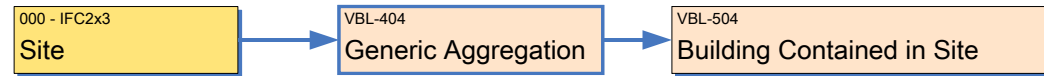


IFC Release Specific Concept Description (IFC 2x3)

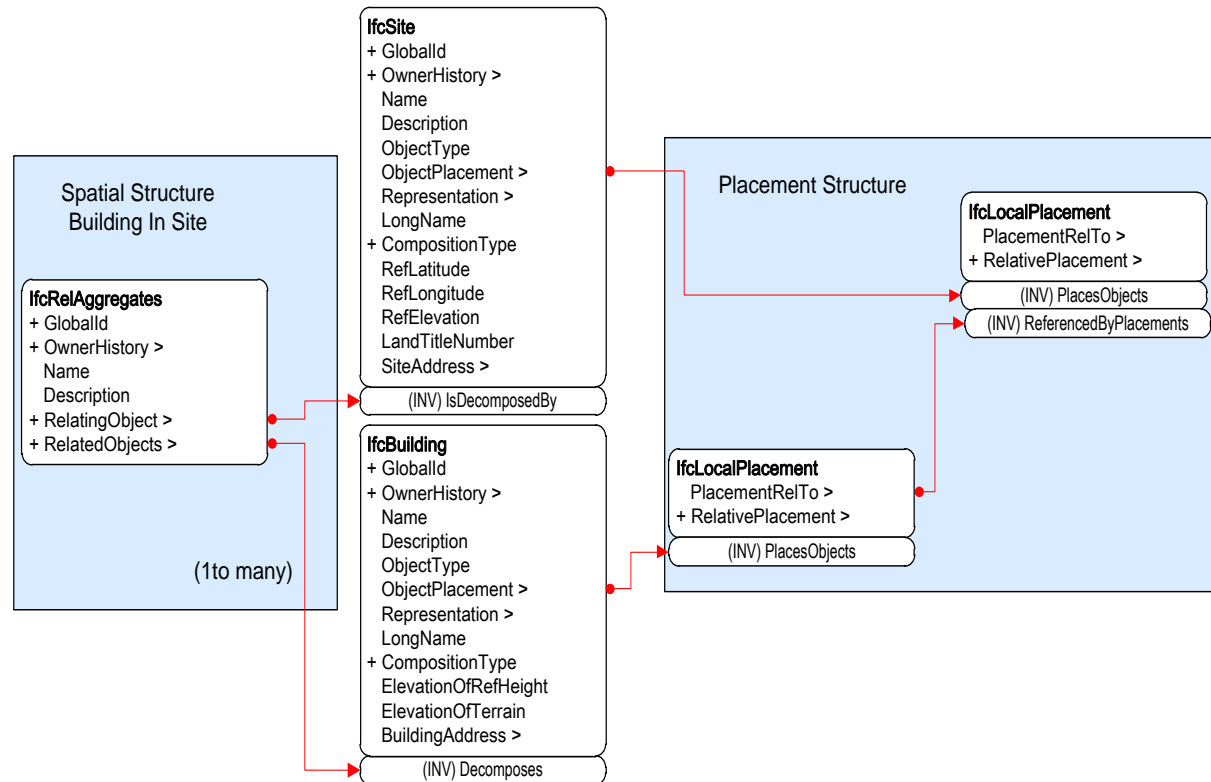
Building Contained in Site

Reference	PCI-043	Version	1.1	Status	Draft
Relationships	Spatial Hierarchy				
History	Revised Nov 13, 2012				
Authors	Manu Venugopal				
Document Owner	GA Tech and Technion Precast NBIMS Team				

Usage in view definition diagram



Instantiation diagram



Implementation agreements

The Spatial Configuration Hierarchy consists of one instance for each element instance in the hierarchy: one project (always), one for each Site in the project (optional), one or more Buildings for each Site; there will be optionally one or more BuildingStory for each Building; Spaces are optional defined as another level in the Spatial Containment Hierarchy.

Each Spatial Configuration Hierarchy entity is to reference the next higher level in the hierarchy that are part of, as a logical relationship. These should be assigned as encountered.

[IfcBuilding](#)

Attribute	Implementation agreements
GlobalId	Must be provided
OwnerHistory	Must be provided, but may contain dummy data
Name	Optional
Description	<Open>
ObjectType	Optional
ObjectPlacement	Optional
Representation	Is a subtype of IfcProductrepresentation
LongName	Optional. IfcLabel
CompositionType	Subtype of IfcElementCompositionEnum
ElevationOfRefHeight	Elevation above sea level of the reference height used for all storey elevation measures, equals to height 0.0. It is usually the ground floor level. Must be IfcLengthMeasure
ElevationOfTerrain	Elevation above the minimal terrain level around the foot print of the building, given in elevation above sea level. Must be IfcLengthMeasure
BuildingAddress	Address given to the building for postal purposes. Must be IfcPostalAddress

Building provides a basic element within the spatial structure hierarchy for the components of a building within a Project. If Sites are specified, a Building is associated to a Site. Multiple Buildings may be part of the same Site, in a one-to-many relationship. If a Project consists of a single Building it may optionally directly reference the Project and define the Global coordinate system for the Project.

One or more Building entities reference the Site or Project they are part of, as a logical relationship. Each is added as encountered. (IGNORE THIS ASPECT) If a Building includes multiple other Buildings, where one Building is a “master” for the others, these are logically organized as the “master” Building being COMPLEX and the others PARTIAL. This is their logical relationship.

IfcRelAggregates

The spatial structure elements are linked together by using the objectified relationship IfcRelAggregates (see diagram).

Attribute	Implementation agreements
GlobalId	Must be provided
OwnerHistory	Must be provided, but may contain dummy data
Name	<Open>
Description	<Open>

RelatingObject	Must be an IfcSite entity
RelatedObject	Must be an IfcBuilding entity

IfcSite

Attribute	Implementation agreements
GlobalId	Must be provided
OwnerHistory	Must be provided, but may contain dummy data
Name	The <i>Name</i> attribute has to be provided for the project. It is the short name for the project.
Description	<Open>
ObjectType	Optional
ObjectPlacement	Optional. Should be a subtype of IfcObjectPlacement
Representation	Optional. Should be a subtype of IfcProductRepresentation .
LongName	Optional.
CompositionType	Should be an enumeration of type IfcElementCompositionEnum
RefLatitude	Optional. Should use IfcCompoundPlaneAngleMeasure entity
RefLongitude	Optional. Should use IfcCompoundPlaneAngleMeasure entity
RefElevation	Optional
LandTitleNumber	Optional
SiteAddress	Opional. Address given to the site for postal purposes. Should use IfcPostalAddress entity.

[IfcLocalPlacement](#)

A Building also plays an important role in terms of spatial coordinate coordination. The IfcLocalPlacement.PlacementRelTo relation can take 2 types of value:

1. Reference the Site coordinate system when one or more buildings are to be spatially related through a Site base coordinate.
2. If the Site coordinate system is not to be the Building reference, then PlacementRelTo is left blank to indicate this Building's origin is the global coordinate system. This ESPACIALLY applies when there is only one Building instance or no Site

Attribute	Implementation agreements
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PlacementRelTo	Optional. The PlacementRelTo relationship of IfcLocalPlacement shall point (if relative placement is used) to the IfcSpatialStructureElement of type IfcSite , or of type IfcBuilding (e.g. to position a building relative to a building complex, or a building section to a building).
RelativePlacement	If the relative placement is not used, the absolute placement is defined within the world coordinate system.

Example: Part21 file

Part 21 File for Building contained in Site

```
#20= IFCOWNERHISTORY(#7,#8,$,.ADDED.,,$,$,1241690761);
#21= IFCARTESIANPOINT((0.,0.,0.));
#25= IFCDIRECTION((1.,0.,0.));
#29= IFCDIRECTION((0.,1.,0.));
#33= IFCDIRECTION((0.,0.,1.));
#37= IFCAXIS2PLACEMENT3D(#21,#33,#25);
#40= IFCGEOMETRICREPRESENTATIONCONTEXT('Body','Model',3,1.0000000E-5,#37,$);
#43= IFCGEOMETRICREPRESENTATIONCONTEXT('BoundingBox','Model',3,1.0000000E-5,#37,$);
#46= IFCPROJECT('3AWw8wyvz14QTe3PMYD$a8',#20,'Project','Description','Object
type','LongName','Phase',(#40,#43),#18);
#53= IFCLOCALPLACEMENT($,#37);
#56= IFCSITE('2$umvcgY11QPrba$dmh585',#20,'Undefined',,$,$,#53,$,$.ELEMENT.,,$,0.,,$);
#66= IFCLOCALPLACEMENT(#53,#37);
#69= IFCBUILDING('3tk6iR4IzDSuhkRrm3_5Bb',#20,'Undefined',,$,$,#66,$,$.ELEMENT.,,$,$);
#79= IFCLOCALPLACEMENT(#66,#37);
#3372= IFCRELAGGREGATES('1IpcTr3X67Ph$9b3UuEL5',#20,$,$,#46,(#56));
#3374= IFCRELAGGREGATES('2pjVqjxITEDhGcmTSgYJyQ',#20,$,$,#56,(#69));
```

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