IFC Release Specific Concept Description (IFC 2x3)
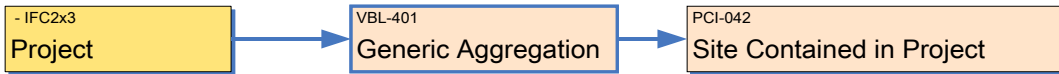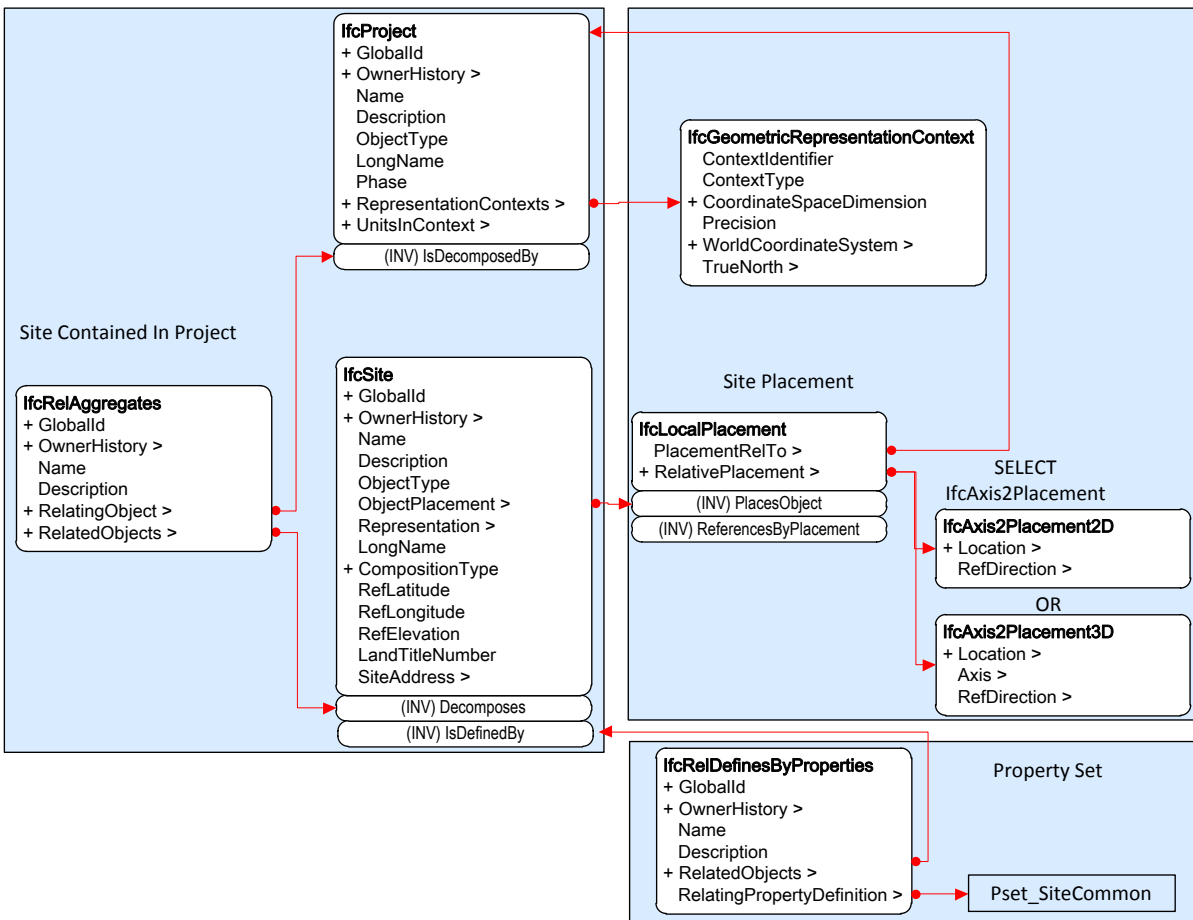Site Contained in Project

Reference	PCI-042	Version	1.1	Status	Draft
Relationships	Spatial Hierarchy				
History	Revised Nov 13, 2012				
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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, one or more Buildings for each Site; there will be optionally one or more BuildingStorey for each Building. (Spaces are defined as another level in the Spatial Containment Hierarchy.)

1. 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.

The qualification of COMPLEX or PARTIAL Spatial Containment Entities should be ignored at this time.

    2.   LocalPlacement reference is made to the next higher level in the hierarchy – Project- consistent with the logical placement.

IfcSite

Attribute	Implementation agreements
GlobalId	Must be provided
OwnerHistory	Must be provided, but may contain dummy data
Name	The *Name* 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
RefLatitutde	Optional. Should use IfcCompoundPlaneAngleMeasure entity
RefLongitude	Optional. Should use IfcCompoundPlaneAngleMeasure entity
RefElevation	Optional
LandTitleNumber	Optional
SiteAddress	Optional. Address given to the site for postal purposes. Should use IfcPostalAddress entity.

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

    1.   Reference the Project coordinate system defining a Project base coordinate system relative to the context defined by Geometric RepresentationContext.

    2.   If the Project coordinate system is not to be the Site reference, then PlacementRelTo is left blank to indicate this site's origin is the global coordinate system

The property sets relating to the IfcSite are defined using the Pset_SiteCommon, attached by the IfcRelDefinesByProperties relationship.

Quanties relating to site are defined as follows using IfcElementQuantity and attached by the IfcRelAssignsProperties as follows.

Name	Description	Value Type
NominalPerimeter	Perimeter of the Site boundary. The exact definition and calculation rules depend on the method of measurement used.	*IfcQuantityLength*
NominalArea	Area for this site (horizontal projections).	*IfcQuantityArea*

IfcRelAggregates

The spatial structure elements are linked together by using the objectified relationship IfcRelAggregates (see diagram). The IfcSite references spatial elements by its inverse relationships.

Attribute	Implementation agreements
GlobalId	Must be provided
OwnerHistory	Must be provided, but may contain dummy data
Name	<Open>
Description	<Open>
RelatingObject	Must be an IfcProject entity
RelatedObject	Must be an IfcSite entity

IfcProject:

1. IfcProject is the root of any decomposition tree. It shall therefore not be used to decompose any other object definition.

2. IfcProject has an associated IfcGeometricRepresentationContext that objects within the project references.

3. The Project is the first Spatial Configuration Member. It must be assigned a name in the IfcProject.Name. It carries the default units to be applied for the project in Project.UnitsInContext.

A Project, if it includes geometry, must also reference from RepresentationContexts one or more GeomtetricRepresentationContexts. It specifies the world coordinate system, TRUE NORTH, if not the y-axis of the coordinate system, and optionally precision.

Attribute	Implementation agreements
GlobalId	Must be provided
OwnerHistory	Must be provided, but may contain dummy data

Name	The *Name* attribute has to be provided for the project. It is the short name for the project.
Description	<Open>
ObjectType	Optional
LongName	Optional
Phase	Optional. Applicable values have to be agreed upon by view definitions or implementer agreements
RepresentationContexts	Context of the representations used within the project. There shall be no instance of *IfcGeometricRepresentationSubContext* directly included in the set of *RepresentationContexts*.
UnitsInContext	Units globally assigned to measure types used within the context of this project. Must be an IfcUnitAssignment entity

Example: Part21 file

#20= IFCOWNERHISTORY(#7,#8,$,.ADDED.,$,$,$,1241690761);
#21= IFCCARTESIANPOINT((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);
#3372= IFCRELAGGREGATES('1IpcTrJ3X67Ph$9b3UuEL5',#20,$,$,#46,(#56));