

coordination view information exchange (CVIE)

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Types of CVIE rules

CV rules include:

- IFC Schema rules where relevant.
 - CV implied rules
 - Implementers Agreements rules
 - Local rules
 - For clash detection reports, building elements must have names.
 - Proxy elements not welcome.
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Examples of CVIE rules

- global existence rules
 - only a very few, like 1 project, 0..1 site, 1..n building
 - Some disallowed entities, like 0 b-splines, 0 sectioned spines, etc.
 - element based shape representation rules
 - ensure that shape representations, like 'Axis', 'Body', etc. exists
 - ensure that those have the correct types, like 'Curve2D', 'SolidModel', etc
 - element specific geometry item rules
 - an 'Axis' for wall standard case is more restrictive, i.e. it shall only have polyline or trimmed curve on circle or line
 - no CSG for most 'Body' representations
 - element specific geometric constraints
 - a space shall only be extruded vertically
 - consistent use of relationships
 - openings with voiding to wall are placed relative to wall
 - stories contained in buildings are placed relative to buildings
 - general geometric validity
 - no duplicated points in a polyline
 - any implicit edge in a faceted brep is defined twice in opposite order
 - any face in a faceted brep is a valid area - i.e. co-planar
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Table of CVIE rules

- Name
- Source
- Level
- Description

	Rule
	Every object and spatial object must have a placement

RuleName	Object	Source	Reference	Context	Function	Test	Level	Name	Rule
ObjectPlacement	Object	CV	CV	Local	exists(objectplacement)	TRUE	Object	Object Placement	Every object and spatial object must have a placement
ObjectRepresentation	BuildingElement	CV	CV	Local	representation(body)	TRUE	Object	Building Element Body	Every building element shall have a body representation
ValidRepresentationContext	GeometricRepresentationContext	VBL-429	VBL-429	Local	exists(contexttype)	TRUE	Model	Valid Context Type	Every project shall have an identified context.
ValidDimensionality	GeometricRepresentationContext	VBL-429	VBL-429	Local	value(coordinatespacedimension,3)	TRUE	Model	Valid Dimensionality	Every project shall have a valid dimensionslity.
NoProfilePointDuplication	ArbitraryClosedProfileDef	IA-111	IA-111	Local	duplicatepoints()	FALSE	Representation	No duplicate points	No profile shall duplicate points
ConsistentContainment	SpatialStructure	IA-143	IA-143	Local	cointainment(self=placement(self)	TRUE	Model	Matching containment and placement	Spatial containment and placement should be relative to the same object.
ObjectRelativePlacement	BuildingElement	CV	CV	Local	iskindof(objectplacement, relativeplacement)	TRUE	Object	Relative placement	Building elements to be placed relatively.
SpatialContainment	BuildingElement	CV	CV	Local	exists(iscontainedin) or exists(decomposes)	TRUE	Model	containment or decomposition	Building element should bespatially contained unless aggregated.
NamedBuildingElements	BuildingElement	Local	Local	Local	exists(name)	TRUE	Object	NamedBuildingElements	Building elements must be named
PairedEdges	Brep	Schema	Schema	Local	pairededges	TRUE	Representation	paired boundary edges	Every edge in a boundary representation must be paired with one opposite one.
Planar faces	Brep	Schema	Schema	Local	flatplane	TRUE	Representation	Building Element Body	Every face must be planar
OpeningsInWalls	Opening	CV	CV	Local	placelativeto(opening,opening,voids.wall)	TRUE	Model	Valid Context Type	Any opening must be located relative to the wall it voids.
ElementsinOpenings	Opening	CV	CV	Local	placelativeto(opening,opening,filled.element)	TRUE	Model	Valid Dimensionality	Any filling must be placed relative to the opening it fills
SimpleSpaces	Space	CV	CV	Local	verticalextrusion	FALSE	Representation	Vertical space extrusions	Space extrusions shall be vertical

Automated CVIE compliance checking



Compliance Correction Notice

Upon Compliance checking of Test_wallStandardCase_CheckWall, the following violations were in evidence:



Project :

Test_wallStandardCase_CheckWall

Rule source :	Compliance Rule :	Expectation :	Identifiers :
IFC2x3 Coordination View	IfcWall_Relative_LocalPlacement	wall shall have relative placement	■ #202 (IFCWALLSTANDARDCASE) 2csSOee297hgpgiLZgUjoF
IFC2x3 Coordination View	IfcWallStandardCase Required_ShapeRepresentationAxis	any IfcWallStandardCase shall have one shape representation with representation identifier "axis" and correct geometry type	■ #202 (IFCWALLSTANDARDCASE) 2csSOee297hgpgiLZgUjoF

Contractual rules

g. The BIM model(s) used to meet the CVIE requirements shall meet the following minimum requirements.

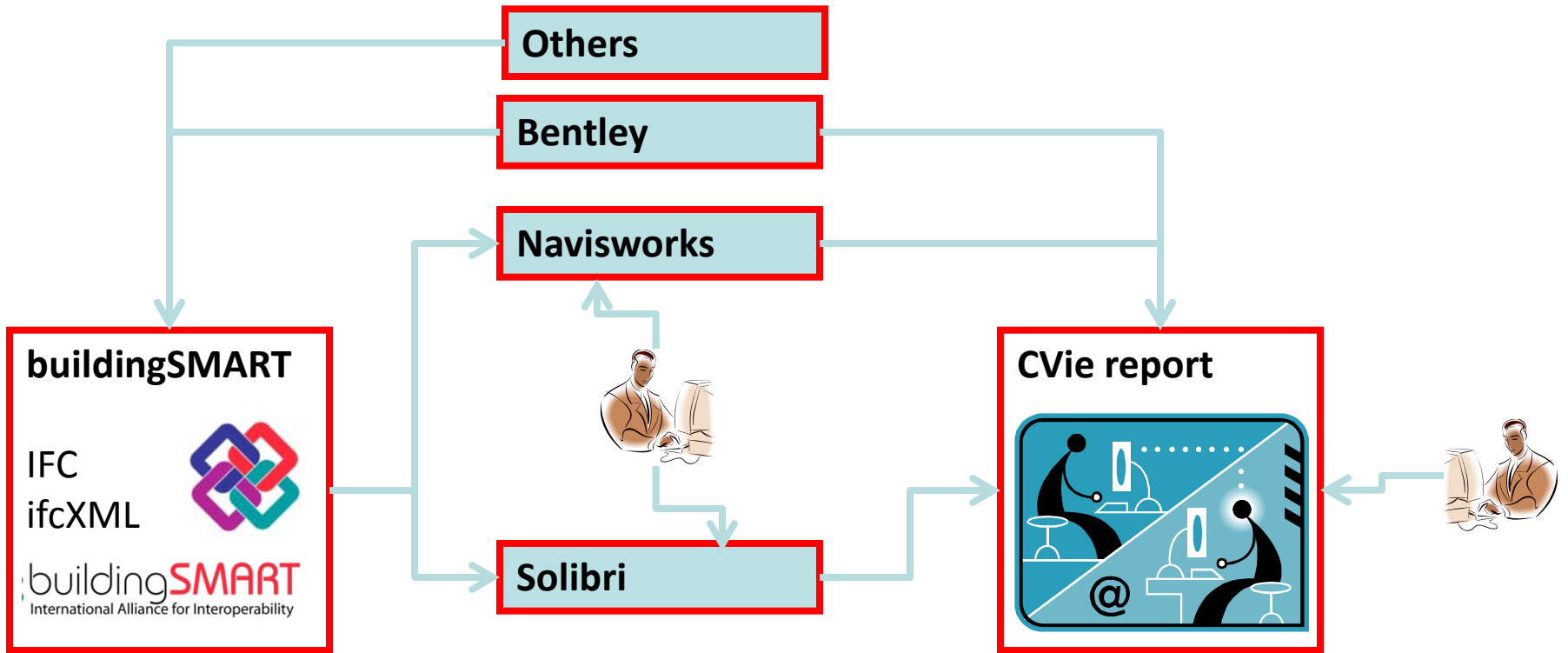
(1) The Contractor shall create the Building Information Model to at least an accuracy of at least 3mm (approximately 1/8 inch).

(2) The Contractor shall utilize the native objects provided in the BIM to create the models upon which the CVIE is based. Geometric-only representations of required Coordination View entities shall not be allowed.

(3) The Contractor shall maintain a Globally Unique Identifier (GUID) for each BIM objects, physical room, and functional spaces.

(4) The Contractor shall not change GUID's for objects and spaces that are submitted in subsequent deliverables.

CVIE paths



CVIE compliance

- implementation issues

- none

- missing data

- most objects named

- Derivable

- none

- non-compliance

- all IFC files were valid

- some use of proxy objects

	Cvie	
	Rout	Proxies
OPS	direc	n/a
Bentley	via IF	2
Revit	direc	n/a
Revit	via IF	1820
Vectorworks	via IF	0