according to #CV-06-106 (context type should be 'Model')
UnitsInContext	Must be provided, at least for - Length unit - Area unit - Volume unit
IsDecomposedBy (INV)	Must be provided, aggregates the top-level nodes of the spatial structure
HasAssociations (INV)	Optional, may contain instances of IfcRelAssociatesClassification that further classify the project according to a classification system
IsDefinedBy (INV)	Optional, may contain instances of IfcRelDefinesByProperties that further define the project

Example (spf)

```
#100= IFCPROJECT('0J$yPqHBD12v72y4qF6XcD',#2,'WHD',$,$,
      'Wohnhaus Dresden','Entwurfsplanung',(#10),#11);
#101= IFCRELAGGREGATES('3HOv58cYbDBAu7vMbay3W7',#2,'ProjectContainer',
      'ProjectContainer for Sites',#100,(#102));
#102= IFCSITE('1G217EQPv3OASE5ZNlFE5v',#2,'BF-J',
      'Baufeld J',$,$,$,$,.ELEMENT.,(52,31,0),(13,24,0),$,$,$);
#10= IFCGEOMETRICREPRESENTATIONCONTEXT($,'Model',3,1.0000000E-5,#20,$);
#11= IFCUNITASSIGNMENT((#16,#17,#18));
#16= IFCSIUNIT(*,.LENGTHUNIT.,$,.METRE.);
#17= IFCSIUNIT(*,.AREAUNIT.,$,.SQUARE_METRE.);
#18= IFCSIUNIT(*,.VOLUMEUNIT.,$,.CUBIC_METRE.);
#20= IFCAXIS2PLACEMENT3D(#21,#22,#23);
#21= IFCCARTESIANPOINT((0.,0.,0.));
#22= IFCDIRECTION((0.,0.,1.));
#23= IFCDIRECTION((1.,0.,0.));
#2= IFCOWNERHISTORY(#5, #6, $, .ADDED., 0, $, $, 1207828354);
#3= IFCPERSON('Matthias Weise', '', '', $, $, $, $, $);
#4= IFCORGANIZATION('', '', '', $, $);
#5= IFCPERSONANDORGANIZATION(#3, #4, $);
#6= IFCAPPLICATION(#4, 'IFC-Application X', 'IFC-Exporter V2.3', 'Company Y');
```

Example (ifcXML)

```
<IfcProject id="ID100">
      <GlobalId>0J$yPqHBD12v72y4qF6XcD</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <Name>WHD</Name>
      <LongName>Wohnhaus Dresden</LongName>
      <Phase>Entwurfsplanung</Phase>
      <RepresentationContexts ex:cType="set">
            <IfcGeometricRepresentationContext pos="0" xsi:nil="true" ref="ID10"/>
      </RepresentationContexts>
      <UnitsInContext>
            <IfcUnitAssignment xsi:nil="true" ref="ID11"/>
      </UnitsInContext>
</IfcProject>
<IfcRelAggregates id="ID101">
      <GlobalId>3HOv58cYbDBAu7vMbay3W7</GlobalId>
      <OwnerHistory>
```

```
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <Name>ProjectContainer</Name>
      <Description>ProjectContainer for Sites</Description>
      <RelatingObject>
            <IfcProject xsi:nil="true" ref="ID100"/>
      </RelatingObject>
      <RelatedObjects ex:cType="set">
            <IfcSite pos="0" xsi:nil="true" ref="ID102"/>
      </RelatedObjects>
</IfcRelAggregates>
<IfcSite id="ID102">
      <GlobalId>1G217EQPv3OASE5ZNlFE5v</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <Name>BF-J</Name>
      <Description>Baufeld J</Description>
      <CompositionType>element</CompositionType>
      <RefLatitude ex:cType="list">
            <ex:long-wrapper pos="0">52</ex:long-wrapper>
            <ex:long-wrapper pos="1">31</ex:long-wrapper>
            <ex:long-wrapper pos="2">0</ex:long-wrapper>
      </RefLatitude>
      <RefLongitude ex:cType="list">
            <ex:long-wrapper pos="0">13</ex:long-wrapper>
            <ex:long-wrapper pos="1">24</ex:long-wrapper>
            <ex:long-wrapper pos="2">0</ex:long-wrapper>
      </RefLongitude>
</IfcSite>
<IfcGeometricRepresentationContext id="ID10">
      <ContextType>Model</ContextType>
      <CoordinateSpaceDimension>3</CoordinateSpaceDimension>
      <Precision>1.E-05</Precision>
      <WorldCoordinateSystem>
            <IfcAxis2Placement3D xsi:nil="true" ref="ID20"/>
      </WorldCoordinateSystem>
</IfcGeometricRepresentationContext>
<IfcUnitAssignment id="ID11">
      <Units ex:cType="set">
            <IfcSIUnit pos="0" xsi:nil="true" ref="ID16"/>
            <IfcSIUnit pos="1" xsi:nil="true" ref="ID17"/>
            <IfcSIUnit pos="2" xsi:nil="true" ref="ID18"/>
      </Units>
</IfcUnitAssignment>
<IfcSIUnit id="ID16">
      <UnitType>lengthunit</UnitType>
      <Name>metre</Name>
</IfcSIUnit>
<IfcSIUnit id="ID17">
      <UnitType>areaunit</UnitType>
      <Name>square_metre</Name>
</IfcSIUnit>
<IfcSIUnit id="ID18">
      <UnitType>volumeunit</UnitType>
      <Name>cubic_metre</Name>
</IfcSIUnit>
<IfcAxis2Placement3D id="ID20">
      <Location>
            <IfcCartesianPoint xsi:nil="true" ref="ID21"/>
      </Location>
      <Axis>
            <IfcDirection xsi:nil="true" ref="ID22"/>
      </Axis>
      <RefDirection>
            <IfcDirection xsi:nil="true" ref="ID23"/>
      </RefDirection>
</IfcAxis2Placement3D>
<IfcCartesianPoint id="ID21">
      <Coordinates ex:cType="list">
            <IfcLengthMeasure pos="0">0.</IfcLengthMeasure>
```

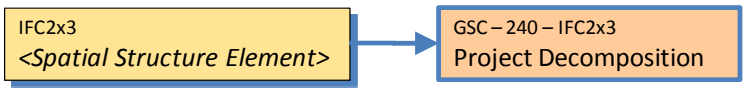
```
            <IfcLengthMeasure pos="1">0.</IfcLengthMeasure>
            <IfcLengthMeasure pos="2">0.</IfcLengthMeasure>
      </Coordinates>
</IfcCartesianPoint>
<IfcDirection id="ID22">
      <DirectionRatios ex:cType="list">
            <ex:double-wrapper pos="0">0.</ex:double-wrapper>
            <ex:double-wrapper pos="1">0.</ex:double-wrapper>
            <ex:double-wrapper pos="2">1.</ex:double-wrapper>
      </DirectionRatios>
</IfcDirection>
<IfcDirection id="ID23">
      <DirectionRatios ex:cType="list">
            <ex:double-wrapper pos="0">1.</ex:double-wrapper>
            <ex:double-wrapper pos="1">0.</ex:double-wrapper>
            <ex:double-wrapper pos="2">0.</ex:double-wrapper>
      </DirectionRatios>
</IfcDirection>
<IfcOwnerHistory id="ID2">
      <OwningUser>
            <IfcPersonAndOrganization xsi:nil="true" ref="ID5"/>
      </OwningUser>
      <OwningApplication>
            <IfcApplication xsi:nil="true" ref="ID6"/>
      </OwningApplication>
      <ChangeAction>added</ChangeAction>
      <LastModifiedDate>0</LastModifiedDate>
      <CreationDate>1207828354</CreationDate>
</IfcOwnerHistory>
<IfcPerson id="ID3">
      <Id>Matthias Weise</Id>
      <FamilyName></FamilyName>
      <GivenName></GivenName>
</IfcPerson>
<IfcOrganization id="ID4">
      <Id></Id>
      <Name></Name>
      <Description></Description>
</IfcOrganization>
<IfcPersonAndOrganization id="ID5">
      <ThePerson>
            <IfcPerson xsi:nil="true" ref="ID3"/>
      </ThePerson>
      <TheOrganization>
            <IfcOrganization xsi:nil="true" ref="ID4"/>
      </TheOrganization>
</IfcPersonAndOrganization>
<IfcApplication id="ID6">
      <ApplicationDeveloper>
            <IfcOrganization xsi:nil="true" ref="ID4"/>
      </ApplicationDeveloper>
      <Version>IFC-Application X</Version>
      <ApplicationFullName>IFC-Exporter V2.3</ApplicationFullName>
      <ApplicationIdentifier>Company Y</ApplicationIdentifier>
</IfcApplication>
```

IFC Release Specific Concept Description (IFC2x3)

Project Decomposition

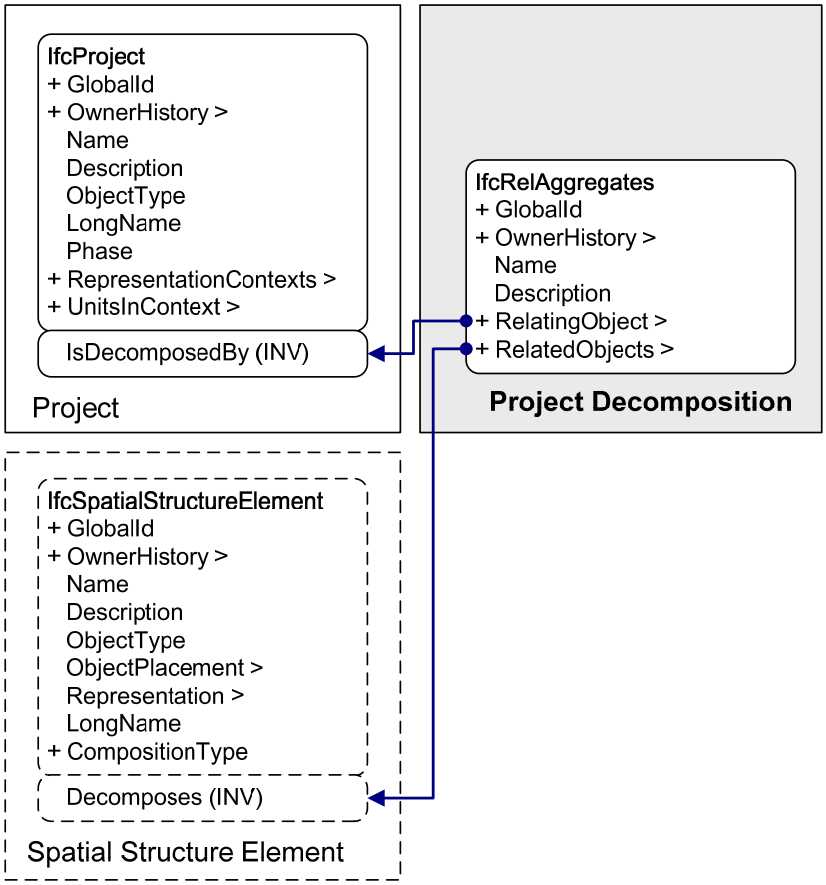
Reference	GSC-240	**Version**	1.0	**Status**	Proposal
Relationships					
History	9th June, 2008				
Authors	Matthias Weise (mw@aec3.de)				
Document Owner	AEC3 (with friendly support by the German research initiative “ZukunftBau”)				

Usage in view definition diagram



Remark for MVD harmonization: see also VBL-404, VBL-405

Instantiation diagram



Please note that *IfcSpatialStructureElement* is an abstract supertype of the concepts *“Site”*, *“Building”*, *“BuildingStorey”* and *“Space”*. Thus, it cannot be instantiated as suggested in the instantiation diagram.

Implementation agreements

IfcRelAggregates

Attribute	Implementation agreements
GlobalId	Must be provided, but is allowed to change
OwnerHistory	Must be provided, but may contain (reusable) dummy value
Name	Reserved
Description	Reserved
RelatingObject	Must be provided - reference to the project

RelatedObjects	Must be provided - top-level nodes of the spatial structure

Example (spf)

```
#24= IFCRELAGGREGATES('cwgUeGRq4TsV1W5nm0d8F0', #2, $, $, #18, (#22));
#18= IFCPROJECT('cwfta0Rq4TsV1W5nm0d8F0', #2, 'Decomposition example project', '',
      $, $, $, (#17), #12);
#22= IFCBUILDING('sISCCgKx4TkF9N05m0d8oG', #2, '1056', $, $, $, $, 'Building',
      .ELEMENT., $, $, $);
#12= IFCUNITASSIGNMENT((#7, #8, #9, #10, #11));
#7=  IFCSIUNIT(*, .AREAUNIT., $, .SQUARE_METRE.);
#8=  IFCSIUNIT(*, .VOLUMEUNIT., $, .CUBIC_METRE.);
#9=  IFCSIUNIT(*, .MASSUNIT., $, .GRAM.);
#10= IFCSIUNIT(*, .TIMEUNIT., $, .SECOND.);
#11= IFCSIUNIT(*, .LENGTHUNIT., $, .METRE.);
#17= IFCGEOMETRICREPRESENTATIONCONTEXT('DummyGeometricContext', 'DummyGeometry', 3,
      0.0, #16, $);
#16= IFCAXIS2PLACEMENT3D(#13, #14, #15);
#13= IFCCARTESIANPOINT((0.0, 0.0, 0.0));
#14= IFCDIRECTION((0.0, 0.0, 1.0));
#15= IFCDIRECTION((1.0, 0.0, 0.0));
#2= IFCOWNERHISTORY(#5, #6, $, .ADDED., 0, $, $, 1207828354);
#3= IFCPERSON('Matthias Weise', '', '', $, $, $, $, $);
#4= IFCORGANIZATION('', '', '', $, $);
#5= IFCPERSONANDORGANIZATION(#3, #4, $);
#6= IFCAPPLICATION(#4, 'IFC-Application X', 'IFC-Exporter V2.3', 'Company Y');
```

All values that are needed to decompose a project are marked with bold letters.

The example shows a project (#18) that is decomposed by a building (#22), whereas the building is an example for the concept *“Spatial Structure Element”*. Both elements are connected by the relationship *IfcRelAggregates* (#24).

Example (ifcXML)

```
<IfcRelAggregates id="ID24">
      <GlobalId>cwgUeGRq4TsV1W5nm0d8F0</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <RelatingObject>
            <IfcProject xsi:nil="true" ref="ID18"/>
      </RelatingObject>
      <RelatedObjects ex:cType="set">
            <IfcBuilding pos="0" xsi:nil="true" ref="ID22"/>
      </RelatedObjects>
</IfcRelAggregates>
<IfcProject id="ID18">
      <GlobalId>cwfta0Rq4TsV1W5nm0d8F0</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <Name>Decomposition example project</Name>
      <Description></Description>
      <RepresentationContexts ex:cType="set">
            <IfcGeometricRepresentationContext pos="0" xsi:nil="true" ref="ID17"/>
      </RepresentationContexts>
      <UnitsInContext>
            <IfcUnitAssignment xsi:nil="true" ref="ID12"/>
      </UnitsInContext>
</IfcProject>
<IfcBuilding id="ID22">
      <GlobalId>sISCCgKx4TkF9N05m0d8oG</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <Name>1056</Name>
      <LongName>Bauwerk</LongName>
      <CompositionType>element</CompositionType>
</IfcBuilding>
```

```
<IfcSIUnit id="ID7">
	<UnitType>areaunit</UnitType>
	<Name>square_metre</Name>
</IfcSIUnit>
<IfcSIUnit id="ID8">
	<UnitType>volumeunit</UnitType>
	<Name>cubic_metre</Name>
</IfcSIUnit>
<IfcSIUnit id="ID9">
	<UnitType>massunit</UnitType>
	<Name>gram</Name>
</IfcSIUnit>
<IfcSIUnit id="ID10">
	<UnitType>timeunit</UnitType>
	<Name>second</Name>
</IfcSIUnit>
<IfcSIUnit id="ID11">
	<UnitType>lengthunit</UnitType>
	<Name>metre</Name>
</IfcSIUnit>
<IfcUnitAssignment id="ID12">
	<Units ex:cType="set">
		<IfcSIUnit pos="0" xsi:nil="true" ref="ID7"/>
		<IfcSIUnit pos="1" xsi:nil="true" ref="ID8"/>
		<IfcSIUnit pos="2" xsi:nil="true" ref="ID9"/>
		<IfcSIUnit pos="3" xsi:nil="true" ref="ID10"/>
		<IfcSIUnit pos="4" xsi:nil="true" ref="ID11"/>
	</Units>
</IfcUnitAssignment>
<IfcCartesianPoint id="ID13">
	<Coordinates ex:cType="list">
		<IfcLengthMeasure pos="0">0.</IfcLengthMeasure>
		<IfcLengthMeasure pos="1">0.</IfcLengthMeasure>
		<IfcLengthMeasure pos="2">0.</IfcLengthMeasure>
	</Coordinates>
</IfcCartesianPoint>
<IfcDirection id="ID14">
	<DirectionRatios ex:cType="list">
		<ex:double-wrapper pos="0">0.</ex:double-wrapper>
		<ex:double-wrapper pos="1">0.</ex:double-wrapper>
		<ex:double-wrapper pos="2">1.</ex:double-wrapper>
	</DirectionRatios>
</IfcDirection>
<IfcDirection id="ID15">
	<DirectionRatios ex:cType="list">
		<ex:double-wrapper pos="0">1.</ex:double-wrapper>
		<ex:double-wrapper pos="1">0.</ex:double-wrapper>
		<ex:double-wrapper pos="2">0.</ex:double-wrapper>
	</DirectionRatios>
</IfcDirection>
<IfcAxis2Placement3D id="ID16">
	<Location>
		<IfcCartesianPoint xsi:nil="true" ref="ID13"/>
	</Location>
	<Axis>
		<IfcDirection xsi:nil="true" ref="ID14"/>
	</Axis>
	<RefDirection>
		<IfcDirection xsi:nil="true" ref="ID15"/>
	</RefDirection>
</IfcAxis2Placement3D>
<IfcGeometricRepresentationContext id="ID17">
	<ContextIdentifier>DummyGeometricContext</ContextIdentifier>
	<ContextType>DummyGeometry</ContextType>
	<CoordinateSpaceDimension>3</CoordinateSpaceDimension>
	<Precision>0.</Precision>
	<WorldCoordinateSystem>
		<IfcAxis2Placement3D xsi:nil="true" ref="ID16"/>
	</WorldCoordinateSystem>
</IfcGeometricRepresentationContext>
```

```
<IfcOwnerHistory id="ID2">
	<OwningUser>
		<IfcPersonAndOrganization xsi:nil="true" ref="ID5"/>
	</OwningUser>
	<OwningApplication>
		<IfcApplication xsi:nil="true" ref="ID6"/>
	</OwningApplication>
	<ChangeAction>added</ChangeAction>
	<LastModifiedDate>0</LastModifiedDate>
	<CreationDate>1207828354</CreationDate>
</IfcOwnerHistory>
<IfcPerson id="ID3">
	<Id>Matthias Weise</Id>
	<FamilyName></FamilyName>
	<GivenName></GivenName>
</IfcPerson>
<IfcOrganization id="ID4">
	<Id></Id>
	<Name></Name>
	<Description></Description>
</IfcOrganization>
<IfcPersonAndOrganization id="ID5">
	<ThePerson>
		<IfcPerson xsi:nil="true" ref="ID3"/>
	</ThePerson>
	<TheOrganization>
		<IfcOrganization xsi:nil="true" ref="ID4"/>
	</TheOrganization>
</IfcPersonAndOrganization>
<IfcApplication id="ID6">
	<ApplicationDeveloper>
		<IfcOrganization xsi:nil="true" ref="ID4"/>
	</ApplicationDeveloper>
	<Version>IFC-Application X</Version>
	<ApplicationFullName>IFC-Exporter V2.3</ApplicationFullName>
	<ApplicationIdentifier>Company Y</ApplicationIdentifier>
</IfcApplication>
```

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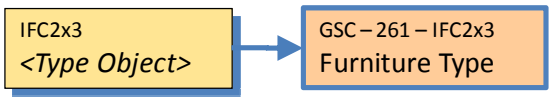
The content of this document has to be certified by the IAI before becoming part of an official IFC Model View Definition.

IFC Release Specific Concept Description (IFC2x3)

Furniture Type

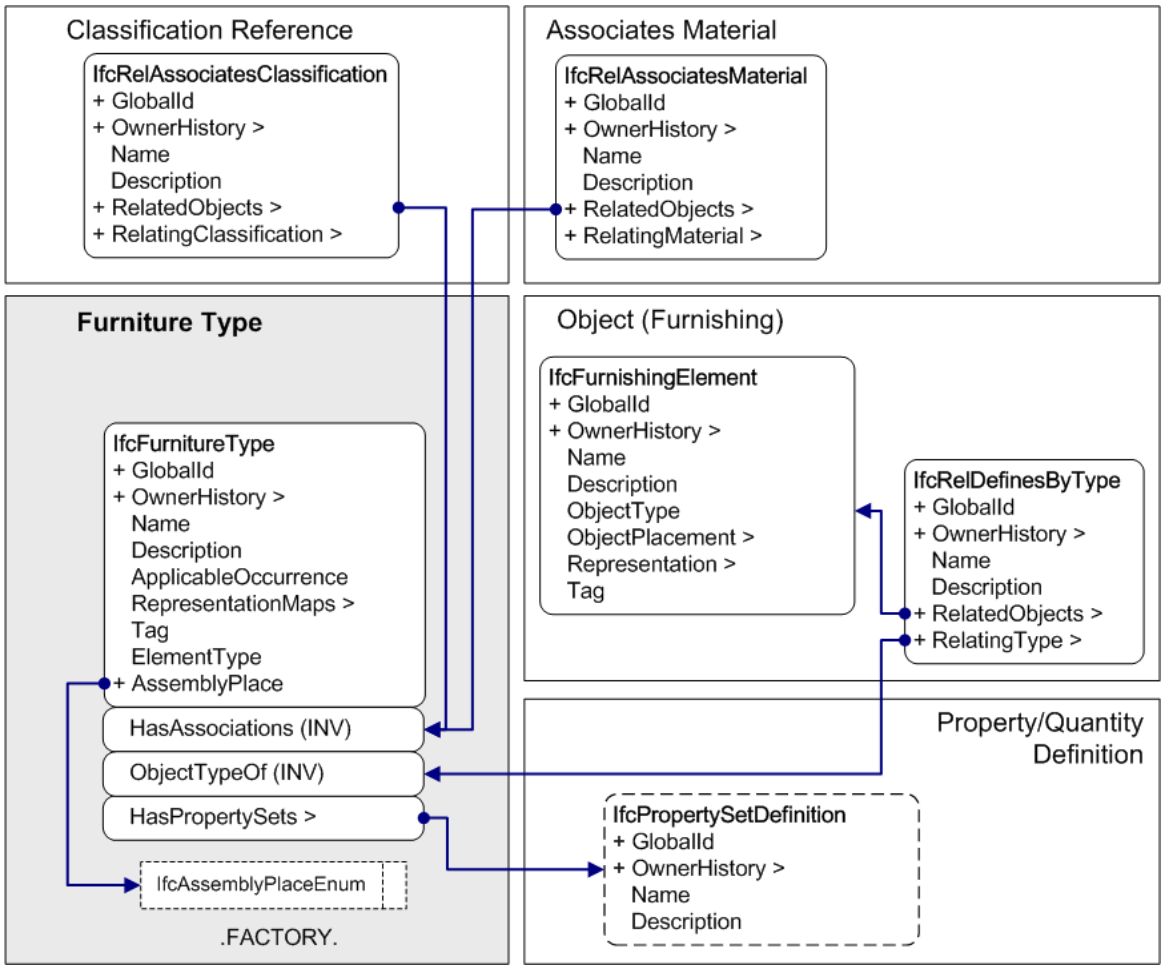
Reference	GSC-261	**Version**	1.0	**Status**	Proposal
Relationships					
History	20th April, 2009				
Authors	Matthias Weise (mw@aec3.de)				
Document Owner	AEC3 (with friendly support by the German research initiative “ZukunftBau”)				

Usage in view definition diagram



Please note that there might be further agreements for the *“Furniture Type”* concept that are not shown here. In particular, there might be separate concept definitions for specific properties, quantities and classifications. There are also additional (inverse) relationships that are not shown here but might be used to add further information.

Instantiation diagram



Implementation agreements

IfcFurnitureType

Attribute	Implementation agreements
GlobalId	Must be provided
OwnerHistory	Must be provided
Name	Reserved
Description	Reserved
ApplicableOccurrence	Reserved
HasPropertySets	No agreements needed
RepresentationMaps	No agreements needed
Tag	Reserved
ElementType	Reserved
AssemblyPlace	Must be provided

Example (spf)

```
#100= IFCFURNISHINGELEMENT('1N6AM49mPF_QLJuXpLNYt1',#2,'F1.Space2',$,$,$,$,$);
#103= IFCFURNITURETYPE('2OZQafot53QR2V1VwPTKAn',#2,'Table',$,$,(#111),$,$,$,
      .FACTORY.);
#104= IFCRELDEFINESBYTYPE('0SuYMDmmH1Lv8fVlwq8_wV',#2,'Table definition',$,
      (#100),#103);
#109= IFCMATERIAL('Wood');
#110= IFCRELASSOCIATESMATERIAL('0iKTtg9xP6buf6Pf7_2fSN',#2,$,$,(#100),#109);
#111= IFCPROPERTYSET('1KWmeMlorCeABBAQ0CbtFj',#2,'Pset_FurnitureTypeCommon',$,
      (#113,#114,#115));
#113= IFCPROPERTYSINGLEVALUE('NominalHeight',$,IFCPOSITIVELENGTHMEASURE(0.9),$);
#114= IFCPROPERTYSINGLEVALUE('NominalLength',$,IFCPOSITIVELENGTHMEASURE(1.6),$);
#115= IFCPROPERTYSINGLEVALUE('NominalDepth',$,IFCPOSITIVELENGTHMEASURE(0.8),$);
#130= IFCSPACE('4Tf2p7VyLB7eox67SA_zKE',#2,'2',$,$,$,$,'Living room',.ELEMENT.,
      .INTERNAL.,$);
#131= IFCRELCONTAINEDINSPATIALSTRUCTURE('1WLuCO_IL5R9J0BIowj2uP',#2,$,$,(#100),
      #130);
#2= IFCOWNERHISTORY(#5, #6, $, .ADDED., 0, $, $, 1207828354);
#3= IFCPERSON('Matthias Weise', '', '', $, $, $, $, $);
#4= IFCORGANIZATION('', '', '', $, $);
#5= IFCPERSONANDORGANIZATION(#3, #4, $);
#6= IFCAPPLICATION(#4, 'IFC-Application X', 'IFC-Exporter V2.3', 'Company Y');
```

Example (ifcXML)

```
<IfcOwnerHistory id="ID2">
      <OwningUser>
            <IfcPersonAndOrganization xsi:nil="true" ref="ID5"/>
      </OwningUser>
      <OwningApplication>
            <IfcApplication xsi:nil="true" ref="ID6"/>
      </OwningApplication>
      <ChangeAction>added</ChangeAction>
      <LastModifiedDate>0</LastModifiedDate>
      <CreationDate>1207828354</CreationDate>
</IfcOwnerHistory>
<IfcPerson id="ID3">
      <Id>Matthias Weise</Id>
      <FamilyName></FamilyName>
      <GivenName></GivenName>
</IfcPerson>
<IfcOrganization id="ID4">
      <Id></Id>
      <Name></Name>
      <Description></Description>
</IfcOrganization>
<IfcPersonAndOrganization id="ID5">
      <ThePerson>
            <IfcPerson xsi:nil="true" ref="ID3"/>
```

```
        </ThePerson>
        <TheOrganization>
             <IfcOrganization xsi:nil="true" ref="ID4"/>
        </TheOrganization>
</IfcPersonAndOrganization>
<IfcApplication id="ID6">
        <ApplicationDeveloper>
             <IfcOrganization xsi:nil="true" ref="ID4"/>
        </ApplicationDeveloper>
        <Version>IFC-Application X</Version>
        <ApplicationFullName>IFC-Exporter V2.3</ApplicationFullName>
        <ApplicationIdentifier>Company Y</ApplicationIdentifier>
</IfcApplication>
<IfcFurnishingElement id="ID100">
        <GlobalId>1N6AM49mPF_QLJuXpLNYt1</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>F1.Space2</Name>
</IfcFurnishingElement>
<IfcFurnitureType id="ID103">
        <GlobalId>2OZQafot53QR2V1VwPTKAn</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Table</Name>
        <HasPropertySets ex:cType="set">
             <IfcPropertySet pos="0" xsi:nil="true" ref="ID111"/>
        </HasPropertySets>
        <AssemblyPlace>factory</AssemblyPlace>
</IfcFurnitureType>
<IfcRelDefinesByType id="ID104">
        <GlobalId>0SuYMDmmH1Lv8fVlwq8_wV</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Table definition</Name>
        <RelatedObjects ex:cType="set">
             <IfcFurnishingElement pos="0" xsi:nil="true" ref="ID100"/>
        </RelatedObjects>
        <RelatingType>
             <IfcFurnitureType xsi:nil="true" ref="ID103"/>
        </RelatingType>
</IfcRelDefinesByType>
<IfcMaterial id="ID109">
        <Name>Wood</Name>
</IfcMaterial>
<IfcRelAssociatesMaterial id="ID110">
        <GlobalId>0iKTtg9xP6buf6Pf7_2fSN</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <RelatedObjects ex:cType="set">
             <IfcFurnishingElement pos="0" xsi:nil="true" ref="ID100"/>
        </RelatedObjects>
        <RelatingMaterial>
             <IfcMaterial xsi:nil="true" ref="ID109"/>
        </RelatingMaterial>
</IfcRelAssociatesMaterial>
<IfcPropertySet id="ID111">
        <GlobalId>1KWmeMlorCeABBAQ0CbtFj</GlobalId>
        <OwnerHistory>
             <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Pset_FurnitureTypeCommon</Name>
        <HasProperties ex:cType="set">
             <IfcPropertySingleValue pos="0" xsi:nil="true" ref="ID113"/>
             <IfcPropertySingleValue pos="1" xsi:nil="true" ref="ID114"/>
             <IfcPropertySingleValue pos="2" xsi:nil="true" ref="ID115"/>
        </HasProperties>
</IfcPropertySet>
```

```
<IfcPropertySingleValue id="ID113">
	<Name>NominalHeight</Name>
	<NominalValue>
		<IfcPositiveLengthMeasure>0.9</IfcPositiveLengthMeasure>
	</NominalValue>
</IfcPropertySingleValue>
<IfcPropertySingleValue id="ID114">
	<Name>NominalLength</Name>
	<NominalValue>
		<IfcPositiveLengthMeasure>1.6</IfcPositiveLengthMeasure>
	</NominalValue>
</IfcPropertySingleValue>
<IfcPropertySingleValue id="ID115">
	<Name>NominalDepth</Name>
	<NominalValue>
		<IfcPositiveLengthMeasure>0.8</IfcPositiveLengthMeasure>
	</NominalValue>
</IfcPropertySingleValue>
<IfcSpace id="ID130">
	<GlobalId>4Tf2p7VyLB7eox67SA_zKE</GlobalId>
	<OwnerHistory>
		<IfcOwnerHistory xsi:nil="true" ref="ID2"/>
	</OwnerHistory>
	<Name>2</Name>
	<LongName>Living room</LongName>
	<CompositionType>element</CompositionType>
	<InteriorOrExteriorSpace>internal</InteriorOrExteriorSpace>
</IfcSpace>
<IfcRelContainedInSpatialStructure id="ID131">
	<GlobalId>1WLuCO_IL5R9J0BIowj2uP</GlobalId>
	<OwnerHistory>
		<IfcOwnerHistory xsi:nil="true" ref="ID2"/>
	</OwnerHistory>
	<RelatedElements ex:cType="set">
		<IfcFurnishingElement pos="0" xsi:nil="true" ref="ID100"/>
	</RelatedElements>
	<RelatingStructure>
		<IfcSpace xsi:nil="true" ref="ID130"/>
	</RelatingStructure>
</IfcRelContainedInSpatialStructure>
```

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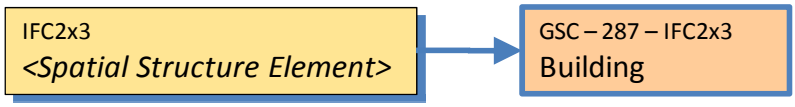
IFC Release Specific Concept Description (IFC2x3)

Building

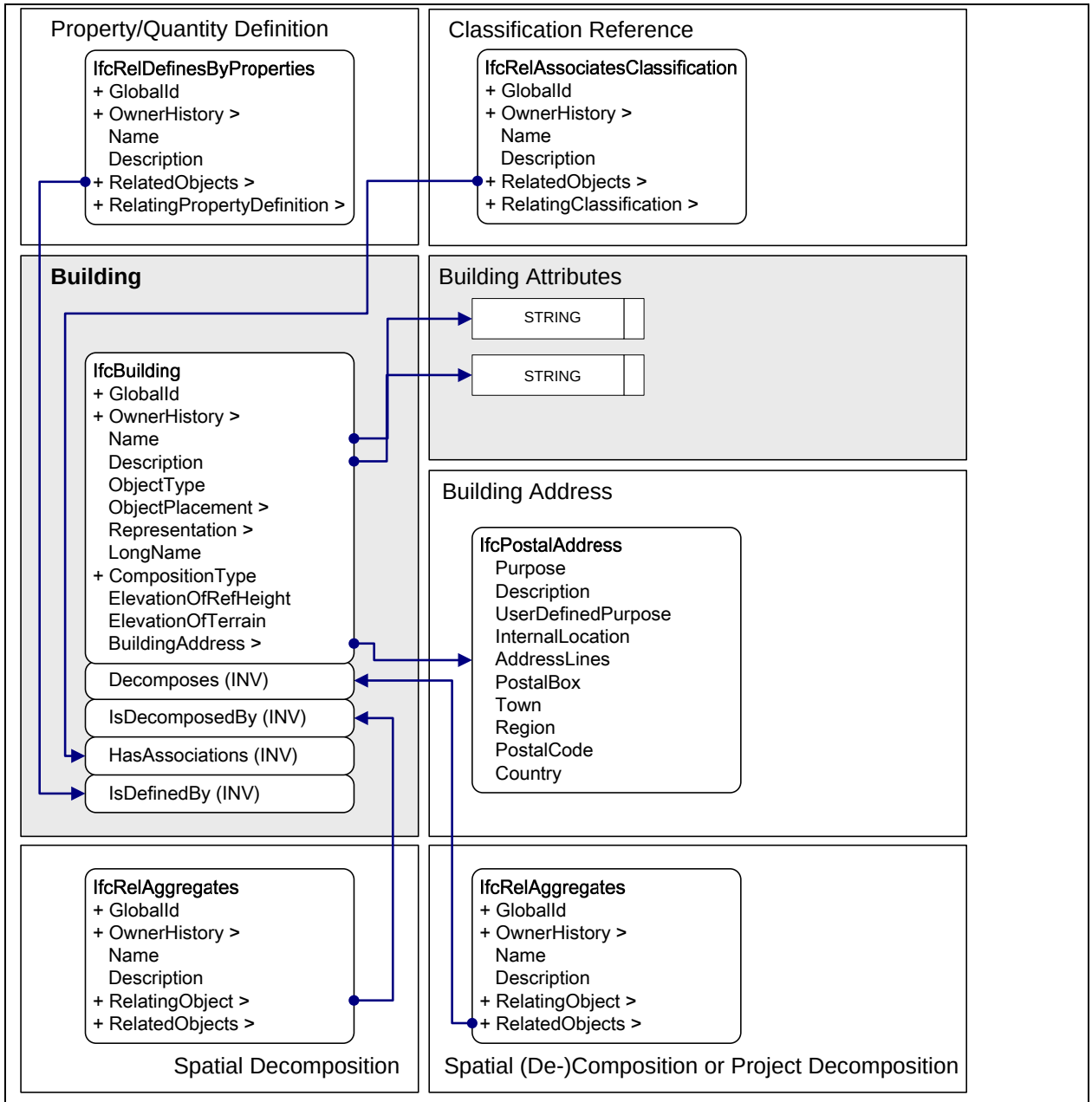
Reference	GSC-287	**Version**	1.0	**Status**	Proposal
Relationships					
History	9th June, 2008				
Authors	Matthias Weise (mw@aec3.de)				
Document Owner	AEC3 (with friendly support by the German research initiative “ZukunftBau”)				

Usage in view definition diagram



Please note that there might be further agreements for the *“Building”* concept that are not shown here. In particular, there might be separate concept definitions for specific properties, quantities and classifications.

Instantiation diagram



Implementation agreements

IfcBuilding

Attribute	Implementation agreements
GlobalId	Must be provided
OwnerHistory	Must be provided
Name	Short name of the building (may follows specific coding rules)
Description	Human readable name
Object Type	Reserved
Object Placement	Reserved
Representation	Reserved
LongName	Reserved
Composition Type	Should be - COMPLEX, in case of a ‘complex building’ - ELEMENT, in case of an ‘elementary building’ - PARTIAL, in case of a ‘partial building’ Please note that the composition type restricts the spatial decomposition.

ElevationOfRefHeight	No agreements needed
ElevationOfTerrain	No agreements needed
BuildingAddress	No agreements needed
Decomposes (INV)	Reference to the parent building, site or the project
IsDecomposedBy (INV)	Reference to the child nodes (building or building storey) of the spatial structure
HasAssociations (INV)	Classification of the building (please see additional implementation agreements)
IsDefinedBy (INV)	Reference to properties or quantities

Example (spf)

```
#106= IFCBUILDING('30V5XJ5d5ApRzfhSGEj6Q2',#2,'NBH-Haus-J.1','Neues Bauen am Horn -
      Baufeld J - Haus 1',$,$,$,$,.ELEMENT.,$,$,$);
#107= IFCRELAGGREGATES('2kPxR9pkf4IhXHOhzu5khk',#2,'SiteContainer','SiteContainer
      For Buildings',#100,(#106));
#100= IFCSITE('1G217EQPv3OASE5ZNlFE5v',#2,'BF-J','Baufeld
      J',$,$,$,$,.ELEMENT.,(52,31,0),(13,24,0),$,$,$);
#108= IFCRELAGGREGATES('3HOv58cYbDBAu7vMbay3W7',#2,'BuildingContainer',
      'BuildingContainer For Buildingstories',#106,(#109, #110, #111));
#109= IFCBUILDINGSTOREY('2mogSTpEvEVQPsrM_t2cN_',#2,
      'Basement',$,$,$,$,$,.ELEMENT.,-1.25);
#110= IFCBUILDINGSTOREY('3FJiQIfNPFlPIFsXmR3Ptc',#2,
      'Ground floor',$,$,$,$,$,.ELEMENT.,0.);
#111= IFCBUILDINGSTOREY('2rAd0PG815zwRG$PbRquLR',#15,
      'First floor',$,$,$,$,$,.ELEMENT.,3.1);
#2= IFCOWNERHISTORY(#5, #6, $, .ADDED., 0, $, $, 1207828354);
#3= IFCPERSON('Matthias Weise', '', '', $, $, $, $, $);
#4= IFCORGANIZATION('', '', '', $, $);
#5= IFCPERSONANDORGANIZATION(#3, #4, $);
#6= IFCAPPLICATION(#4, 'IFC-Application X', 'IFC-Exporter V2.3', 'Company Y');
```

Example (ifcXML)

```
<IfcOwnerHistory id="ID2">
      <OwningUser>
            <IfcPersonAndOrganization xsi:nil="true" ref="ID5"/>
      </OwningUser>
      <OwningApplication>
            <IfcApplication xsi:nil="true" ref="ID6"/>
      </OwningApplication>
      <ChangeAction>added</ChangeAction>
      <LastModifiedDate>0</LastModifiedDate>
      <CreationDate>1207828354</CreationDate>
</IfcOwnerHistory>
<IfcPerson id="ID3">
      <Id>Matthias Weise</Id>
      <FamilyName></FamilyName>
      <GivenName></GivenName>
</IfcPerson>
<IfcOrganization id="ID4">
      <Id></Id>
      <Name></Name>
      <Description></Description>
</IfcOrganization>
<IfcPersonAndOrganization id="ID5">
      <ThePerson>
            <IfcPerson xsi:nil="true" ref="ID3"/>
      </ThePerson>
      <TheOrganization>
            <IfcOrganization xsi:nil="true" ref="ID4"/>
      </TheOrganization>
</IfcPersonAndOrganization>
<IfcApplication id="ID6">
      <ApplicationDeveloper>
            <IfcOrganization xsi:nil="true" ref="ID4"/>
```

```
        </ApplicationDeveloper>
        <Version>IFC-Application X</Version>
        <ApplicationFullName>IFC-Exporter V2.3</ApplicationFullName>
        <ApplicationIdentifier>Company Y</ApplicationIdentifier>
  </IfcApplication>
  <IfcSite id="ID100">
        <GlobalId>1G217EQPv3OASE5ZNlFE5v</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>BF-J</Name>
        <Description>Baufeld J</Description>
        <CompositionType>element</CompositionType>
        <RefLatitude ex:cType="list">
              <ex:long-wrapper pos="0">52</ex:long-wrapper>
              <ex:long-wrapper pos="1">31</ex:long-wrapper>
              <ex:long-wrapper pos="2">0</ex:long-wrapper>
        </RefLatitude>
        <RefLongitude ex:cType="list">
              <ex:long-wrapper pos="0">13</ex:long-wrapper>
              <ex:long-wrapper pos="1">24</ex:long-wrapper>
              <ex:long-wrapper pos="2">0</ex:long-wrapper>
        </RefLongitude>
  </IfcSite>
  <IfcBuilding id="ID106">
        <GlobalId>30V5XJ5d5ApRzfhSGEj6Q2</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>NBH-Haus-J.1</Name>
        <Description>Neues Bauen am Horn - Baufeld J - Haus 1</Description>
        <CompositionType>element</CompositionType>
  </IfcBuilding>
  <IfcRelAggregates id="ID107">
        <GlobalId>2kPxR9pkf4IhXHOhzu5khk</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>SiteContainer</Name>
        <Description>SiteContainer For Buildings</Description>
        <RelatingObject>
              <IfcSite xsi:nil="true" ref="ID100"/>
        </RelatingObject>
        <RelatedObjects ex:cType="set">
              <IfcBuilding pos="0" xsi:nil="true" ref="ID106"/>
        </RelatedObjects>
  </IfcRelAggregates>
  <IfcRelAggregates id="ID108">
        <GlobalId>3HOv58cYbDBAu7vMbay3W7</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>BuildingContainer</Name>
        <Description>BuildingContainer For Buildingstories</Description>
        <RelatingObject>
              <IfcBuilding xsi:nil="true" ref="ID106"/>
        </RelatingObject>
        <RelatedObjects ex:cType="set">
              <IfcBuildingStorey pos="0" xsi:nil="true" ref="ID109"/>
              <IfcBuildingStorey pos="1" xsi:nil="true" ref="ID110"/>
              <IfcBuildingStorey pos="2" xsi:nil="true" ref="ID111"/>
        </RelatedObjects>
  </IfcRelAggregates>
  <IfcBuildingStorey id="ID109">
        <GlobalId>2mogSTpEvEVQPsrM_t2cN_</GlobalId>
        <OwnerHistory>
              <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
        </OwnerHistory>
        <Name>Basement</Name>
        <CompositionType>element</CompositionType>
        <Elevation>-1.25</Elevation>
```

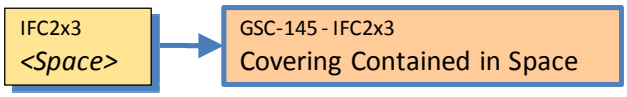
```
</IfcBuildingStorey>
<IfcBuildingStorey id="ID110">
       <GlobalId>3FJiQIfNPFlPIFsXmR3Ptc</GlobalId>
       <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
       </OwnerHistory>
       <Name>Ground floor</Name>
       <CompositionType>element</CompositionType>
       <Elevation>0.</Elevation>
</IfcBuildingStorey>
<IfcBuildingStorey id="ID111">
       <GlobalId>2rAd0PG815zwRG$PbRquLR</GlobalId>
       <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
       </OwnerHistory>
       <Name>First floor</Name>
       <CompositionType>element</CompositionType>
       <Elevation>3.1</Elevation>
</IfcBuildingStorey>
```

IFC Release Specific Concept Description (IFC2x3)

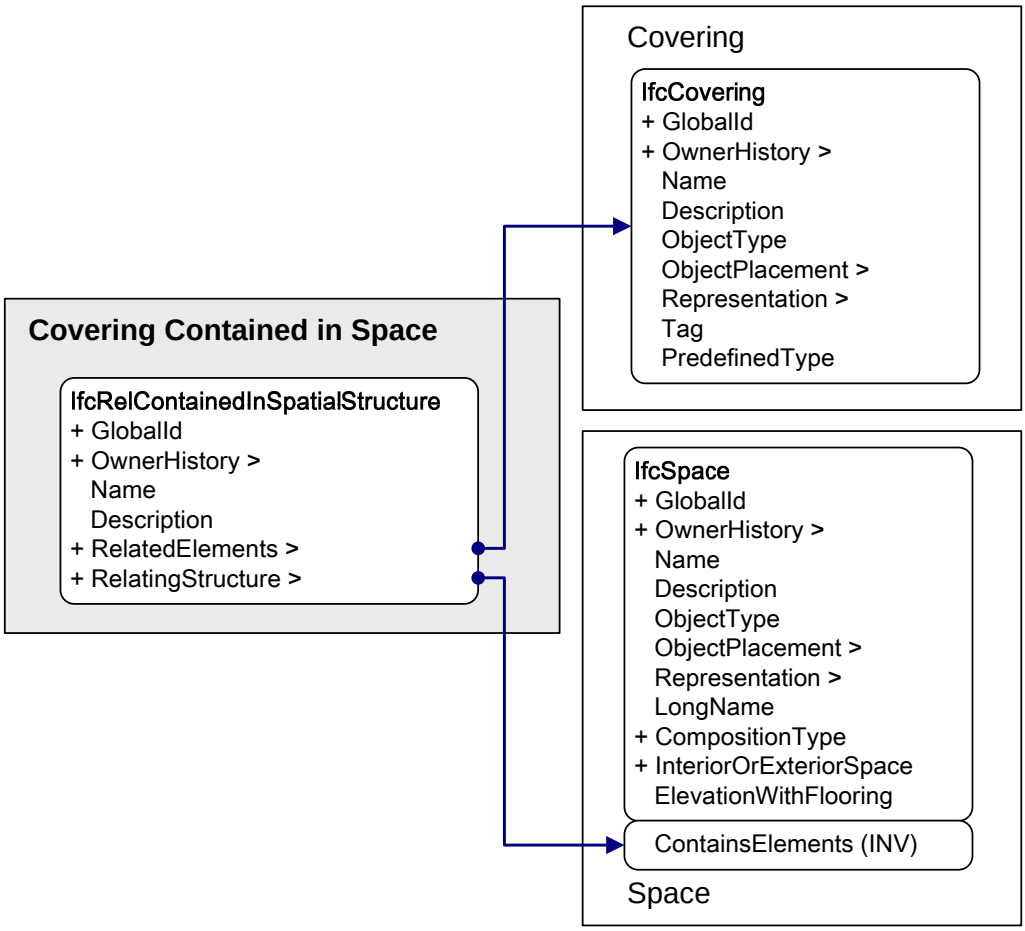
Covering Contained in Space

Reference	GSC-145	**Version**	1.0	**Status**	Proposal
Relationships					
History	7th October, 2009				
Authors	Matthias Weise (mw@aec3.de)				
Document Owner	AEC3				

Usage in view definition diagram



Instantiation diagram



Implementation agreements

IfcRelContainedInSpatialStructure

Attribute	Implementation agreements
GlobalId	Must be provided, but is allowed to change
OwnerHistory	Must be provided, but may contain (reusable) dummy value
Name	Reserved
Description	Reserved
RelatedElements	Must be provided – reference to a set of coverings
RelatedStructure	Must be provided – reference to the space that is covered by the coverings

Example (spf)

```
#100= IFCSPACE('4Tf2p7VyLB7eox67SA_zKE',#2,'2',$,$,$,$,
      'Living room',.ELEMENT.,.INTERNAL.,$);
#101= IFCRELCONTAINEDINSPATIALSTRUCTURE ('cwgUeGRq4TsV1W5nm0d8F0',#2,$,$,(#102),
      #100);
#102= IFCCOVERING('$nsOeF_t4TobLUH6m0d8Fm', #2,'Space Covering Example',
      $,$,$,$,$,.NOTDEFINED.);
#2= IFCOWNERHISTORY(#5, #6, $, .ADDED., 0, $, $, 1207828354);
#3= IFCPERSON('Matthias Weise', '', '', $, $, $, $, $);
#4= IFCORGANIZATION('', '', '', $, $);
#5= IFCPERSONANDORGANIZATION(#3, #4, $);
#6= IFCAPPLICATION(#4, 'IFC-Application X', 'IFC-Exporter V2.3', 'Company Y');
```

All values that are needed to connect coverings with spaces are marked with bold letters.

The example shows a space (#100) that is covered by a covering (#102). Both elements are connected by the relationship *IfcRelContainedInSpactialStructure* (#101).

Example (ifcXML)

```
<IfcSpace id="ID100">
      <GlobalId>4Tf2p7VyLB7eox67SA_zKE</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <Name>2</Name>
      <LongName>Living room</LongName>
      <CompositionType>element</CompositionType>
      <InteriorOrExteriorSpace>internal</InteriorOrExteriorSpace>
</IfcSpace>
<IfcRelContainedInSpatialStructure id="ID101">
      <GlobalId>cwgUeGRq4TsV1W5nm0d8F0</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <RelatedElements ex:cType="set">
            <IfcCovering pos="0" xsi:nil="true" ref="ID102"/>
      </RelatedElements>
      <RelatingStructure>
            <IfcSpace xsi:nil="true" ref="ID100"/>
      </RelatingStructure>
</IfcRelContainedInSpatialStructure>
<IfcCovering id="ID102">
      <GlobalId>$nsOeF_t4TobLUH6m0d8Fm</GlobalId>
      <OwnerHistory>
            <IfcOwnerHistory xsi:nil="true" ref="ID2"/>
      </OwnerHistory>
      <Name>Space Covering Example</Name>
      <PredefinedType>notdefined</PredefinedType>
</IfcCovering>
<IfcOwnerHistory id="ID2">
      <OwningUser>
            <IfcPersonAndOrganization xsi:nil="true" ref="ID5"/>
      </OwningUser>
      <OwningApplication>
            <IfcApplication xsi:nil="true" ref="ID6"/>
      </OwningApplication>
      <ChangeAction>added</ChangeAction>
      <LastModifiedDate>0</LastModifiedDate>
      <CreationDate>1207828354</CreationDate>
</IfcOwnerHistory>
<IfcPerson id="ID3">
      <Id>Matthias Weise</Id>
      <FamilyName></FamilyName>
      <GivenName></GivenName>
</IfcPerson>
<IfcOrganization id="ID4">
      <Id></Id>
      <Name></Name>
```

```
        <Description></Description>
  </IfcOrganization>
  <IfcPersonAndOrganization id="ID5">
        <ThePerson>
              <IfcPerson xsi:nil="true" ref="ID3"/>
        </ThePerson>
        <TheOrganization>
              <IfcOrganization xsi:nil="true" ref="ID4"/>
        </TheOrganization>
  </IfcPersonAndOrganization>
  <IfcApplication id="ID6">
        <ApplicationDeveloper>
              <IfcOrganization xsi:nil="true" ref="ID4"/>
        </ApplicationDeveloper>
        <Version>IFC-Application X</Version>
        <ApplicationFullName>IFC-Exporter V2.3</ApplicationFullName>
        <ApplicationIdentifier>Company Y</ApplicationIdentifier>
  </IfcApplication>
```