ISPRS EuroSDR GeoBIM benchmark[1]
2019

Task 1 – The **support for IFC** within BIM (and other) software

Results of the tests delivered by participants

[1] https://3d.bk.tudelft.nl/projects/geobim-benchmark/

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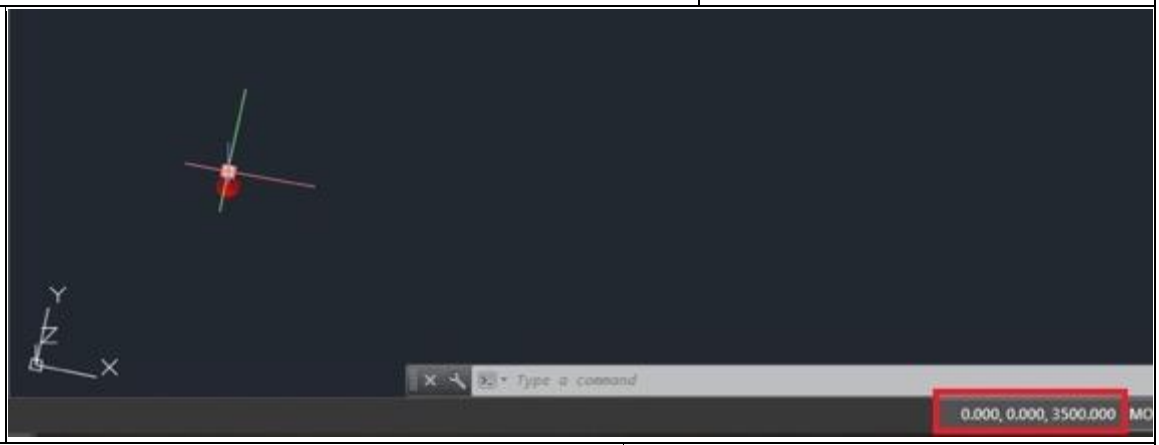
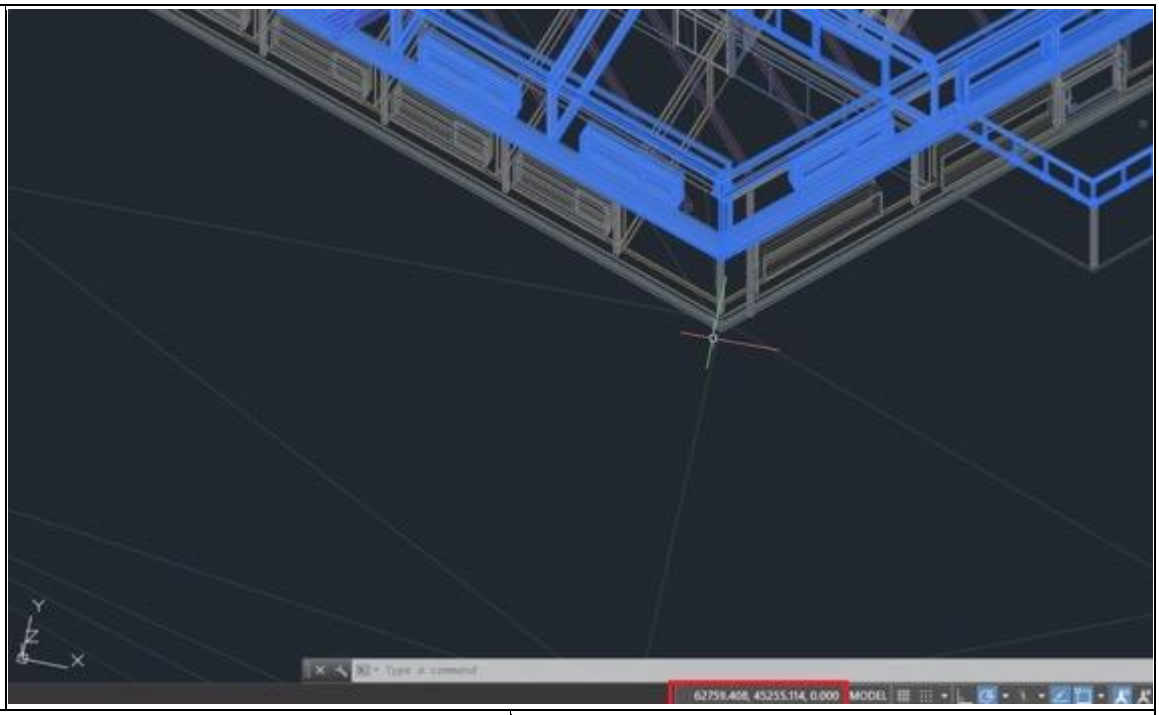
Autodesk Civil 3D

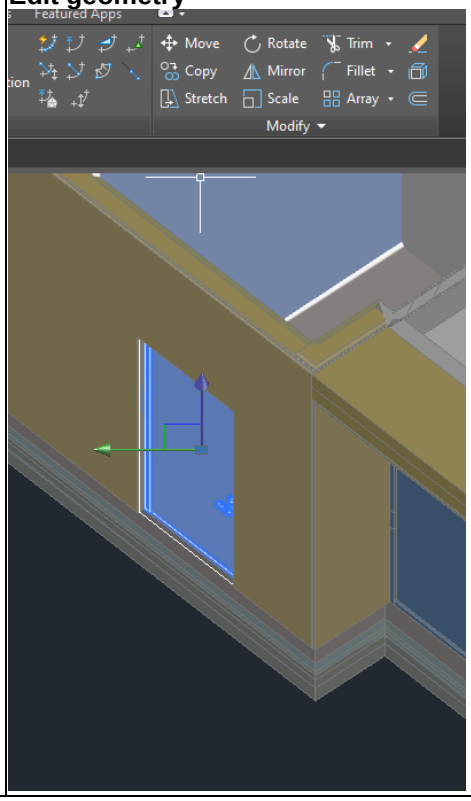
Software	Software Name [version]	**Civil 3D [2019]**		Software house		**Autodesk**	
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	self-built desktop (2013)	Windows 10 Home 64-bit	Intel i5-4570 @ 3.20GHz	AMD Radeon HD 7800 Series	8 GB	120 GB	20 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			

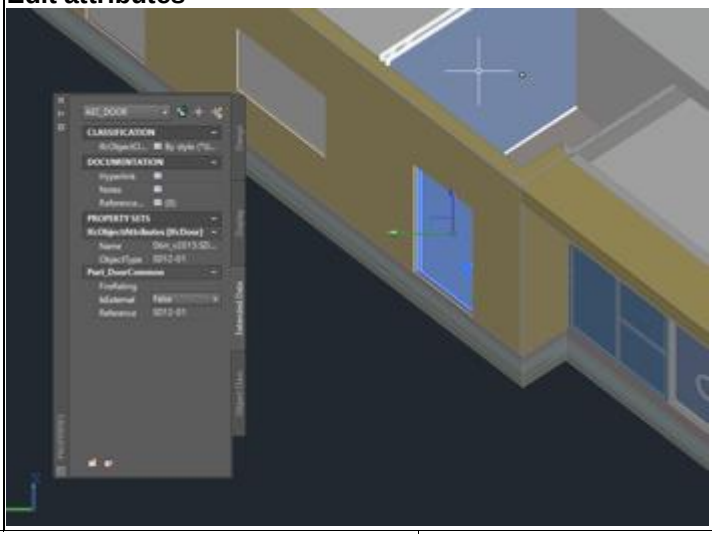
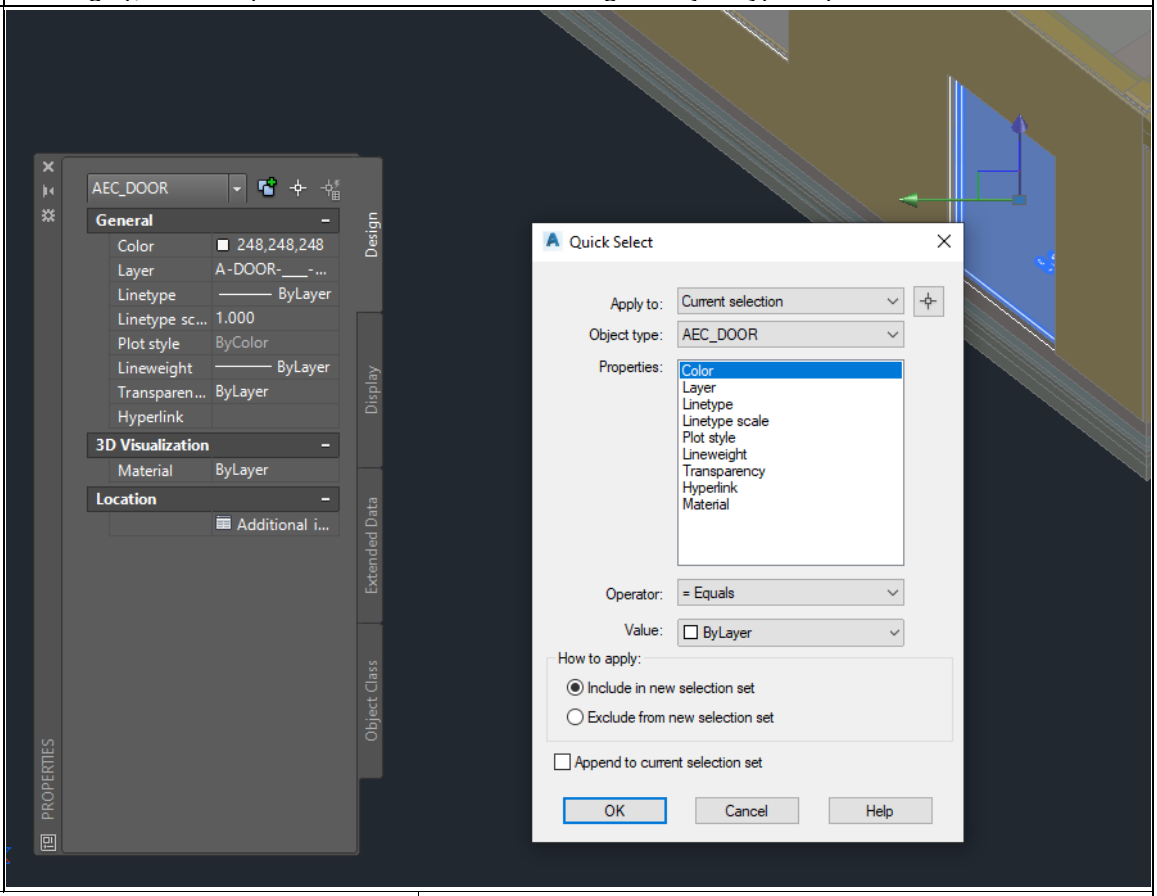
Test with Myran.ifc

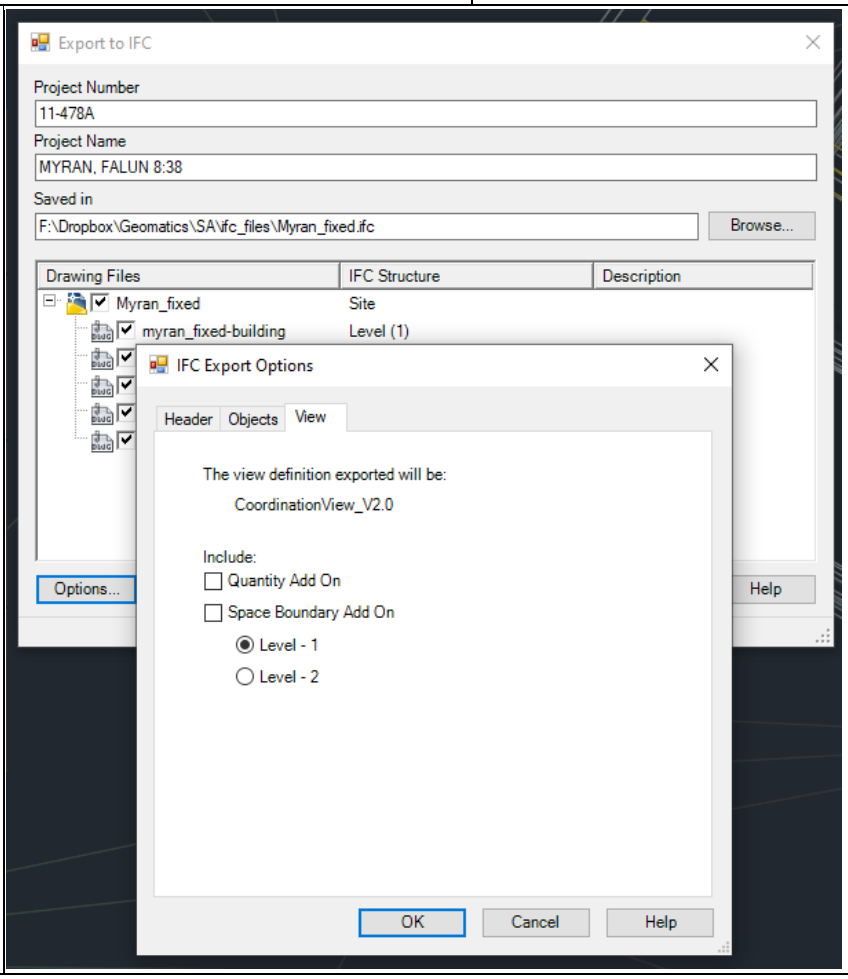
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	less than a minute
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	2.1.1) Where is the origin of the model coordinate reference system as imported in the software?	At the blue reference point
	2.1.2) Attach screenshots	
	2.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	Local right-handed coordinate system with milimetres as unit of measure

	2.1.4) Attach screenshots	

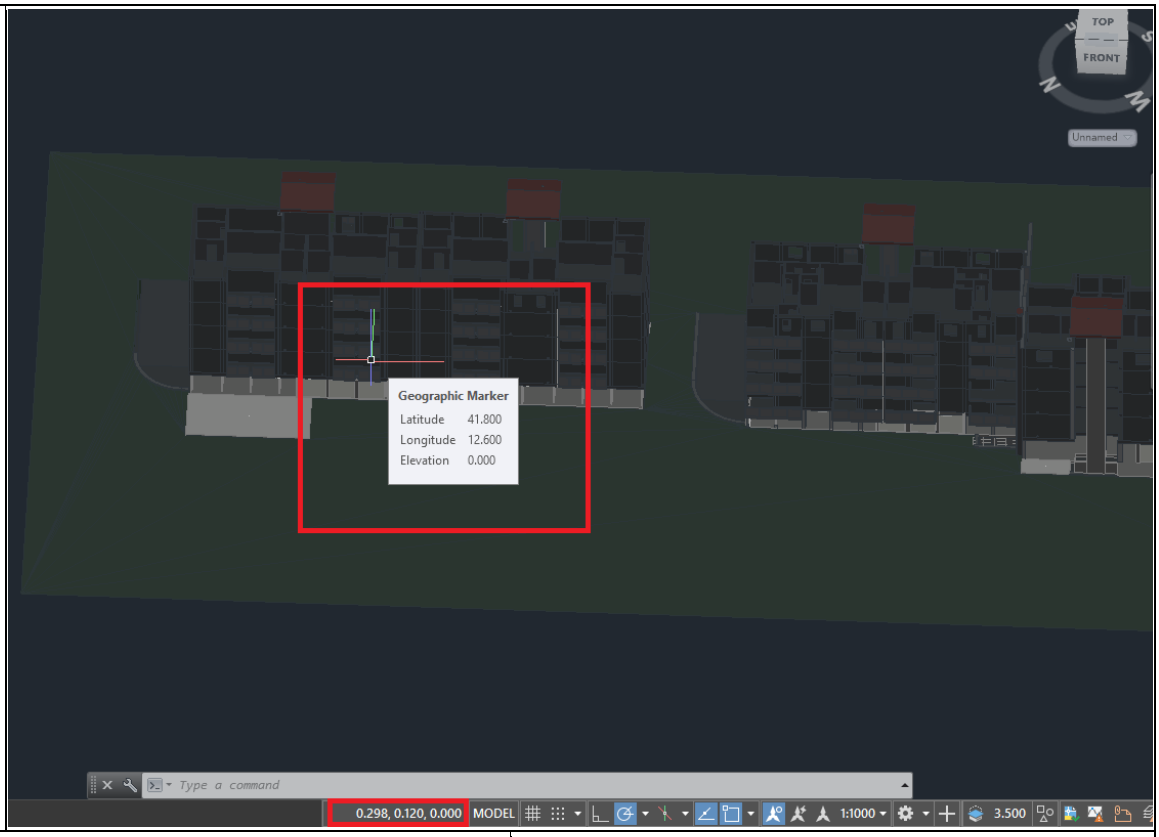
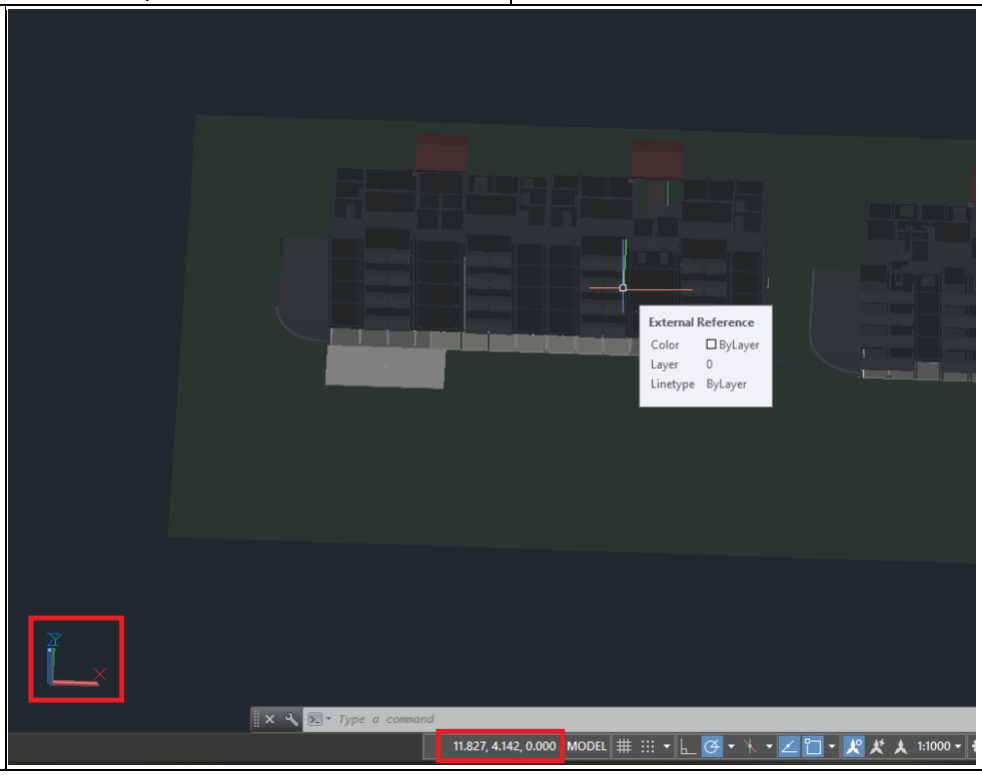
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	3.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0
	3.1.2) Attach screenshots	See figure from 2.1.2
	3.1.3) What is the height reference system?	Local in mm
	3.1.4) Attach screenshots	See figure from 2.1.2
	3.2) short comments to the previous question (optional)	The height of the reference point itself is 3500mm, but everything around it has a height of 0.
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
	4.2) short comments to the previous question (optional)	The angle is 48 degrees, similarly to to example on the data page.
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchies	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relationships	9.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Geometry	10.1) Is geometry read correctly?	Yes
Norm	11.1) Did the normals change?	No

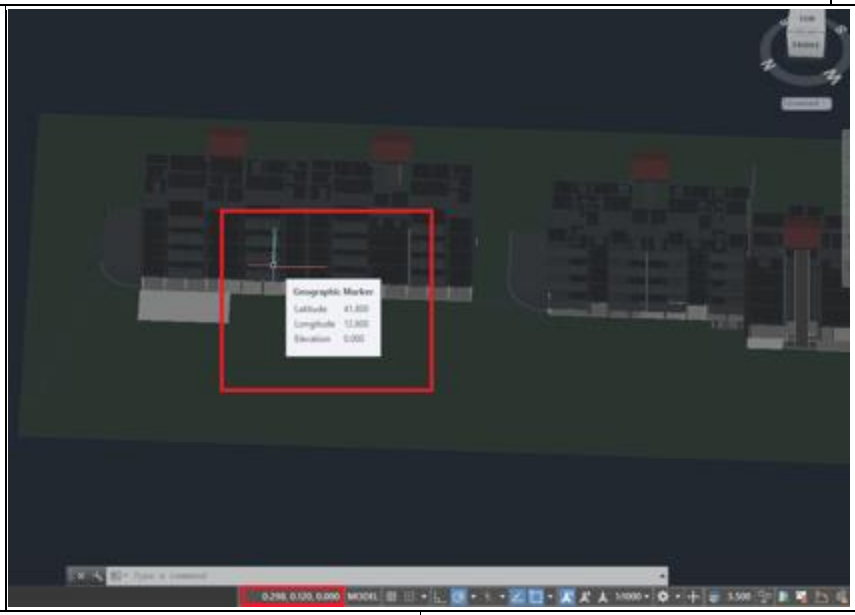
	11.1.2) Attach screenshots	
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	Yes
	13.2) short comments to the previous question (optional)	Yes, but as wireframe
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	The attributes and the geometry (move, rotate, scale, trim, mirror, stretch).
	14.1.2) Attach screenshots	**Edit geometry** 

		Edit attributes 
Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	You can do selection on properties that are native to the software (such as material, layer, lineweight), but not specific IFC attributes. Selecting on object type is possible.
	15.1.2) Attach screenshots	
Analysis	16.1) Is it possible to analyse the objects and the model?	Yes, analysis about the modelled building performances (energy, noise, shadows...) are possible (type 2)

	16.1.1) What analysis are possible? Do you know if the results are reliable?	Visibility check (for example sight distance) and volume report, amongst others. See the screenshot for all options. I didn't really know how to perform these analyses, as they are not so straightforward.
	16.1.2) Attach screenshots	
	16.1.3) Time required to perform the analysis about the model itself (type 1)	No analysis of type 1 are possible
	16.1.3) Time required to perform the analysis about the model performances (type2)	No analysis of type 2 are possible
	16.2) short comments to the previous question (optional)	I couldn't really perform the analyses as they require specific input.
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	Yes
	17.1.1) Can you add a short description of the steps involved in the pre-processing?	You can choose whether to includ "Quantity Add On" and "Space Boundary Add On" (Level 1 or level 2) or not.
	17.1.2) Attach screenshots and files	

	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	No
	18.2) short comments to the previous question (optional)	It will automatically use the CoordinationView_V2.0 view definition.
	19) How long does it take for the data to be exported to IFC?	1-5 minutes
	19) How long does it take for the data to be exported to IFC?	1-5 minutes
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation
	Please report on any errors the software gives when importing the file.	No errors, but trying to do anything will make the software freeze
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	40.1.1) Where is the origin of the model coordinate reference system as imported in the software?	At the blue reference point

	40.1.2) Attach screenshots	
	40.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	Local right-handed coordinate system with milimetres as unit of measure
	40.1.4) Attach screenshots	

Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	41.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0
	41.1.2) Attach screenshots	
	41.1.3) What is the height reference system?	Local in millimetres
	41.1.4) Attach screenshots	See figure from 41.1.2
	41.2) short comments to the previous question (optional)	You can't see that it is in millimetres, but the whole coordinate system is and it was also shown for Myran_fixed.
Cr...	42.1) Is the model oriented correctly with respect to the true North?	Yes
Pr...	43.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC ...	44.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attribute ...	46.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relationships	47.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
	47.2) short comments to the previous question (optional)	The storey relationships are kept at least.
Geo...	48.1) Is geometry read correctly?	Yes
Nor...	49.1) Did the normals change?	No

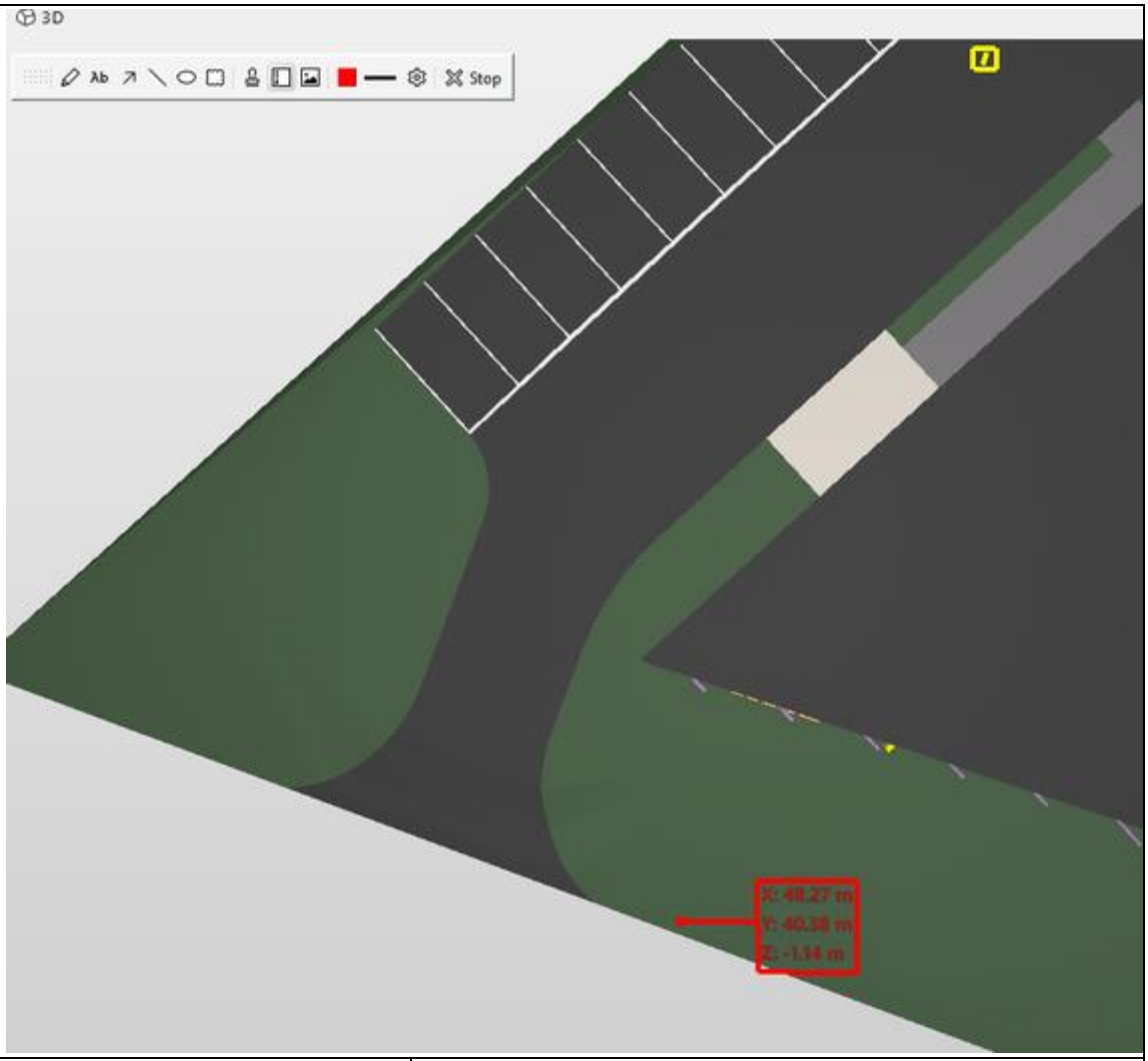
	49.1.2) Attach screenshots		
2D/3D	50.1) Is it possible to view the model in 3D?	Yes	
	51.1) Is it possible to view the model in 2D?	Yes	
	51.2) short comments to the previous question (optional)		As 2D wireframe
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:		The software has also export abilities to IFC
	55) How long does it take for the data to be exported to IFC?		1-5 minutes

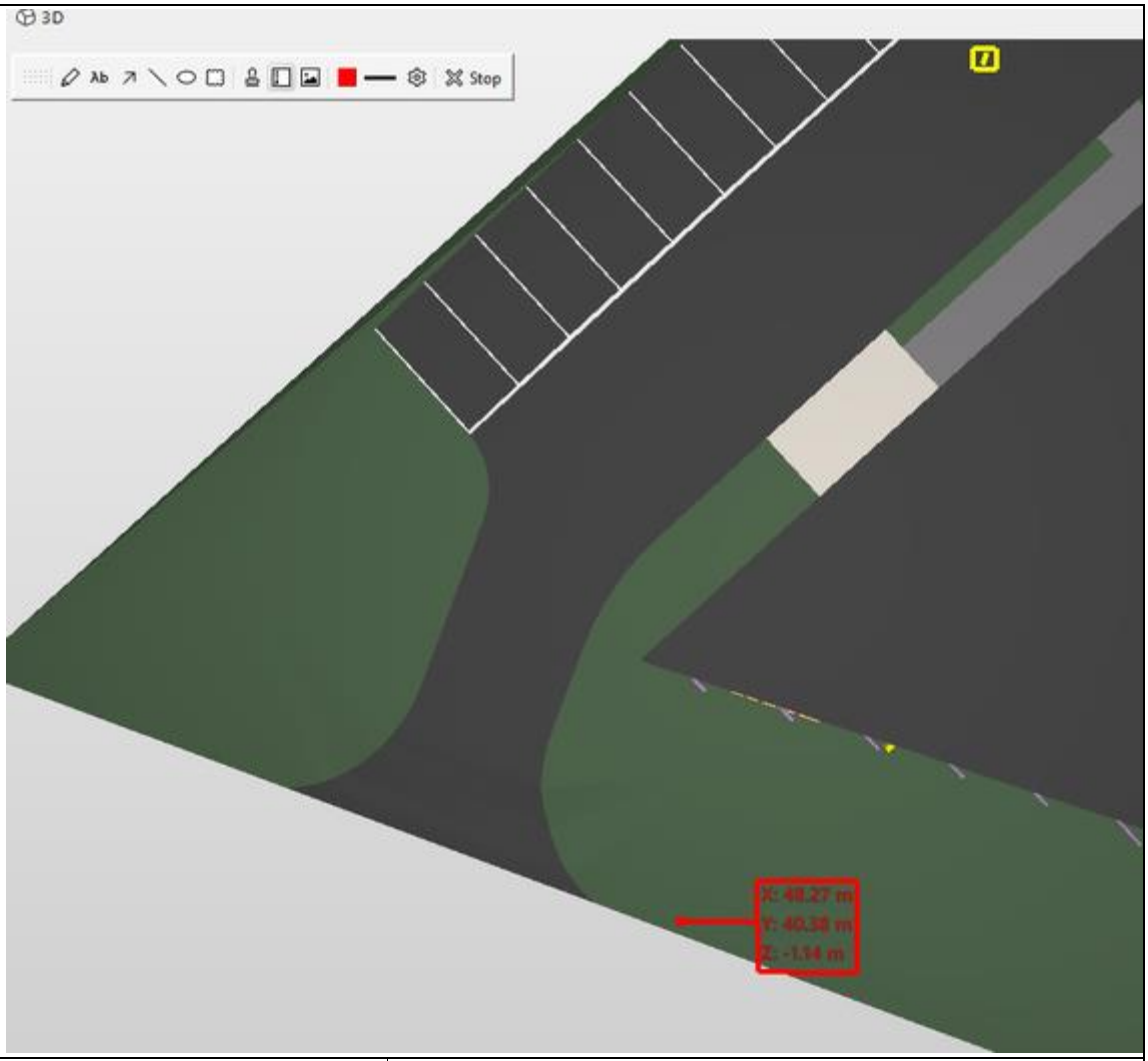
Solibri Office 9.10.3.5 - Windows 10 Home
Proprietary software
BIM
Level of tester expertise: 1 - Very beginner user (it is nearly the first time you use the software)

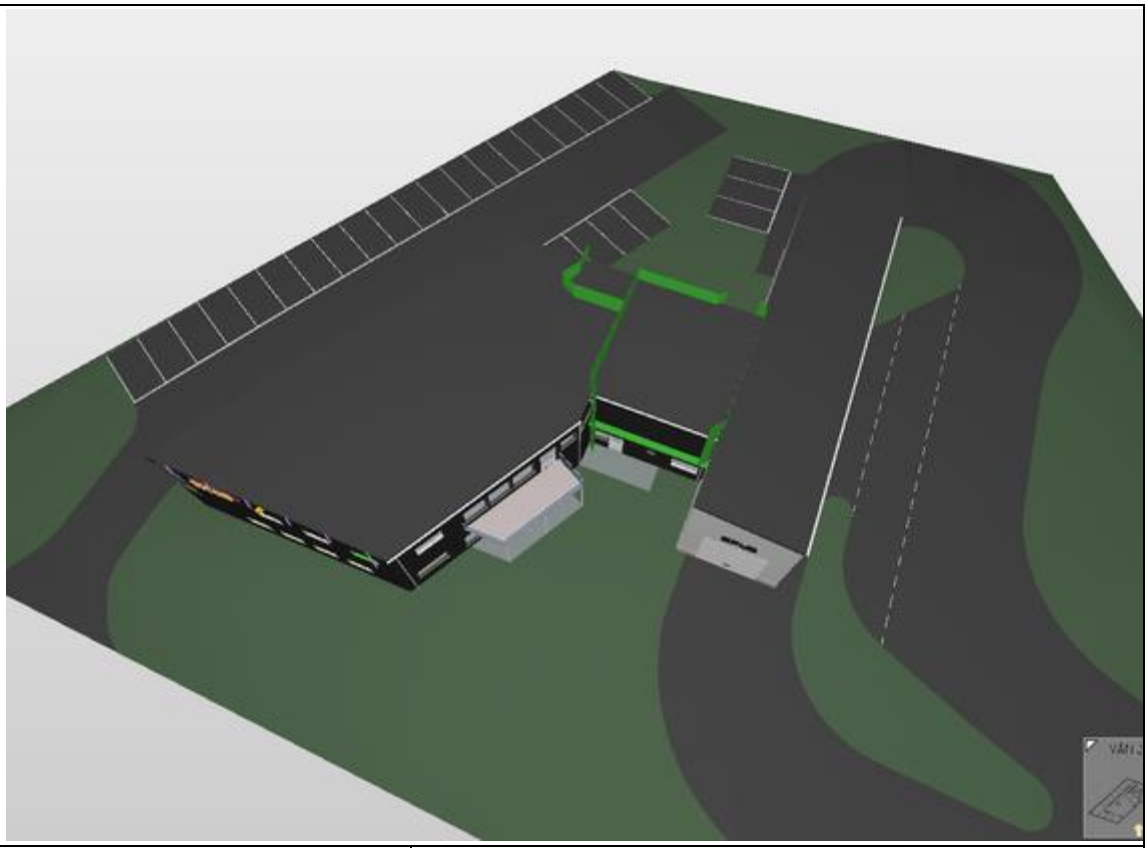
Solibri Office

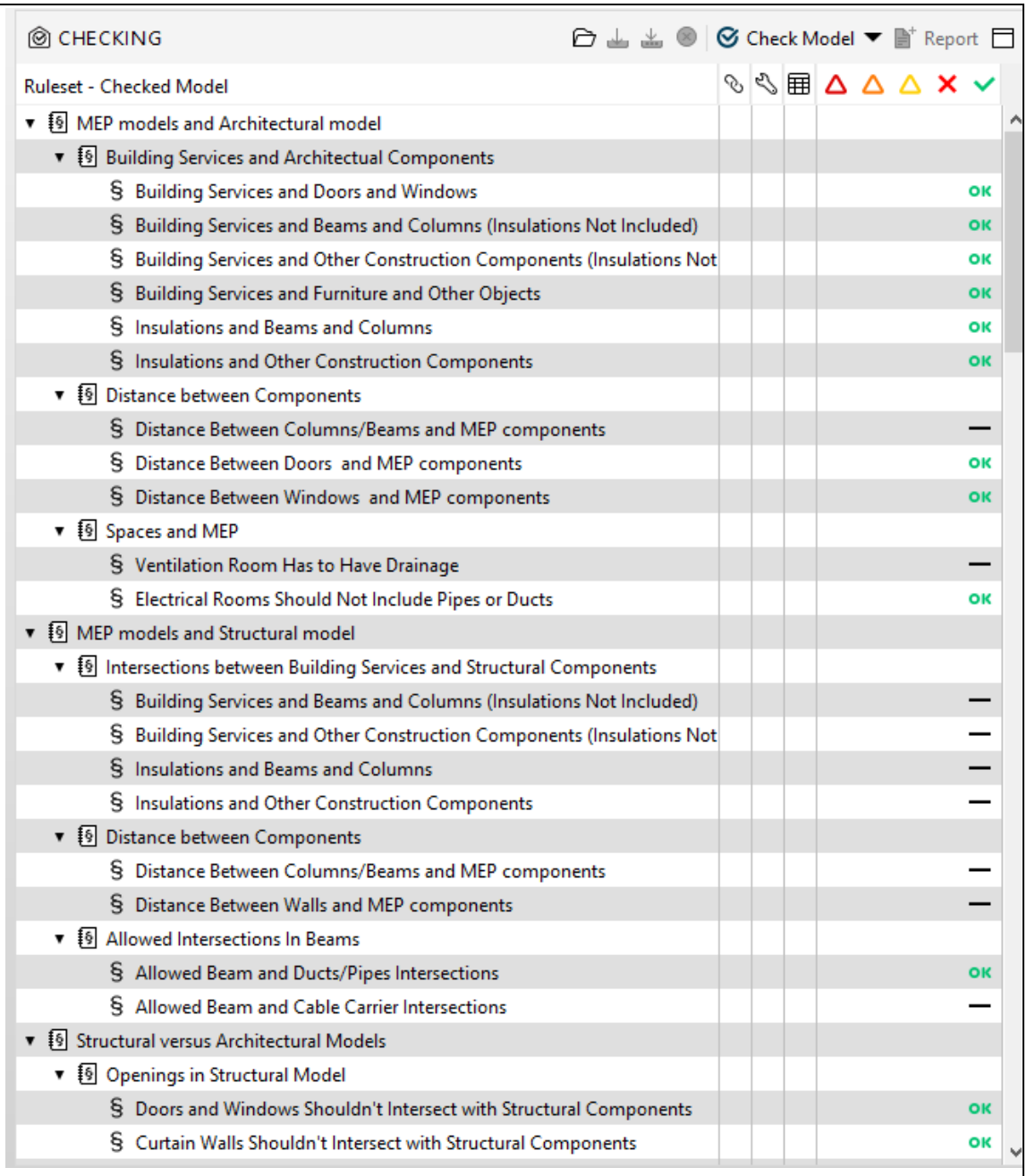
Software	Software Name [version]	**Solibri Office [9.10.3.5]**		Software house			
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	self-built desktop (2013)	Windows 10 Home 64-bit	Intel i5-4570 @ 3.20GHz	AMD Radeon HD 7800 Series	8 GB	120 GB	20 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			

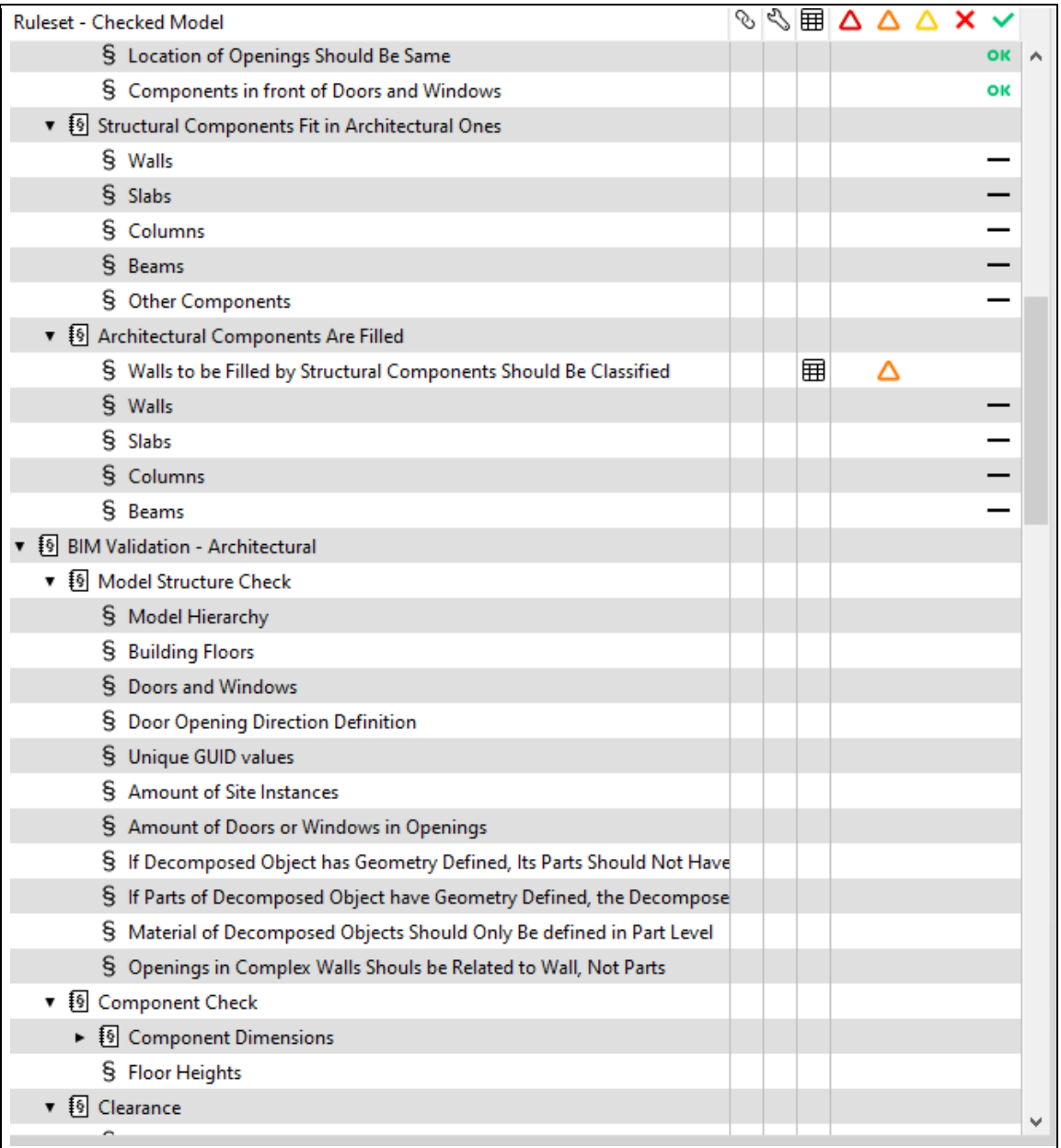
Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
Georeferencing	2.1.1) Where is the origin of the model coordinate reference system as imported in the software?	Can't determine it properly because the software doesn't allow to pick coordinates outside the model footprint. It is however likely to be at the blue reference point.

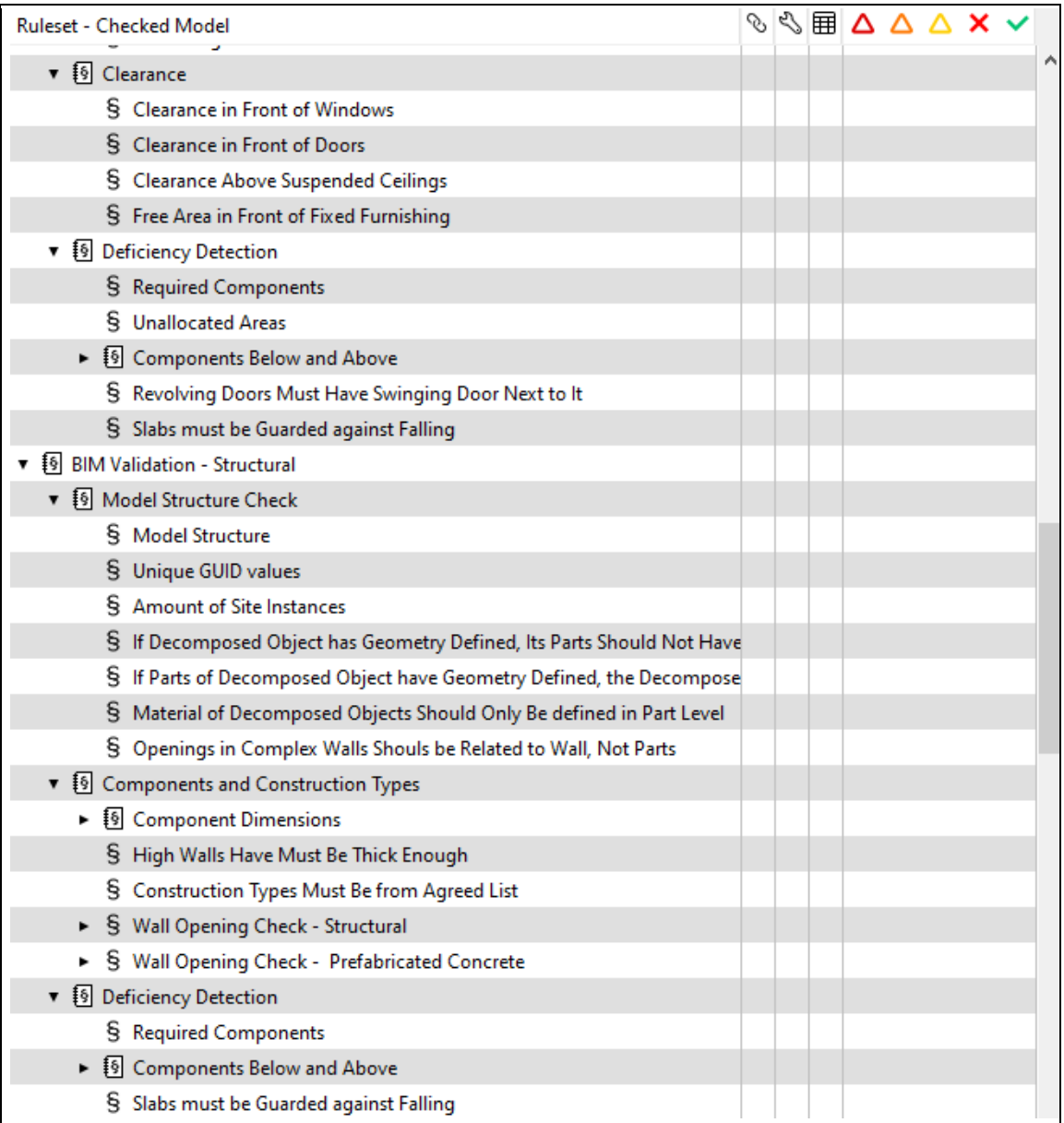
	2.1.2) Attach screenshots	
	2.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	Local right-handed coordinate system with metres as unit of measurement
	2.1.4) Attach screenshots	See figure from 2.1.2
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	3.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	Can't check information on the origin
	3.1.3) What is the height reference system?	Local in metres

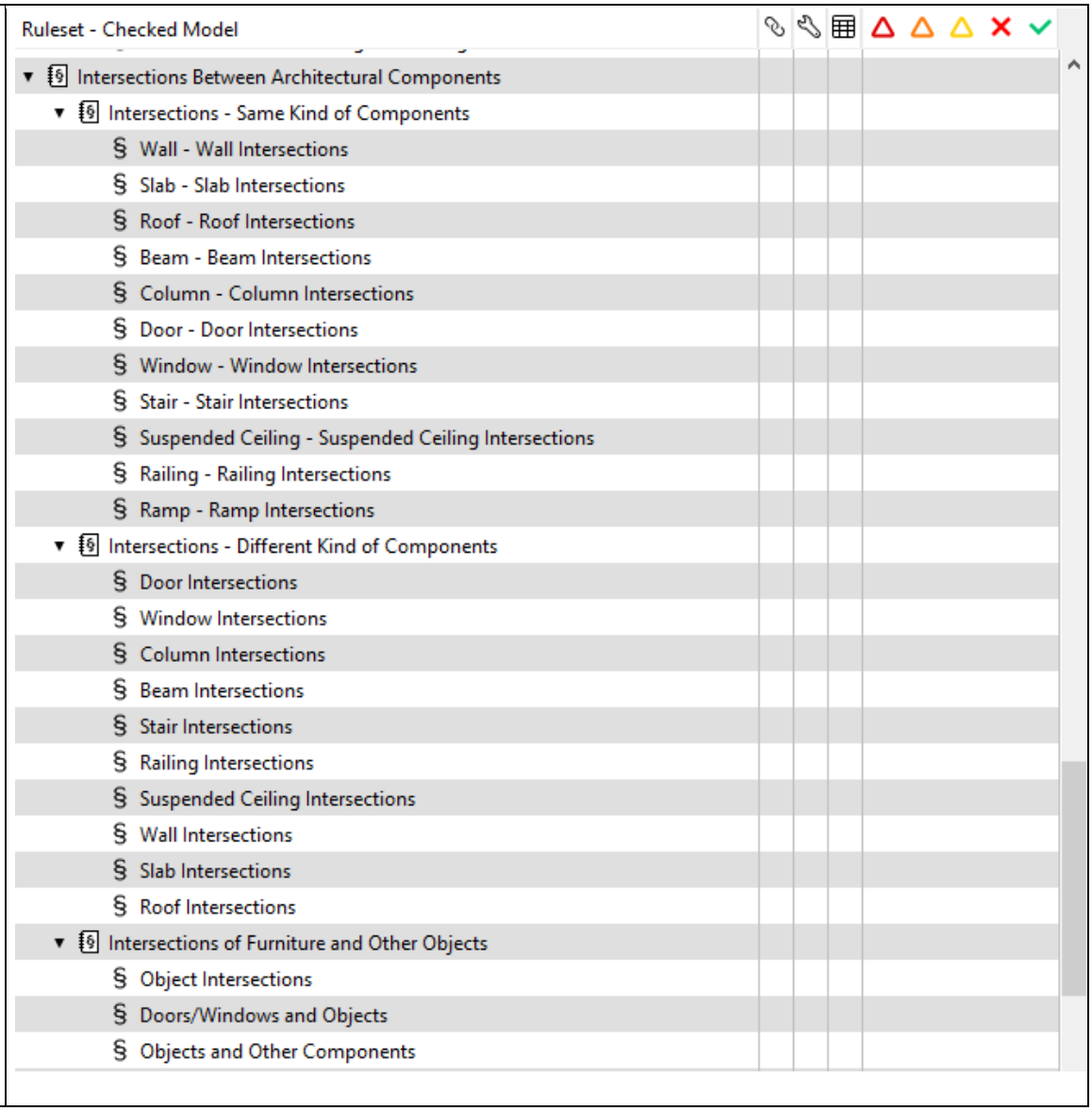
	3.1.4) Attach screenshots	
Orientation	4.1) Is the model oriented correctly with respect to the true North?	The software does not have the necessary tools to determine this information
	4.2) short comments to the previous question (optional)	Can't check properly, but it seems like it is oriented correctly
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relat	9.1) Are the relationships between the objects retained?	Yes
Geo	10.1) Is geometry read correctly?	Yes
No	11.1) Did the normals change?	No

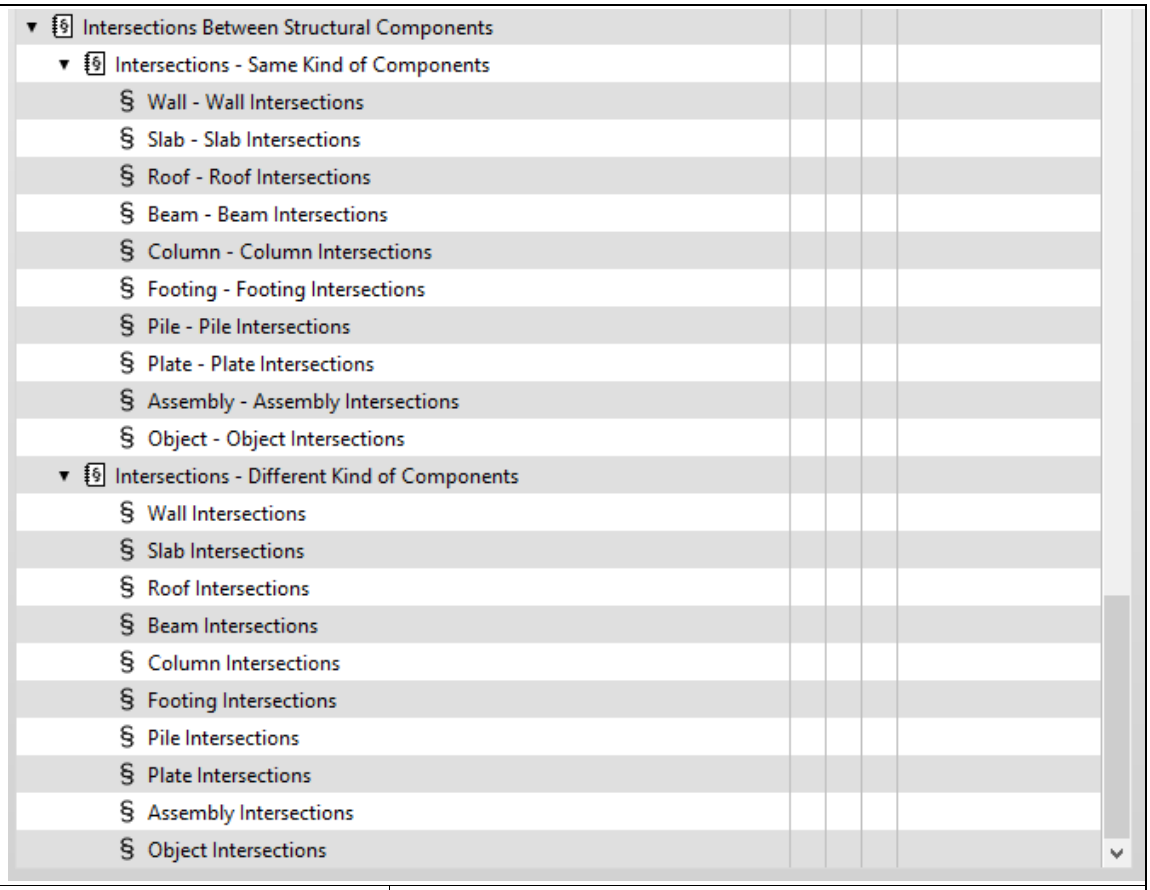
	11.1.2) Attach screenshots	
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	No
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	No
Queries	15.1) Is it possible to query the model and the attributes?	No
Analysis	16.1) Is it possible to analyse the objects and the model?	Yes, analysis about the model validity and features (geometry, semantics, schema validity...) are possible (type 1)
	16.1.1) What analysis are possible? Do you know if the results are reliable?	You can check the validity of the model on specific criteria. See the screenshot for an idea about the options. There are different rulesets that can be chosen, and you can also use custom rulesets.

	16.1.2) Attach screenshots	


Ruleset - Checked Model
Location of Openings Should Be Same
OK
Components in front of Doors and Windows
OK
Structural Components Fit in Architectural Ones
Walls
Slabs
Columns
Beams
Other Components
Architectural Components Are Filled
Walls to be Filled by Structural Components Should Be Classified
Walls
Slabs
Columns
Beams
BIM Validation - Architectural
Model Structure Check
Model Hierarchy
Building Floors
Doors and Windows
Door Opening Direction Definition
Unique GUID values
Amount of Site Instances
Amount of Doors or Windows in Openings
If Decomposed Object has Geometry Defined, Its Parts Should Not Have
If Parts of Decomposed Object have Geometry Defined, the Decompose
Material of Decomposed Objects Should Only Be defined in Part Level
Openings in Complex Walls Shouls be Related to Wall, Not Parts
Component Check
Component Dimensions
Floor Heights
Clearance

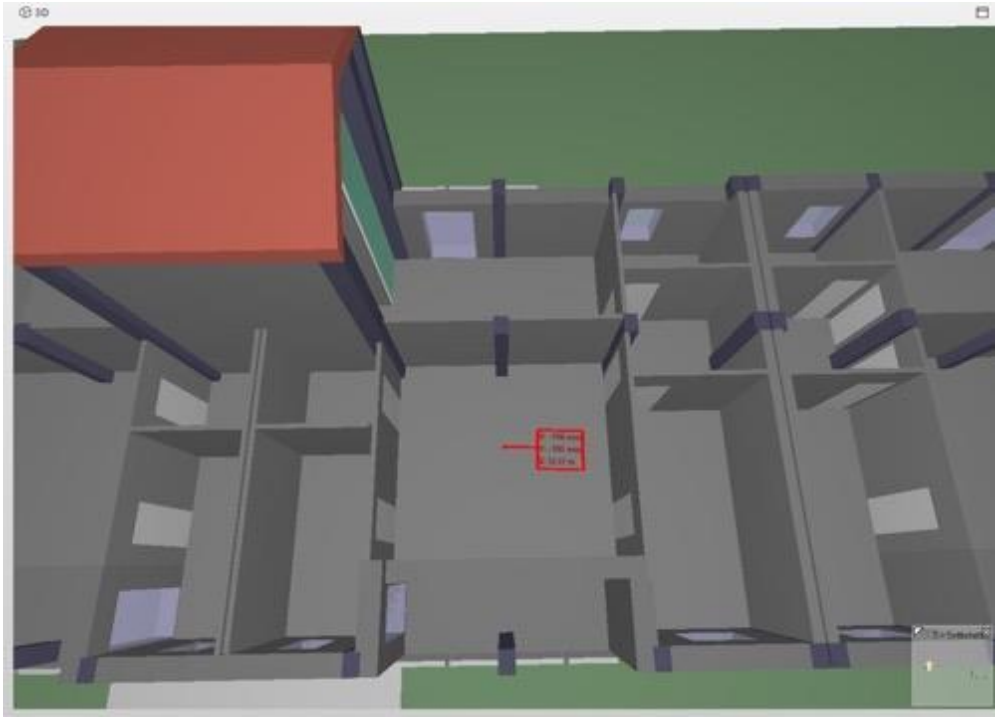

Ruleset - Checked Model
Clearance
Clearance in Front of Windows
Clearance in Front of Doors
Clearance Above Suspended Ceilings
Free Area in Front of Fixed Furnishing
Deficiency Detection
Required Components
Unallocated Areas
Components Below and Above
Revolving Doors Must Have Swinging Door Next to It
Slabs must be Guarded against Falling
BIM Validation - Structural
Model Structure Check
Model Structure
Unique GUID values
Amount of Site Instances
If Decomposed Object has Geometry Defined, Its Parts Should Not Have
If Parts of Decomposed Object have Geometry Defined, the Decompose
Material of Decomposed Objects Should Only Be defined in Part Level
Openings in Complex Walls Shouls be Related to Wall, Not Parts
Components and Construction Types
Component Dimensions
High Walls Have Must Be Thick Enough
Construction Types Must Be from Agreed List
Wall Opening Check - Structural
Wall Opening Check - Prefabricated Concrete
Deficiency Detection
Required Components
Components Below and Above
Slabs must be Guarded against Falling

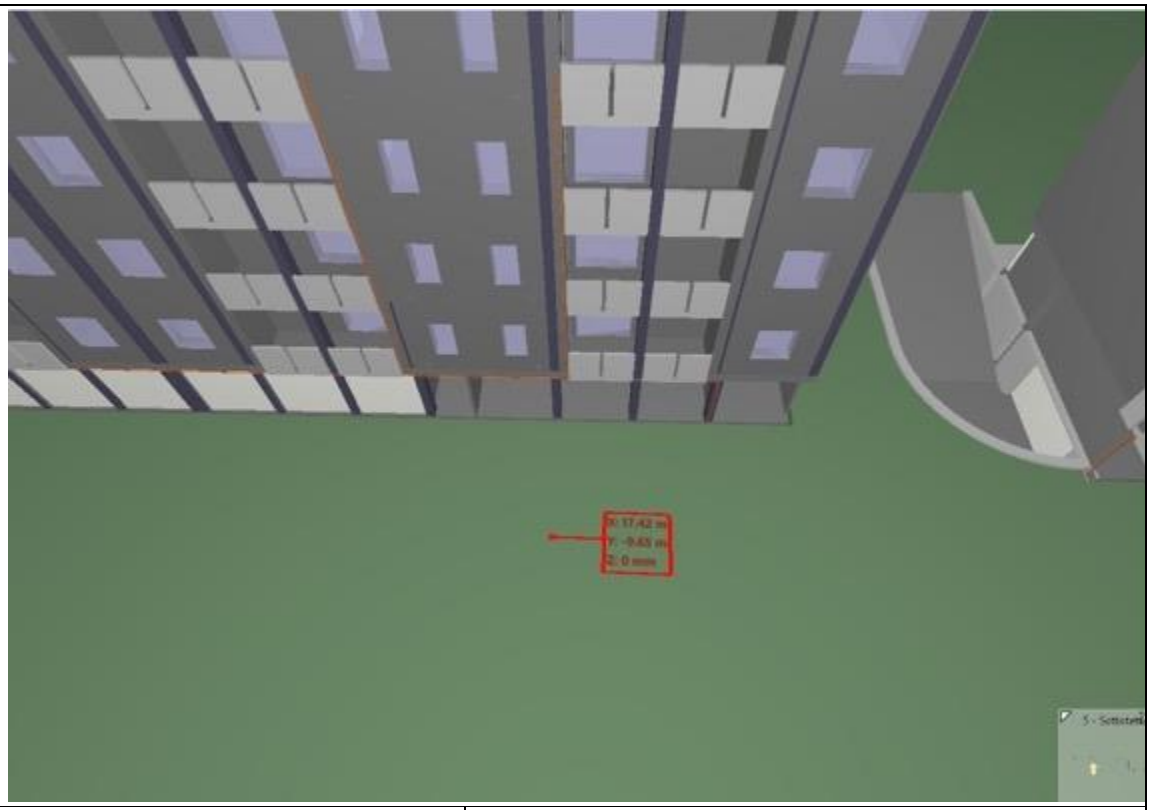

Ruleset - Checked Model
Intersections Between Architectural Components
Intersections - Same Kind of Components
Wall - Wall Intersections
Slab - Slab Intersections
Roof - Roof Intersections
Beam - Beam Intersections
Column - Column Intersections
Door - Door Intersections
Window - Window Intersections
Stair - Stair Intersections
Suspended Ceiling - Suspended Ceiling Intersections
Railing - Railing Intersections
Ramp - Ramp Intersections
Intersections - Different Kind of Components
Door Intersections
Window Intersections
Column Intersections
Beam Intersections
Stair Intersections
Railing Intersections
Suspended Ceiling Intersections
Wall Intersections
Slab Intersections
Roof Intersections
Intersections of Furniture and Other Objects
Object Intersections
Doors/Windows and Objects
Objects and Other Components

		
	16.1.3) Time required to perform the analysis about the model itself (type 1)	less than a minute
	16.1.3) Time required to perform the analysis about the model performances (type2)	No analysis of type 2 are possible
	16.2) short comments to the previous question (optional)	The analysis time is based on checking all the validity criteria
Test with UpTown.ifc		Ho mo
Performance	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	it's almost immediate
Pro porti one	24.1) Does the model maintain its correct dimensions and proportions?	Yes

Solibri Office 9.10.3.5 - Windows 10 Home
Proprietary software
BIM
Level of tester expertise: 1 - Very beginner user (it is nearly the first time you use the software)

IFC definitio	25.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attributes	27.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relat	28.1) Are the relationships between the objects retained?	Yes
Geo	29.1) Is geometry read correctly?	Yes
Normals Normals	30.1) Did the normals change?	No
	30.1.2) Attach screenshots	
2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	32.1) Is it possible to view the model in 2D?	No
	35.2) short comments to the previous question (optional)	However, the validity check takes longer (about 5 minutes)
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2
Test with Savigliano.ifc		
Perfo	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate

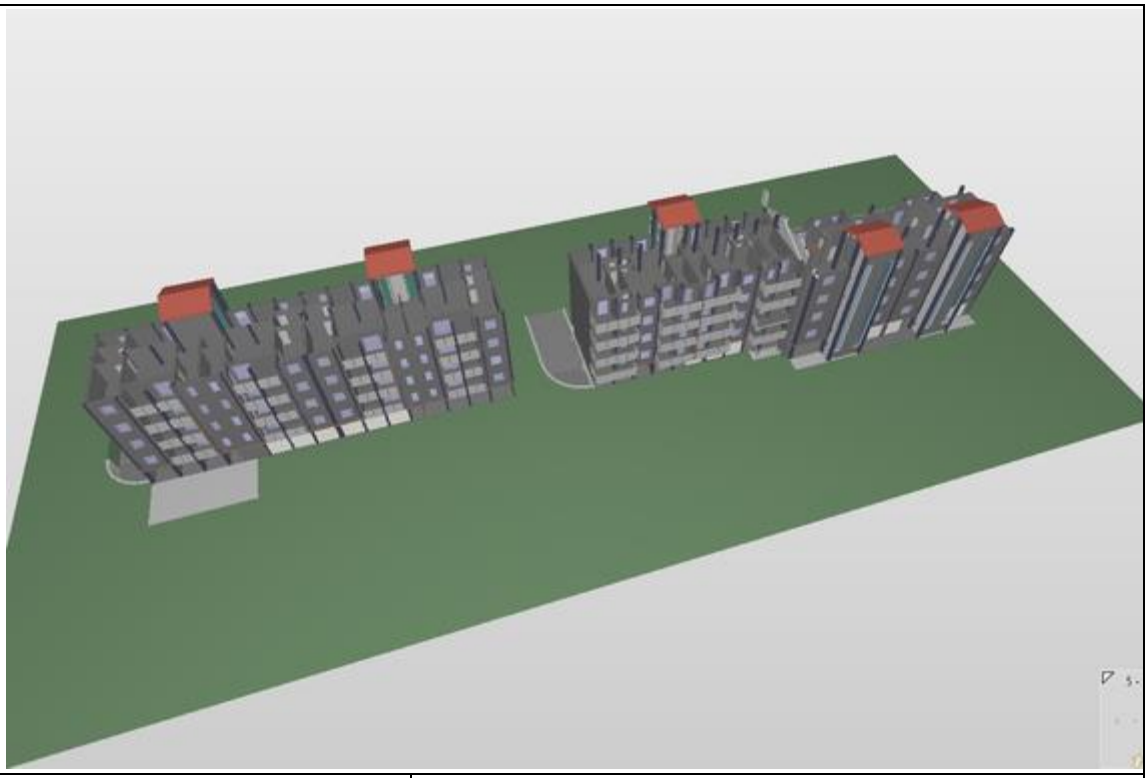
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	40.1.1) Where is the origin of the model coordinate reference system as imported in the software?	It's at the blue reference point
	40.1.2) Attach screenshots	
	40.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	Local right-handed coordinate system with metres as unit of measure

	40.1.4) Attach screenshots	

Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	41.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0
	41.1.2) Attach screenshots	See figure from 40.1.4
	41.1.3) What is the height reference system?	Local in metres
	41.1.4) Attach screenshots	See figure from 40.1.4

Orientation	42.1) Is the model oriented correctly with respect to the true North?	Yes
	42.2) short comments to the previous question (optional)	Yes, based on the coordinates along the bottom part of the model (as shown in the example picture in the data description)

Proporti	43.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC	44.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarch	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attribute	46.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relat	47.1) Are the relationships between the objects retained?	Yes
Geo	48.1) Is geometry read correctly?	Yes
Nor	49.1) Did the normals change?	No

	49.1.2) Attach screenshots	
2D/3D	49.2) short comments to the previous question (optional)	Visually the normals seem correct
	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2

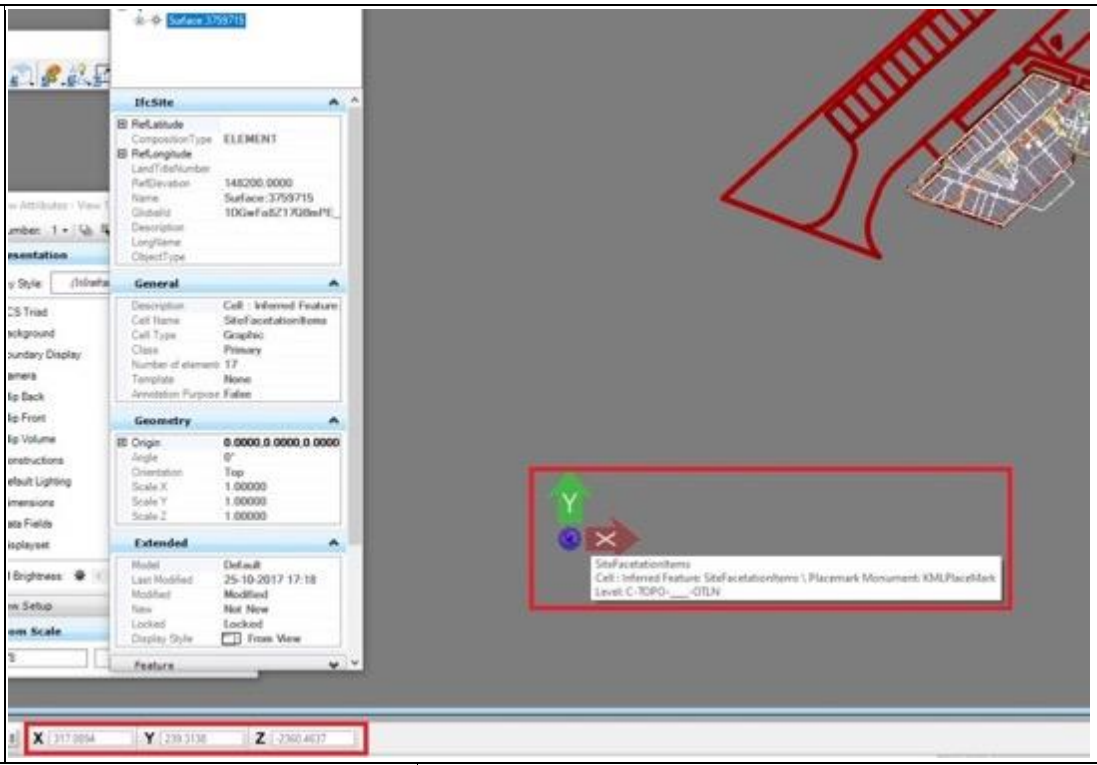
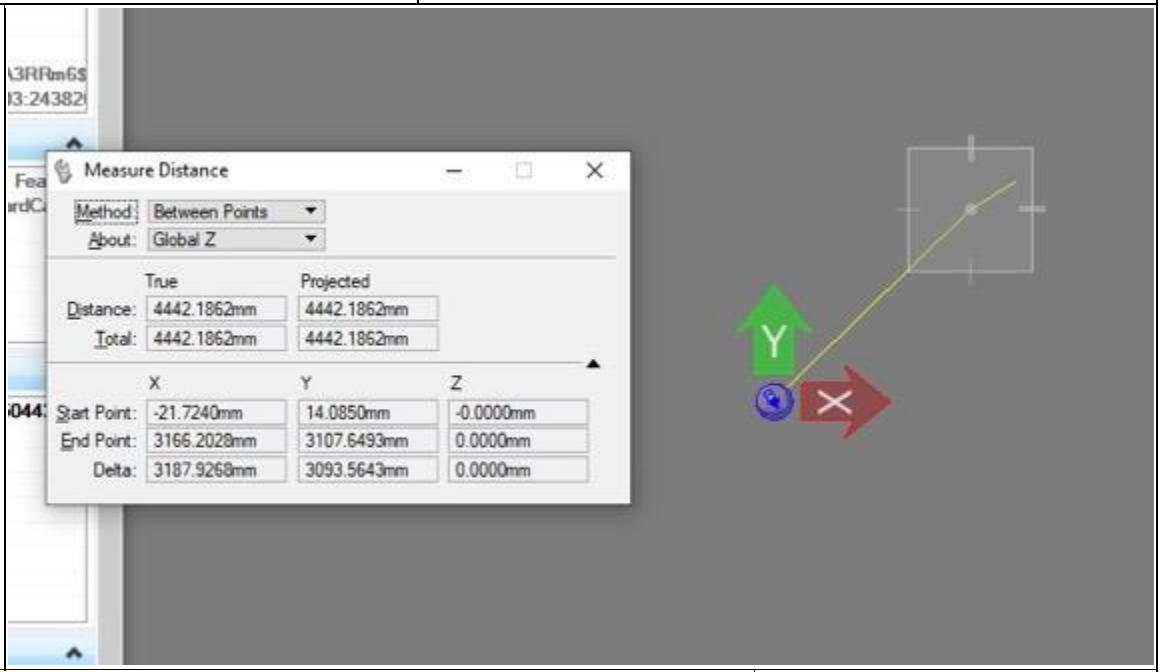
Bentley Map Enterprise V8i SELECTseries 10 - Windows 10 Home
Proprietary software
GIS
Level of tester expertise: 1 - Very beginner user (it is nearly the first time you use the software)

Bentley Map Enterprise

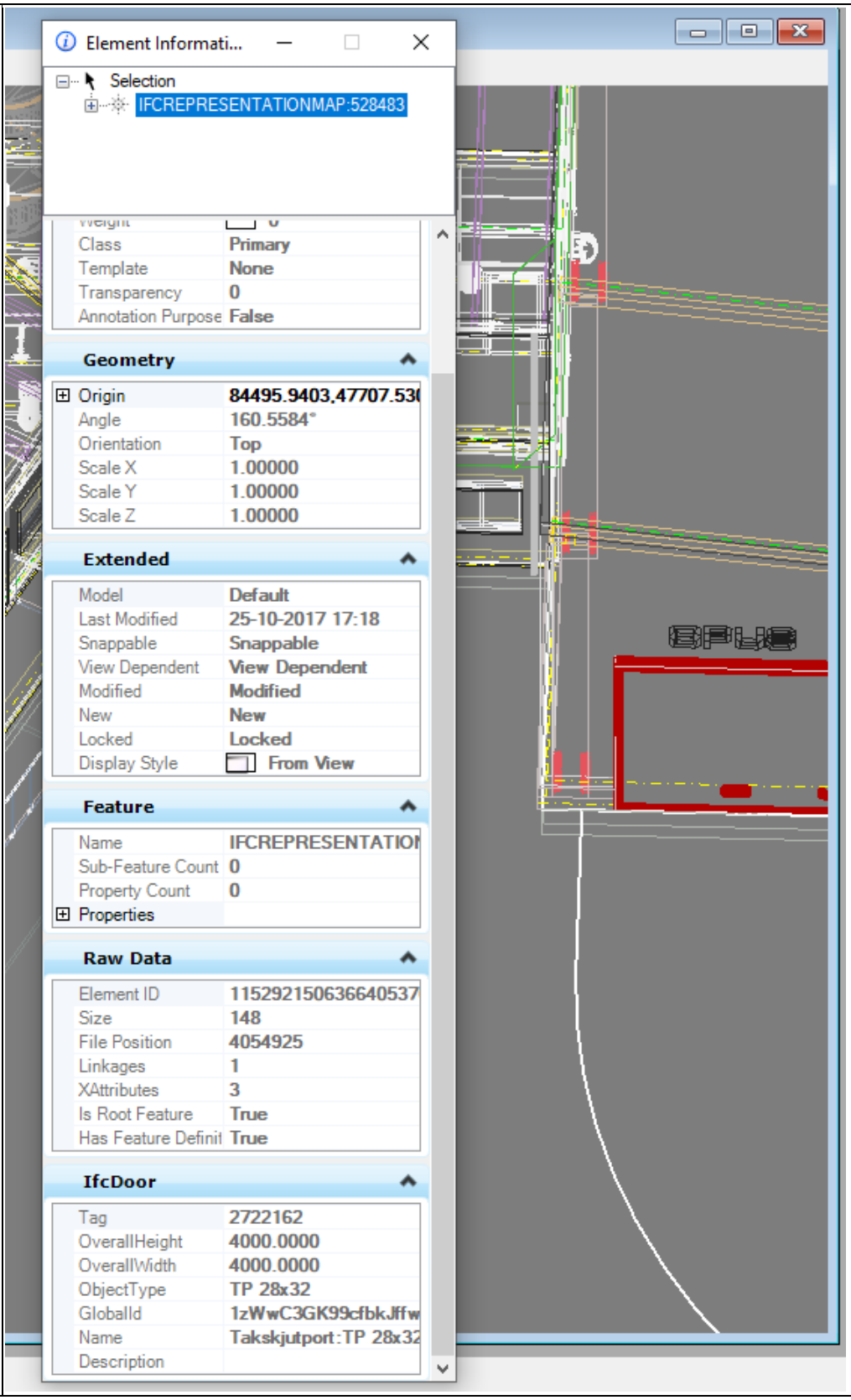
Software	Software Name [version]	**Bentley Map Enterprise [V8i SELECTseries 10]**		Software house			
	Proprietary or open source software?			Kind of software			
	proprietary			GIS			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	self-built desktop (2013)	Windows 10 Home 64-bit	Intel i5-4570 @ 3.20GHz	AMD Radeon HD 7800 Series	8 GB	120 GB	20 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			

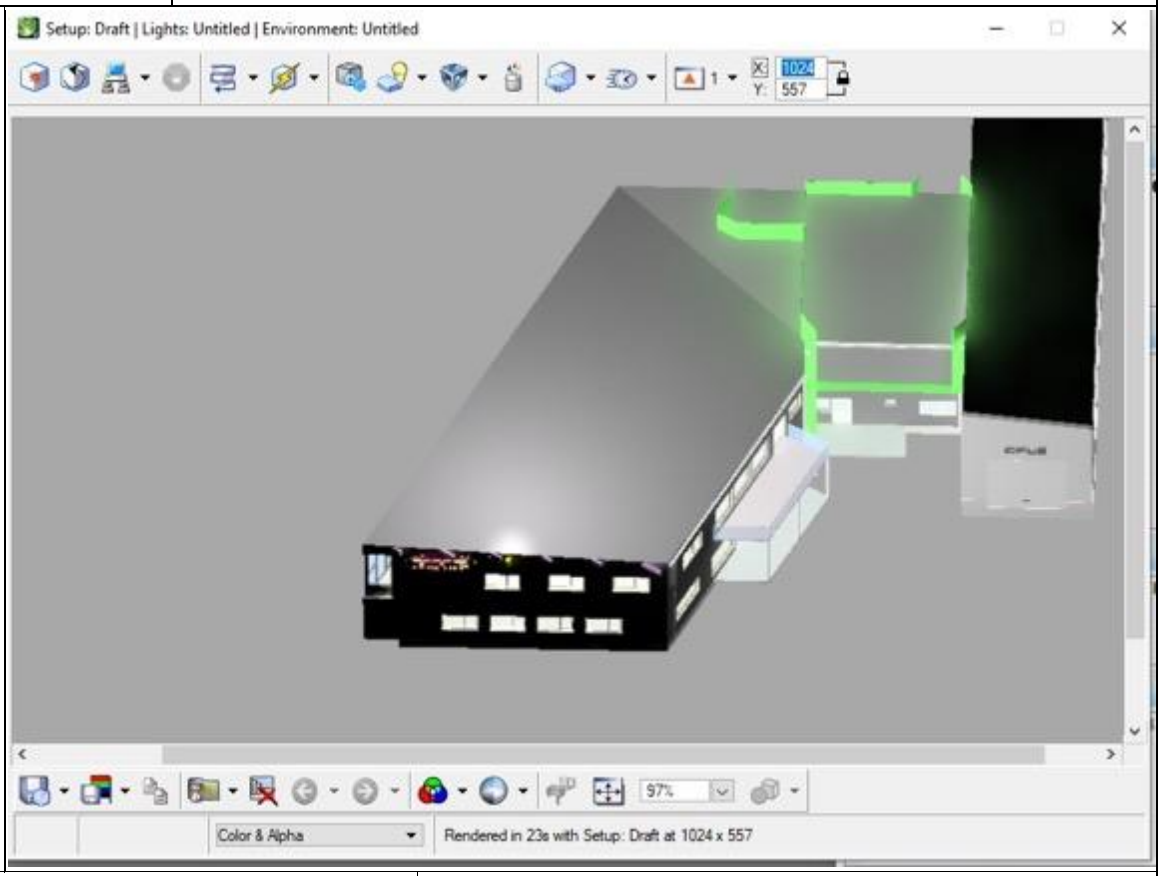
Test with Myran.ifc

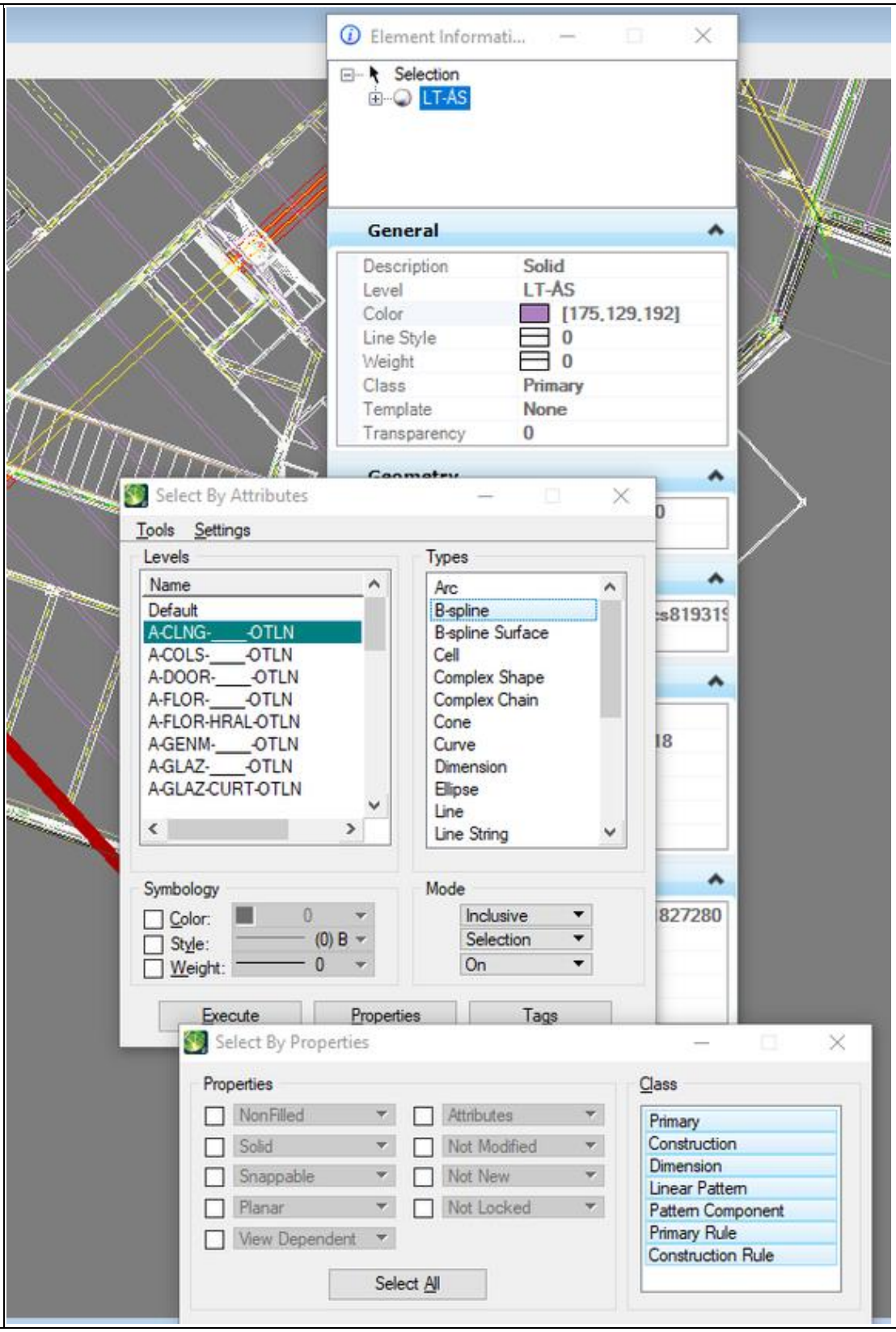
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georefencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	2.1.1) Where is the origin of the model coordinate reference system as imported in the software?	The origin is at the blue reference point.

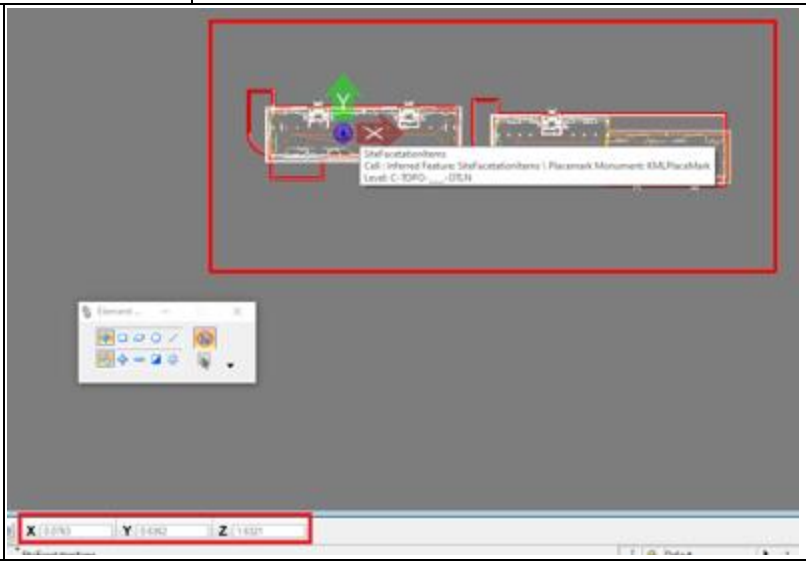
	2.1.2) Attach screenshots	
	2.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	It is a local right-handed coordinate system, with millimetres as unit of measure
	2.1.4) Attach screenshots	
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No

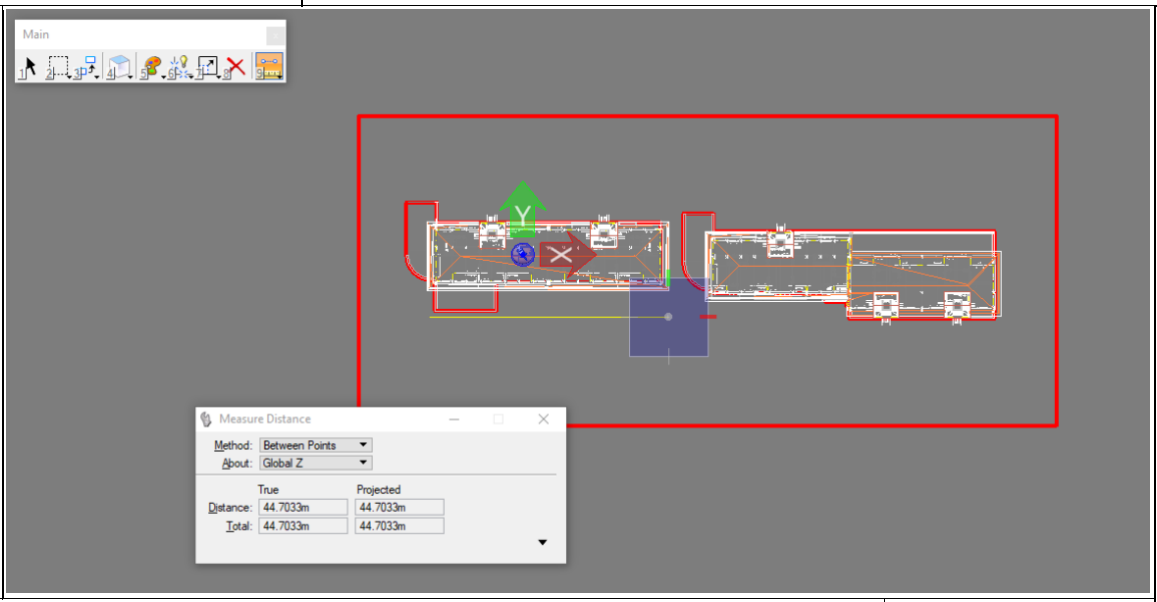
	3.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0
	3.1.2) Attach screenshots	See figure from 2.1.4
	3.1.3) What is the height reference system?	It's just local, in millimetres
	3.1.4) Attach screenshots	See figure from 2.1.4
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
Proportion	5.1) Does the model maintain its correct dimensions and proportions?	Yes
Semantics	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
	8.1) Are the attributes present in the IFC entities retained and consistent?	No
	8.1.1) What changes / inconsistencies / errors / other issues were noted?	The properties shown in the data description are not there.

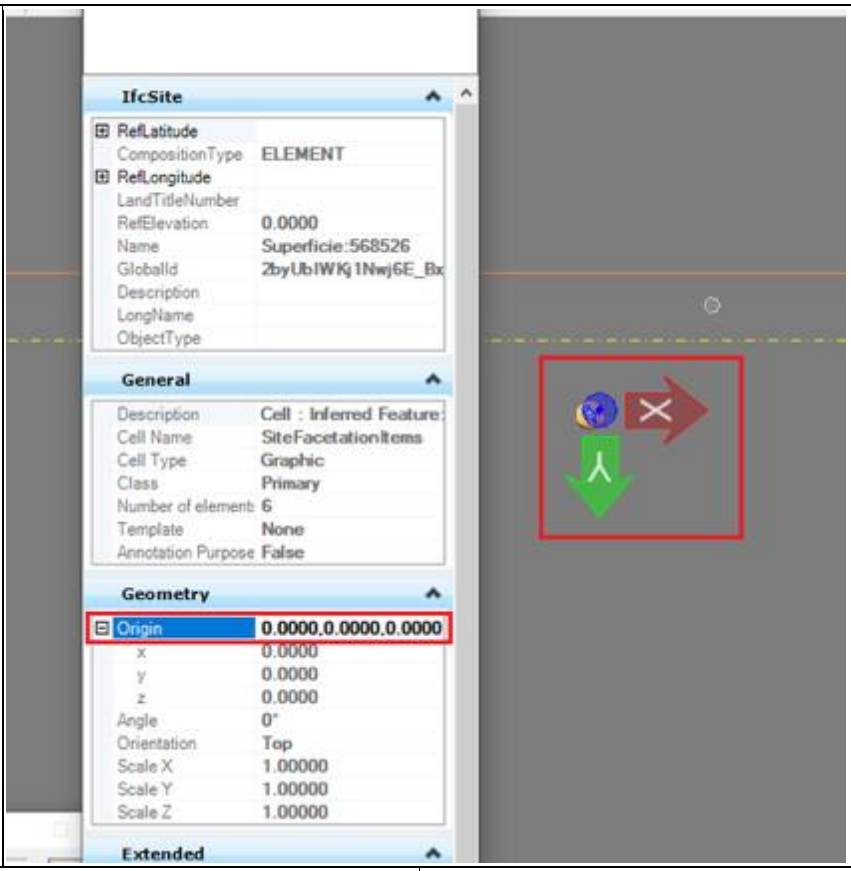
	8.1.2) Attach screenshots	

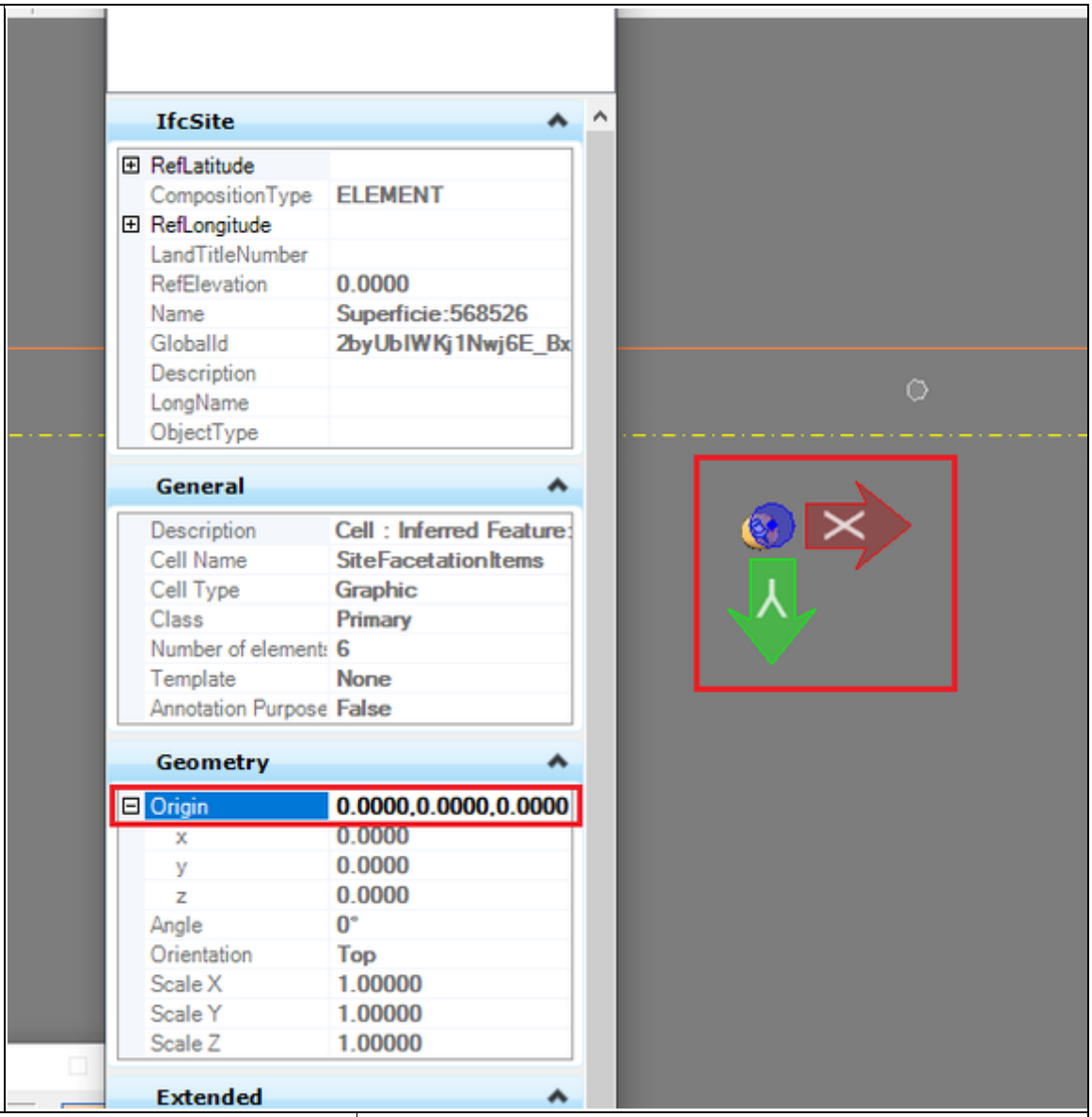
Relationships	9.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Geometry Normals	10.1) Is geometry read correctly?	Yes
	11.1) Did the normals change?	No
	11.1.2) Attach screenshots	
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	No
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	No
Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	You can select objects based on some attributes

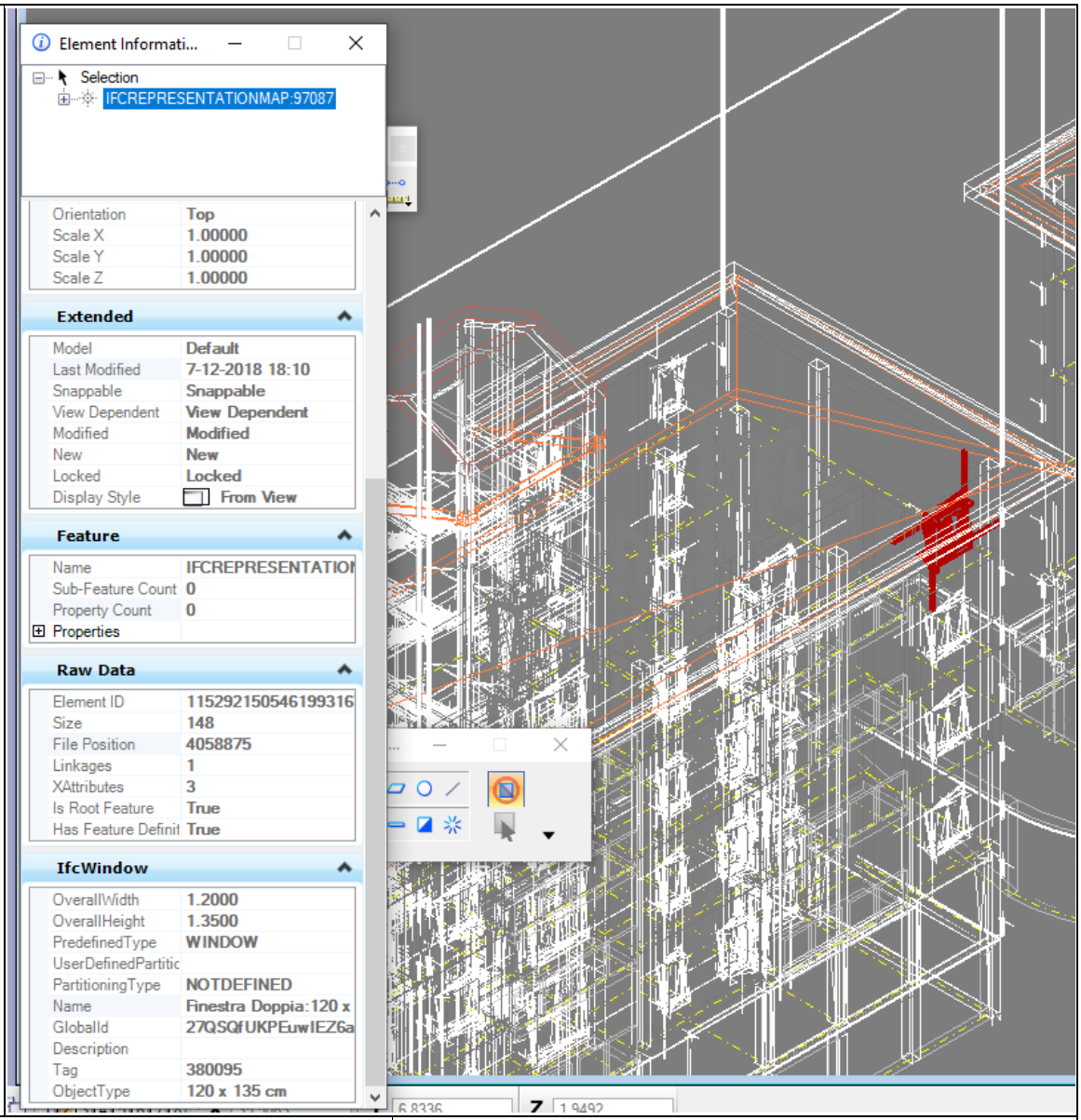
	15.1.2) Attach screenshots	

Analysis	16.1) Is it possible to analyse the objects and the model?	No
	16.1.3) Time required to perform the analysis about the model itself (type 1)	No analysis of type 1 are possible
	16.1.3) Time required to perform the analysis about the model performances (type2)	No analysis of type 2 are possible
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	40.1.1) Where is the origin of the model coordinate reference system as imported in the software?	The origin is at the blue reference point.
	40.1.2) Attach screenshots	

	40.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	It is a local right-handed coordinate system, with metres as unit of measure
	40.1.4) Attach screenshots	
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	41.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0

	41.1.2) Attach screenshots	
	41.1.3) What is the height reference system?	Local in metres

	41.1.4) Attach screenshots	
Orientation	42.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	43.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	44.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attributes	46.1) Are the attributes present in the IFC entities retained and consistent?	No
	46.1.1) What changes / inconsistencies / errors / other issues were noted?	The properties shown in the data description are not there.

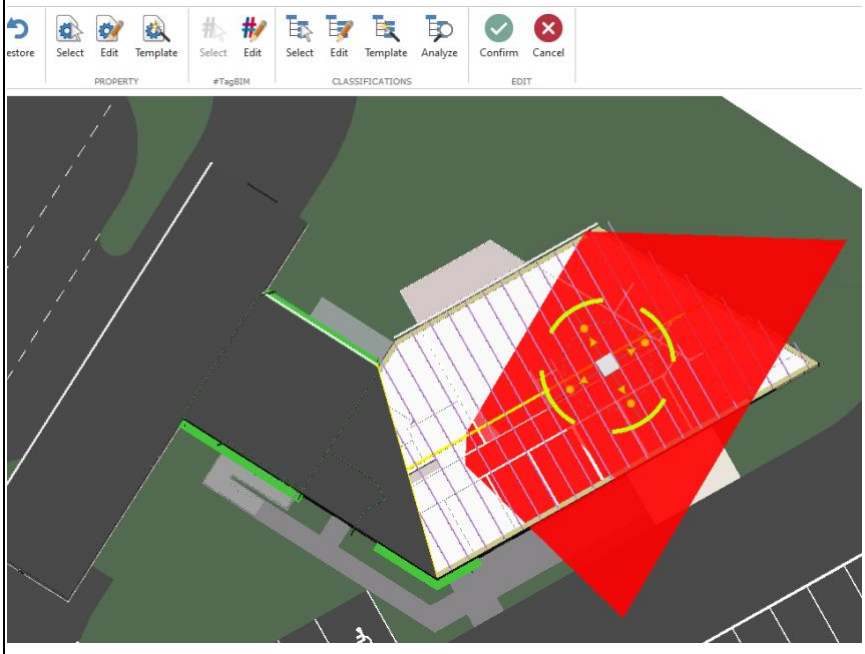
	46.1.2) Attach screenshots	
Relations hips	47.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Geo	48.1) Is geometry read correctly?	Yes
Normals	49.1) Did the normals change?	No
	49.2) short comments to the previous question (optional)	Visually, they didn't change
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2

ACCA usBIM.viewer+ v.8.00d - Windows 10 Home
Proprietary software
BIM
Level of tester expertise: 1 - Very beginner user (it is nearly the first time you use the software)

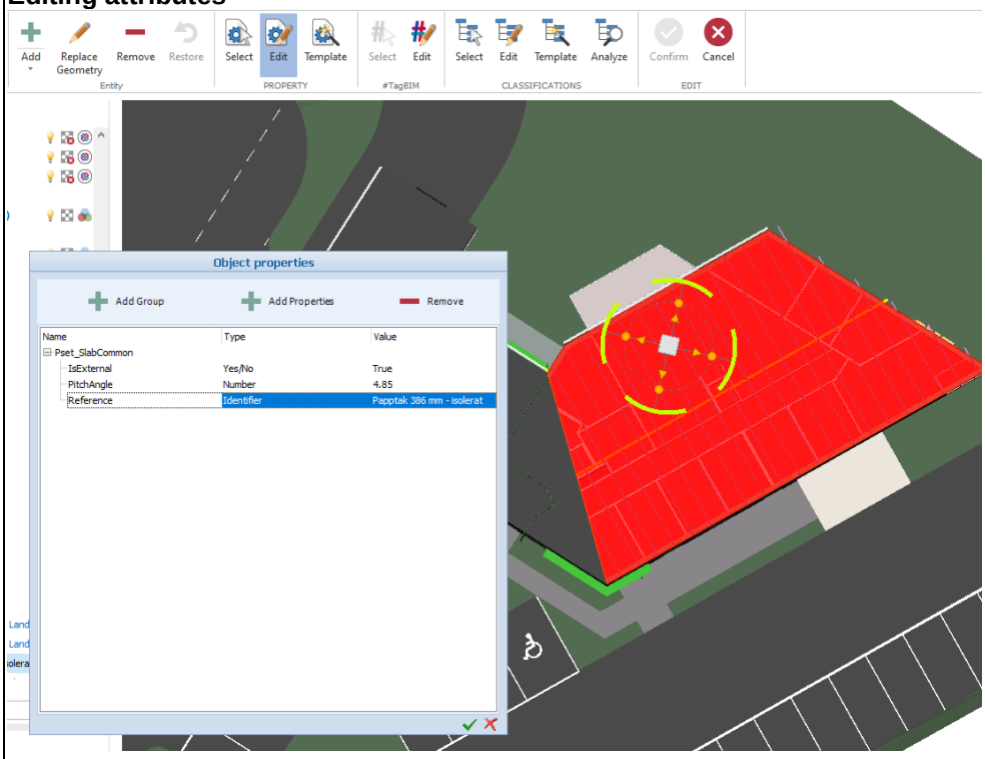
ACCA usBIM.viewer+

Software	Software Name [version]	**usBIM.viewer+ [v.8.00d]**		Software house		**ACCA**	
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	self-built desktop (2013)	Windows 10 Home 64-bit	Intel i5-4570 @ 3.20GHz	AMD Radeon HD 7800 Series	8 GB	120 GB	20 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	2018-01-27	CV 2.0	not certified			

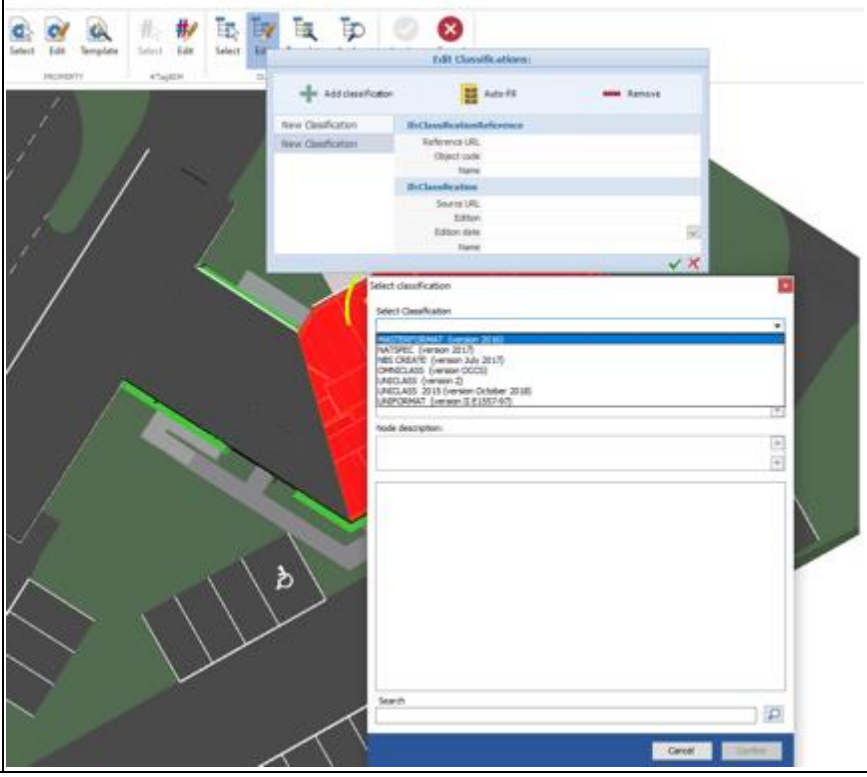
Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferenci ng	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	The software does not have the necessary tools to check this information
Hei ght	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	The software does not have the necessary tools for checking it
Orie ntati on	4.1) Is the model oriented correctly with respect to the true North?	Yes
IFC defi nitio	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hier arch y	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attri bute s	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Rel atio nshi	9.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
G e	10.1) Is geometry read correctly?	Yes
N o r	11.1) Did the normals change?	No

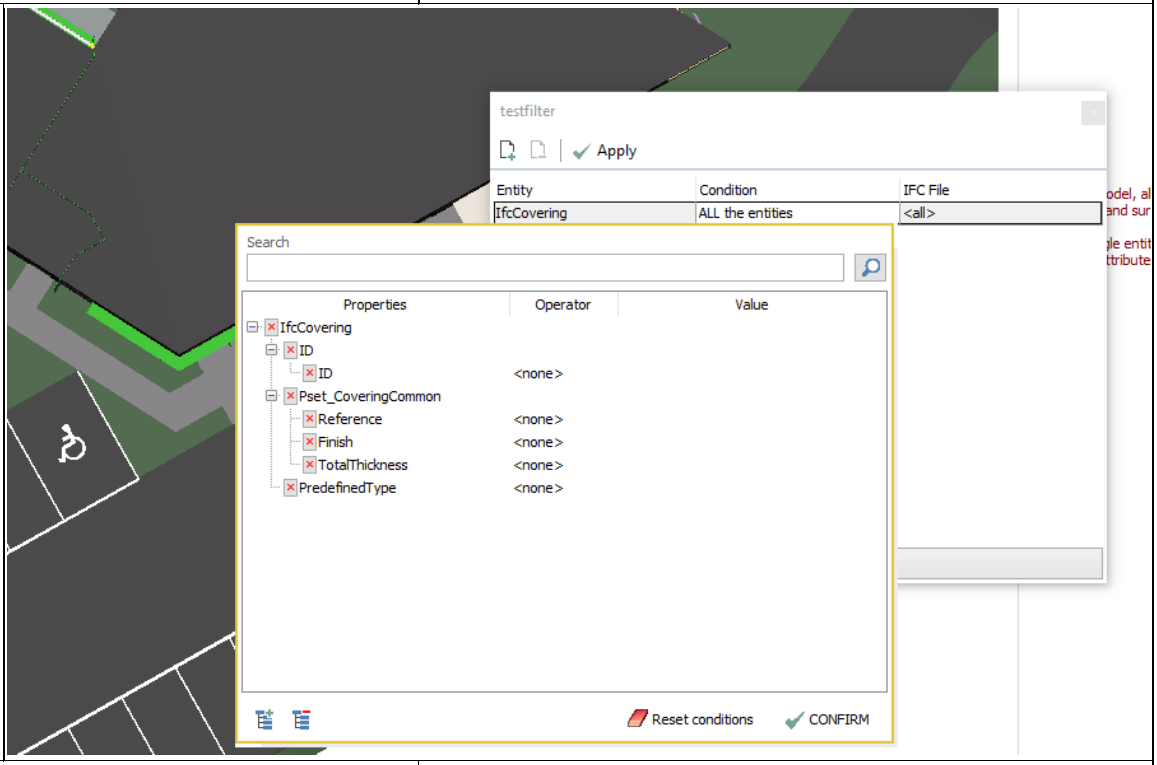
	11.1.2) Attach screenshots	
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	Yes
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	Moving/rotating geometries, editing properties and classifications
	14.1.2) Attach screenshots	**Editing geometry** 

Editing attributes



Editing classifications



Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	You can perform queries on object types and any attribute. This works well and fast.
	15.1.2) Attach screenshots	
Analysis	16.1) Is it possible to analyse the objects and the model?	No
	16.1.3) Time required to perform the analysis about the model itself (type 1)	No analysis of type 1 are possible
	16.1.3) Time required to perform the analysis about the model performances (type2)	No analysis of type 2 are possible
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	No
	19) How long does it take for the data to be exported to IFC?	less than a minute
Test with UpTown.ifc		
	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate

	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	the software does not allow this
Proporti ons	24.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC defi nitio	25.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hier archy	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attri bute s	27.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Rel atio nshi	28.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
G e o	29.1) Is geometry read correctly?	Yes
Normals	30.1) Did the normals change?	No
	30.1.2) Attach screenshots	
2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	32.1) Is it possible to view the model in 2D?	Yes

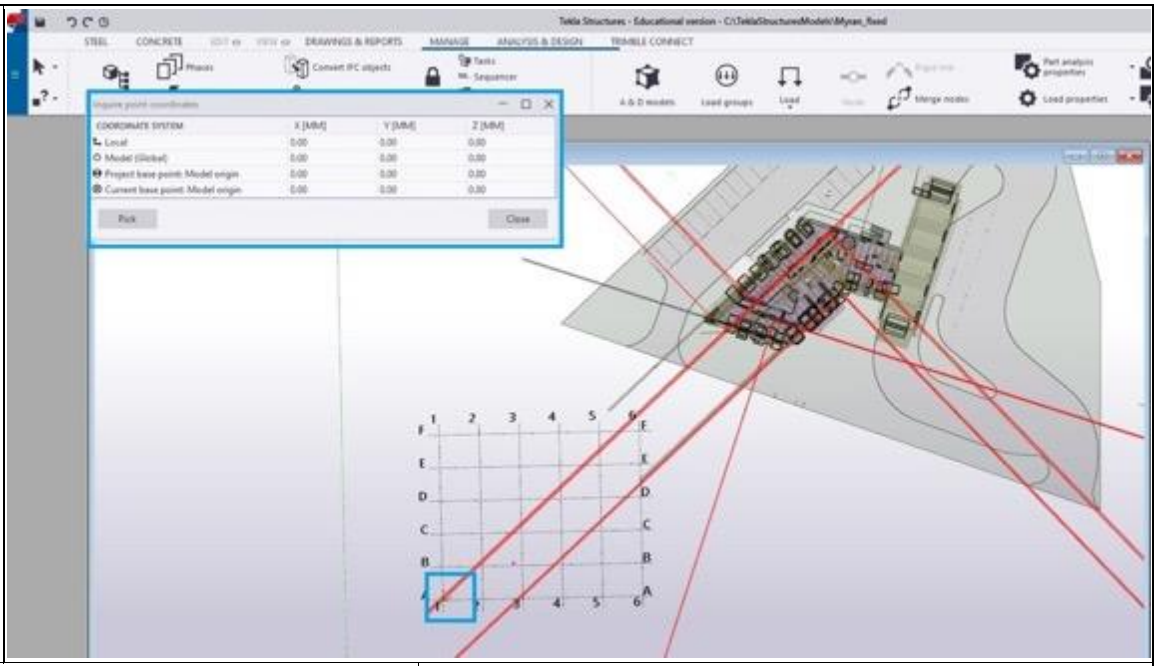
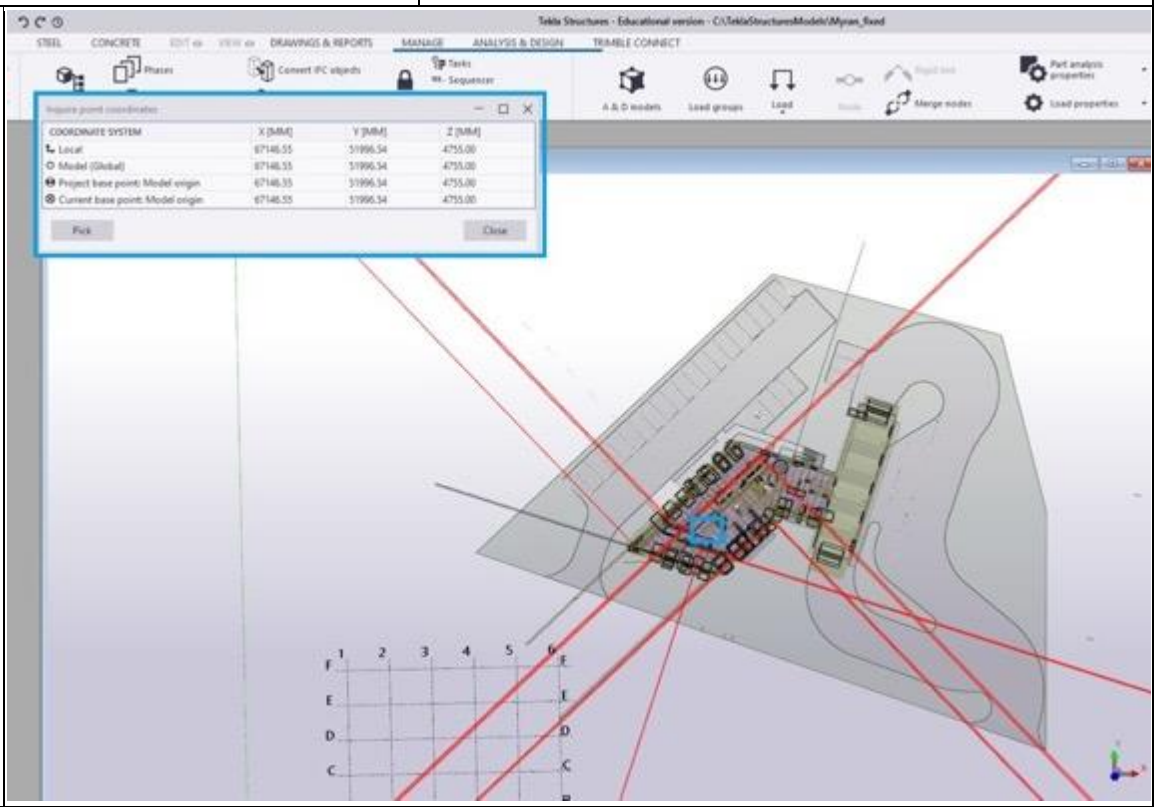
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	36) How long does it take for the data to be exported to IFC?	less than a minute
	36) How long does it take for the data to be exported to IFC?	less than a minute
Test with Savigliano.ifc		
Per for	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation

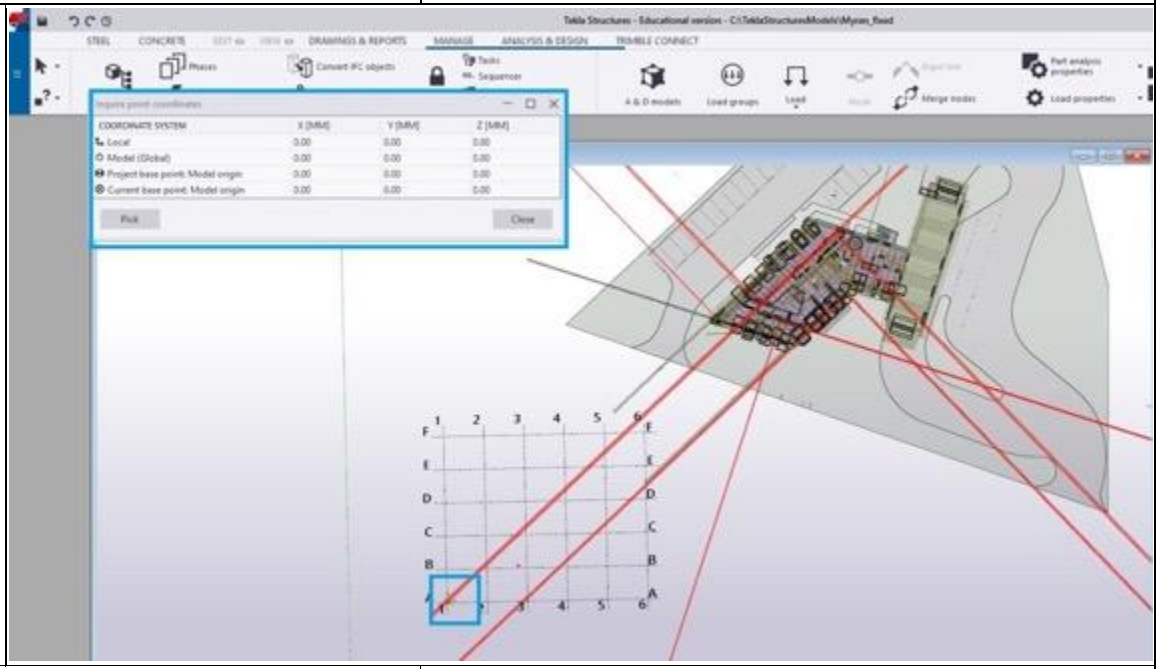
Tekla Structures [2019 Service Pack 1] - Windows 10 Home
Proprietary software
BIM
Level of tester expertise: 1 - Very beginner user (it is nearly the first time you use the software)

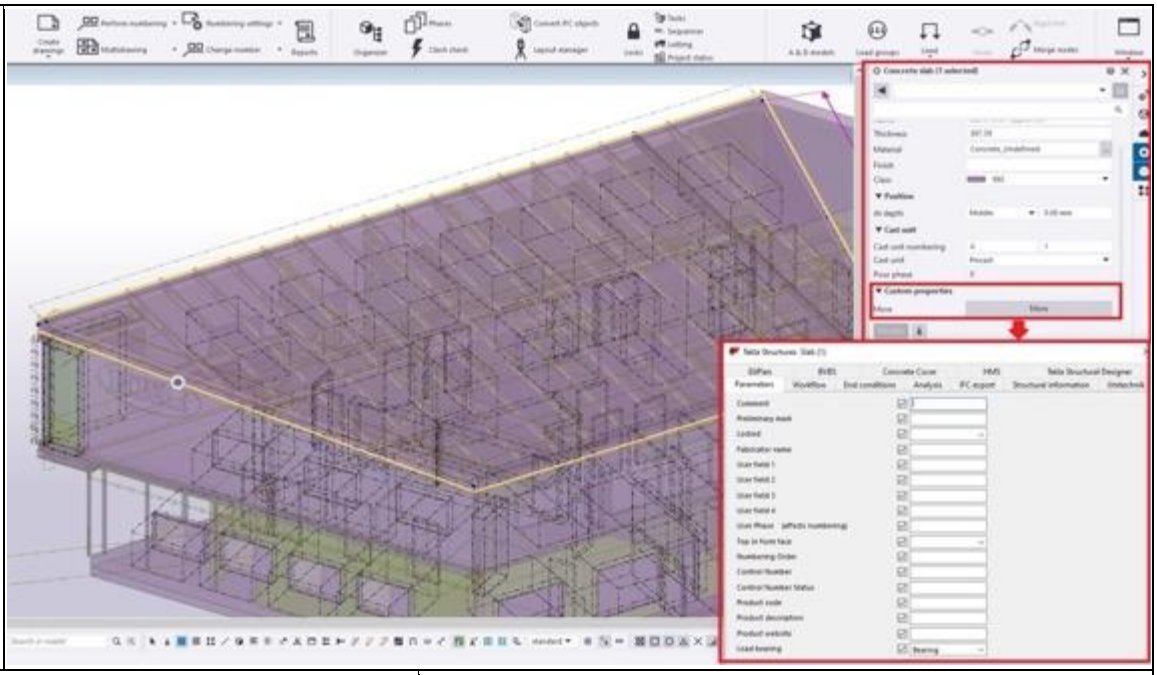
Tekla Structures

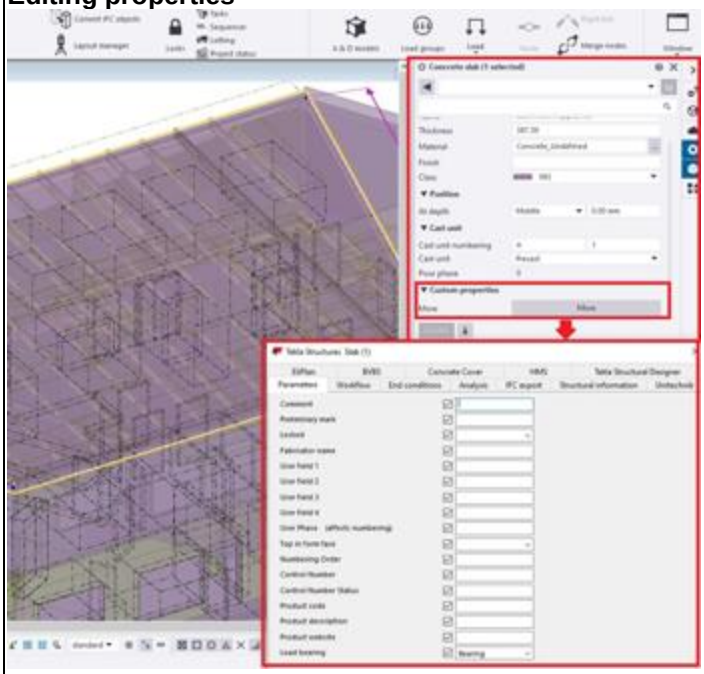
Software	Software Name [version]	**Tekla Structures [2019 Service Pack 1]**		Software house			
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	self-built desktop (2013)	Windows 10 Home 64-bit	Intel i5-4570 @ 3.20GHz	AMD Radeon HD 7800 Series	8 GB	120 GB	20 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	2013-10-09	CV 2.0	certified in (date)	2013-06-12	CV2.0-Struct	

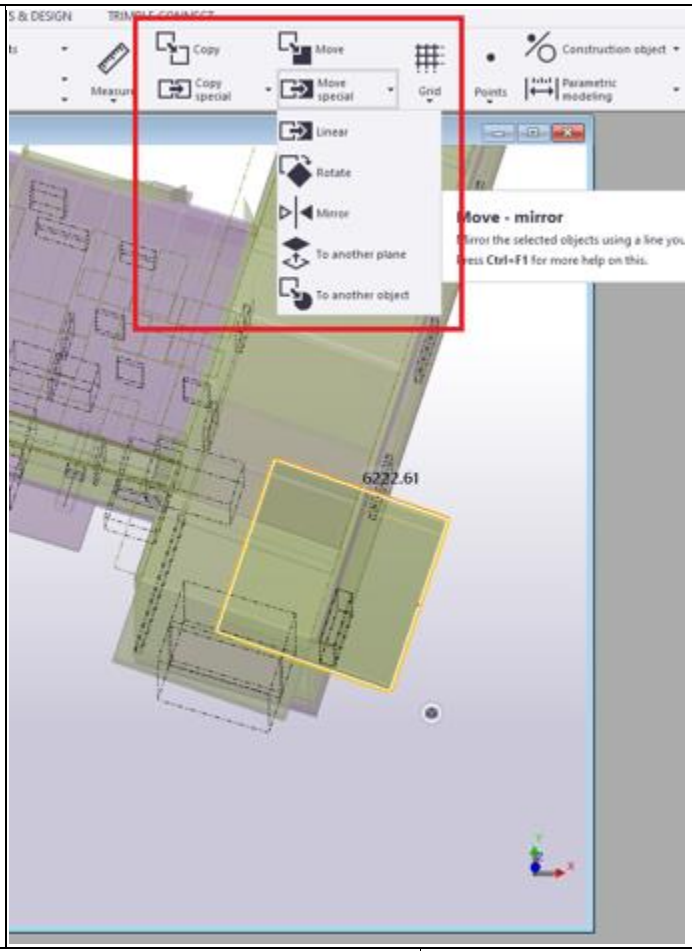
Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
	Please report on any errors the software gives when importing the file.	You have to convert it to Tekla's own structure first. It couldn't convert quite many objects.
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	2.1.1) Where is the origin of the model coordinate reference system as imported in the software?	The origin is at the reference point.

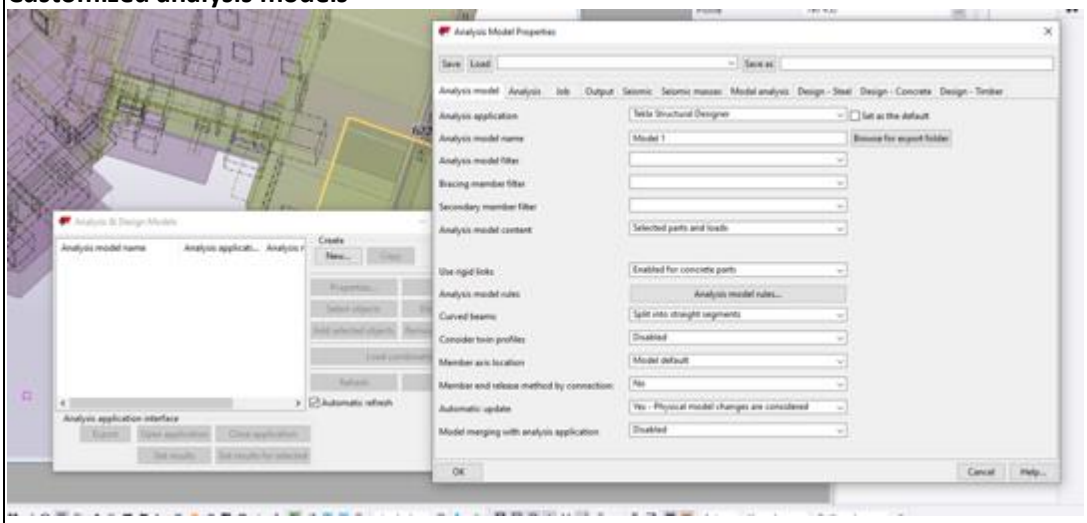
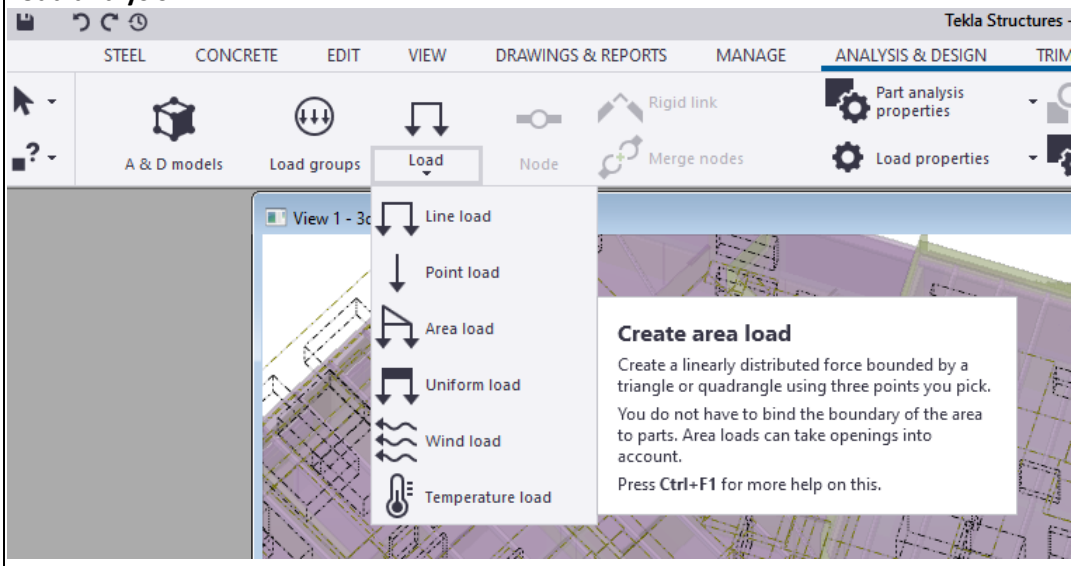
	2.1.2) Attach screenshots	
	2.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	It is a local coordinate system, using millimetres as unit of measure.
	2.1.4) Attach screenshots	
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No

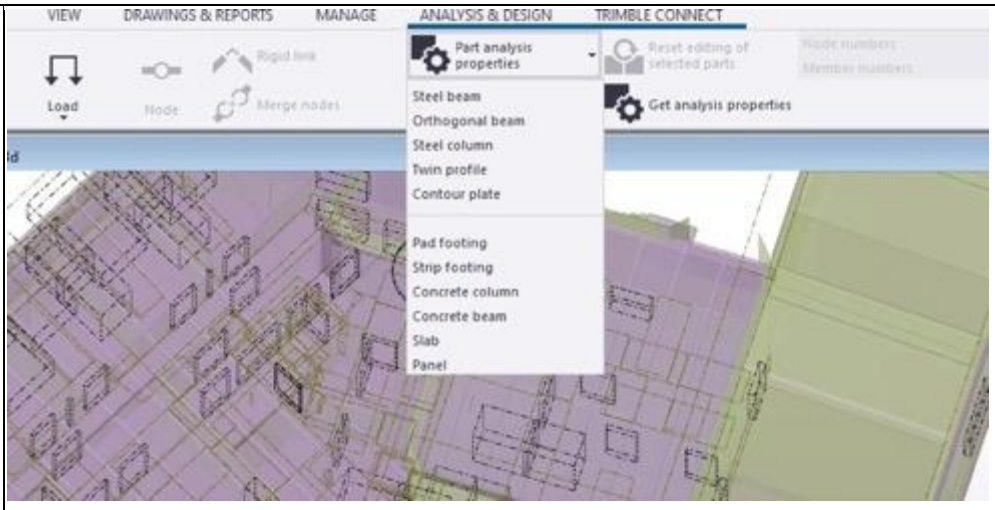
	3.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0
	3.1.2) Attach screenshots	
	3.1.3) What is the height reference system?	Local in millimetres
	3.1.4) Attach screenshots	See picture from 3.1.2
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
	6.2) short comments to the previous question (optional)	Only elements 5 and 6 are present (or clickable).
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	No
	8.1.1) What changes / inconsistencies / errors / other issues were noted?	The attributes are not there. IFC objects have to be converted to Tekla's native structure, which would explain why the attributes are lost (only elements 5 and 6 can be checked)

	8.1.2) Attach screenshots	
Relationships	9.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Geometry	10.1) Is geometry read correctly?	Yes
Normals	11.1) Did the normals change?	The software does not have the necessary tools for checking it
	11.2) short comments to the previous question (optional)	Can't even check them visually.
2D/3D	12) Visualisation 3D	Yes
	13) Visualisation 2D	No
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	It is possible to edit attributes (that are native to Tekla), and you can move/rotate geometries.

	14.1.2) Attach screenshots	**Editing properties**  **Editing geometry**

		
Query	15.1) Is it possible to query the model and the attributes?	No
Analysis	16.1) Is it possible to analyse the objects and the model?	Yes, analysis about the modelled building performances (energy, noise, shadows...) are possible (type 2)
	16.1.1) What analysis are possible? Do you know if the results are reliable?	You can do load analysis, part analysis, and customized analysis. However, I don't know how they would work and can't properly test them.

	16.1.2) Attach screenshots	**Customized analysis models**  **Load analysis**  **Part analysis**

		
	16.1.3) Time required to perform the analysis about the model itself (type 1)	No analysis of type 1 are possible
	16.1.3) Time required to perform the analysis about the model performances (type2)	it's almost immediate
	16.2) short comments to the previous question (optional)	Even though I can't properly test the analyses, they seem to be performed very quickly.
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	Yes
	18.1.1) Which ones are available?	Coordination view (1.0 and 2.0), steel fabrication view, surface geometry (if this is a view)
	18.1.2) Is it possible to add a customised MVD to be used for exporting IFC?	No
	19) How long does it take for the data to be exported to IFC?	it's almost immediate
Test with UpTown.ifc		
Performance	How long does it take, approximately, to: Import (and visualise if the software allows it) the model	it crashes without completing the operation
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to: Import (and visualise if the software allows it) the model	it crashes without completing the operation

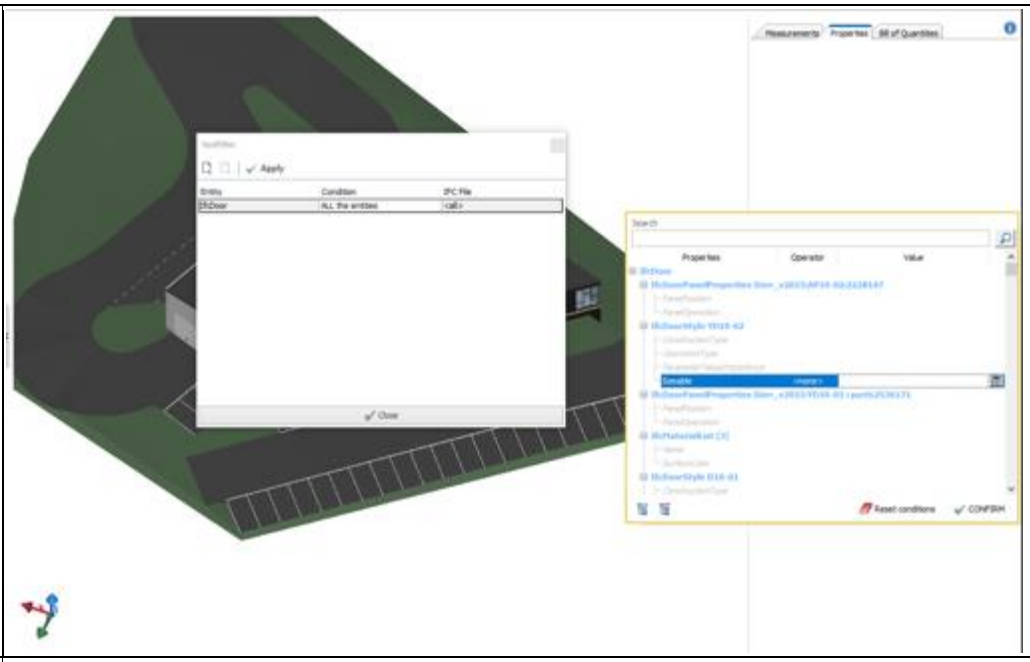
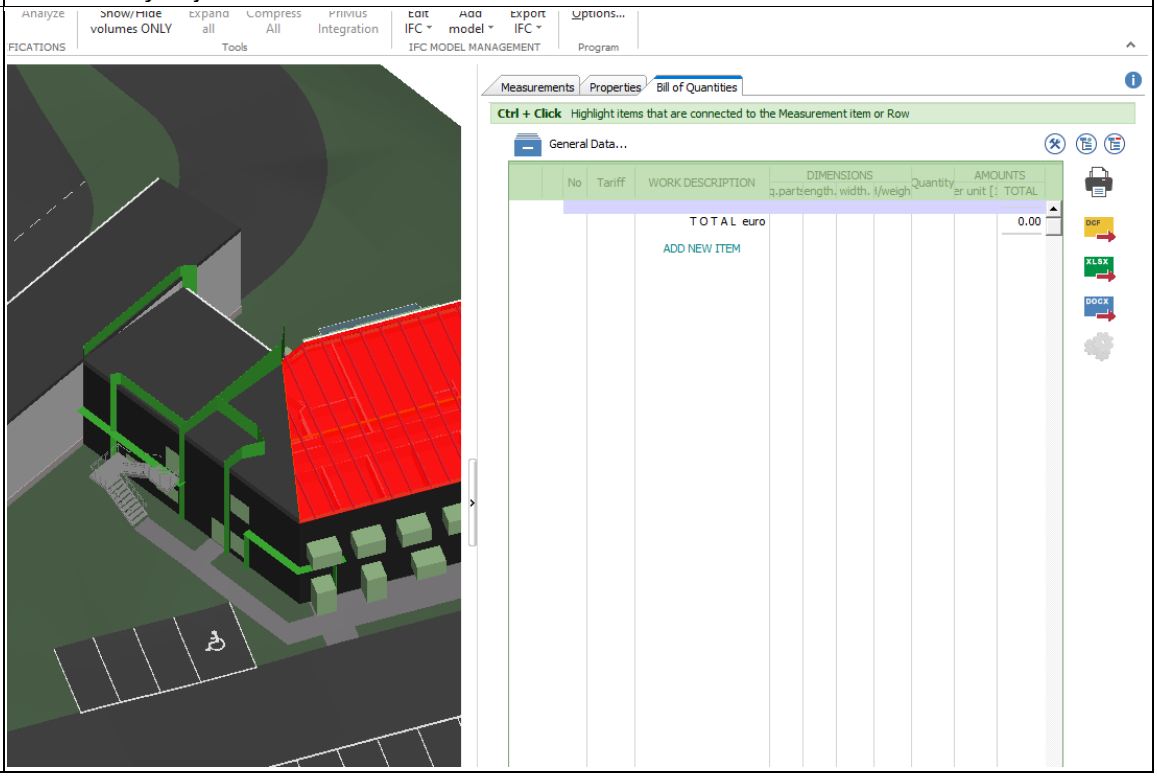
ACCA PriMus-IFC BIM 2(b) (64 bit) - Windows 10 Home
Proprietary software
BIM
Level of tester expertise: 1 - Very beginner user (it is nearly the first time you use the software)

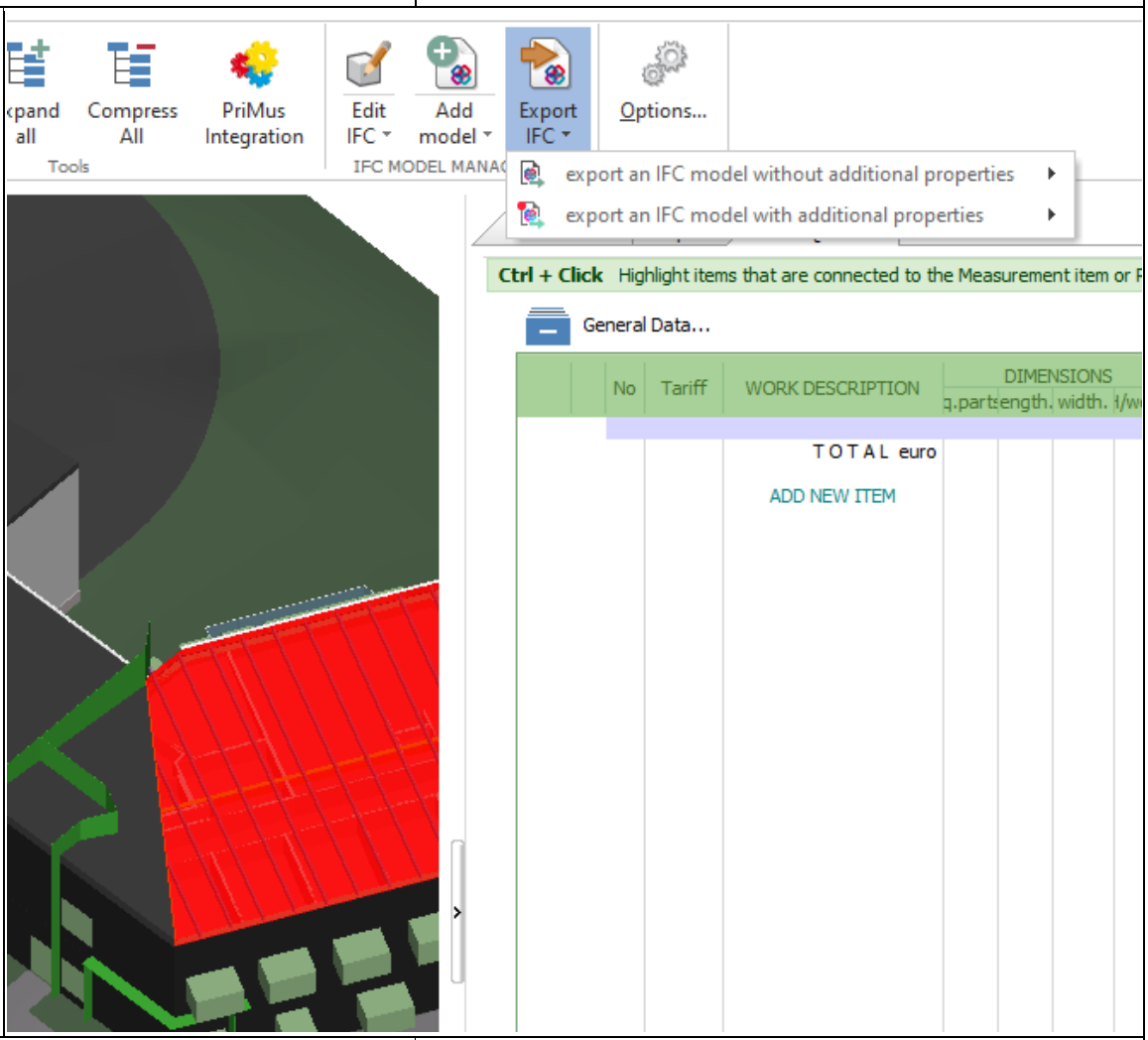
ACCA PriMus-IFC

Software	Software Name [version]	**PriMus-IFC [BIM 2(b) (64 bit)]**		Software house		**ACCA**	
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	self-built desktop (2013)	Windows 10 Home 64-bit	Intel i5-4570 @ 3.20GHz	AMD Radeon HD 7800 Series	8 GB	120 GB	20 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	2018-01-27	CV 2.0	not certified			

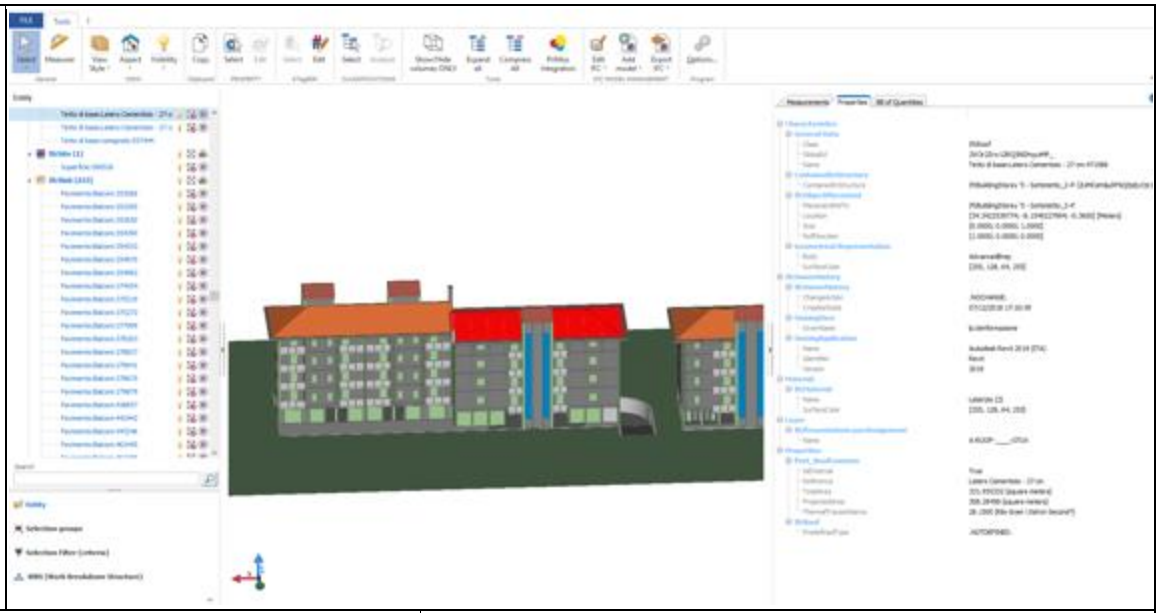
Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	The software does not have the necessary tools to check this information
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	The software does not have the necessary tools for checking it
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitio	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relationshi	9.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Geo	10.1) Is geometry read correctly?	Yes

Normals	11.1) Did the normals change?	No
	11.1.1) What changes / inconsistencies / errors / other issues were noted?	They didn't change (visually)
	11.1.2) Attach screenshots	
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	Yes
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	No
Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	You can perform queries on object types and any attribute. This works well and fast.

	15.1.2) Attach screenshots	
Analysis	16.1) Is it possible to analyse the objects and the model?	Yes, analysis about the modelled building performances (energy, noise, shadows...) are possible (type 2)
	16.1.1) What analysis are possible? Do you know if the results are reliable?	You can do a cost performance analysis (Bill of Quantities). The reliability of the results depends on the input, as you have to associate each object with a rate item to determine the cost of every object. You can do this with an Excel sheet.
	16.1.2) Attach screenshots	

	16.1.3) Time required to perform the analysis about the model itself (type 1)	No analysis of type 1 are possible
	16.2) short comments to the previous question (optional)	I can't assess this, because I don't have any suitable input data.
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	Yes
	17.1.1) Can you add a short description of the steps involved in the pre-processing?	You have to choose between adding additional properties or not
	17.1.2) Attach screenshots and files	
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	No
	19) How long does it take for the data to be exported to IFC?	less than a minute
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation

Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
	39) Attach screenshots regarding the eventually reported errors.	
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	The software does not have the necessary tools to check this information
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	The software does not have the necessary tools for checking it
Orientation	42.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	43.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	44.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attributes	46.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relationships	47.1) Are the relationships between the objects retained?	Yes
	47.2) short comments to the previous question (optional)	It seems like they are retained, but I could only find many "IfcRelConnectsPathElements" relations.
Geometry	48.1) Is geometry read correctly?	Yes
Normals	49.1) Did the normals change?	No
	49.1.1) What changes / inconsistencies / errors / other issues were noted?	I haven't noticed anything off.

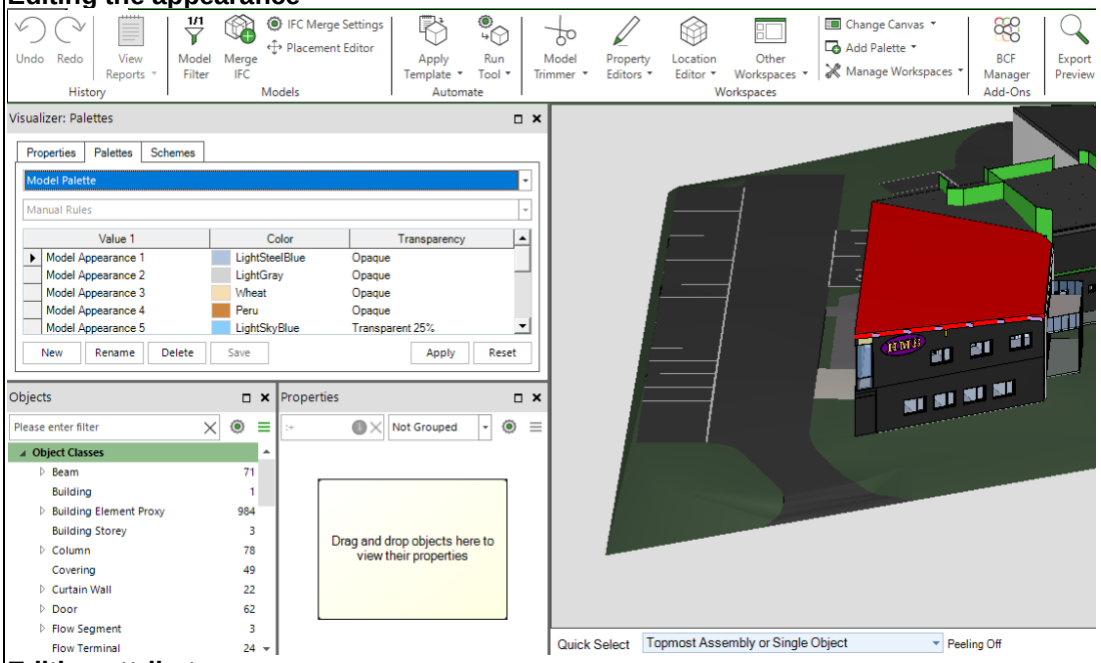
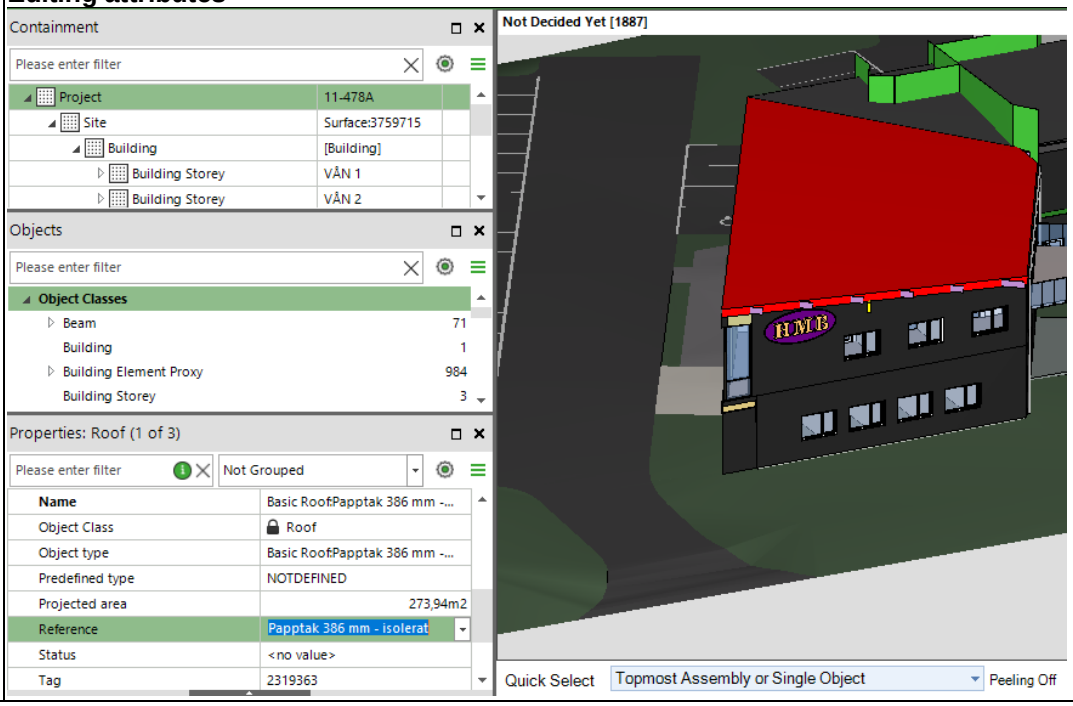
	49.1.2) Attach screenshots	
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	Yes
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	55) How long does it take for the data to be exported to IFC?	less than a minute

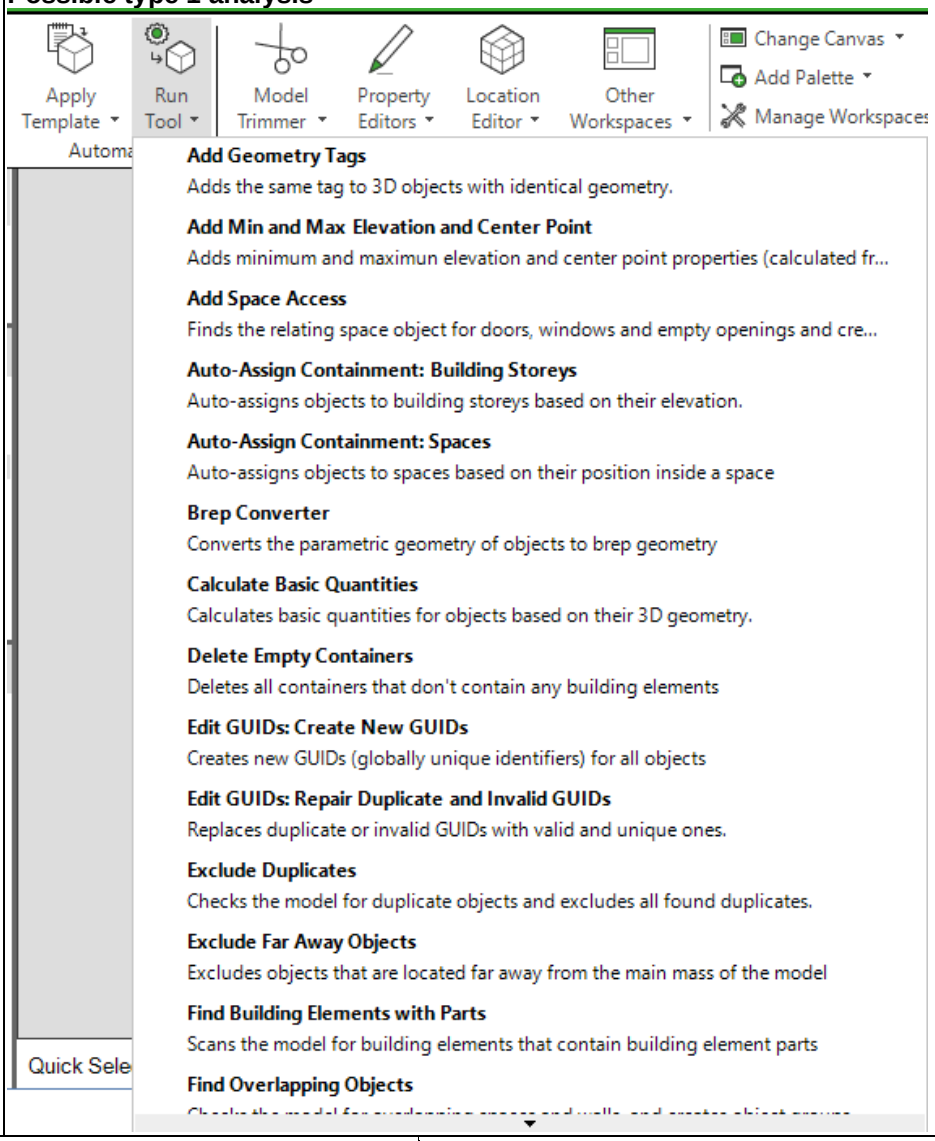
Simplebim 8.0 - Windows 10 Home
Proprietary software
BIM
Level of tester expertise: 1 - Very beginner user (it is nearly the first time you use the software)

Simplebim

Software	Software Name [version]	**Simplebim [8.0]**		Software house			
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	self-built desktop (2013)	Windows 10 Home 64-bit	Intel i5-4570 @ 3.20GHz	AMD Radeon HD 7800 Series	8 GB	120 GB	20 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			

Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	The software does not have the necessary tools to check this information
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	The software does not have the necessary tools for checking it
Orientation	4.1) Is the model oriented correctly with respect to the true North?	The software does not have the necessary tools to determine this information
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitio	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relationships	9.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Geo	10.1) Is geometry read correctly?	Yes
Nor	11.1) Did the normals change?	No

2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	No
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	You can modify the attributes and appearance. Changing the geometry seems not to be possible.
	14.1.2) Attach screenshots	**Editing the appearance**  **Editing attributes** 

Query	15.1) Is it possible to query the model and the attributes?	No
Analysis	16.1) Is it possible to analyse the objects and the model?	No
	16.1.1) What analysis are possible? Do you know if the results are reliable?	No analysis possible, unless some functionalities in the screenshot would count as type 1 analysis. In that case, it seems to work well.
	16.1.2) Attach screenshots	**Possible type 1 analysis** 
	16.1.3) Time required to perform the analysis about the model itself (type 1)	No analyses of type 1 are possible
	16.1.3) Time required to perform the analysis about the model performances (type2)	No analysis of type 2 are possible
	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
Export	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No

	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	No
	19) How long does it take for the data to be exported to IFC?	less than a minute
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	5-20 minutes
	How long does it take, approximately, to:Pan the model	less than a minute
	How long does it take, approximately, to:Rotate the model	less than a minute
	How long does it take, approximately, to:Query an object	less than a minute
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	the software does not allow this
	Please report on any errors the software gives when importing the file.	No errors
Proporti ons	24.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC defi nitio	25.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hie rarc	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attributes	27.1) Are the attributes present in the IFC entities retained and consistent?	Yes
	27.2) short comments to the previous question (optional)	Yes, they are all retained, except for the attributes that had empty values
Rel atio nshi	28.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
G e	29.1) Is geometry read correctly?	Yes
Nor mals	30.1) Did the normals change?	Yes
	30.2) short comments to the previous question (optional)	Yes, visually
2D/3 D	31.1) Is it possible to view the model in 3D?	Yes
	32.1) Is it possible to view the model in 2D?	No
Q u	34.1.1) What kinds of query are possible?	No querying possible
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	36) How long does it take for the data to be exported to IFC?	1-5 minutes
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate

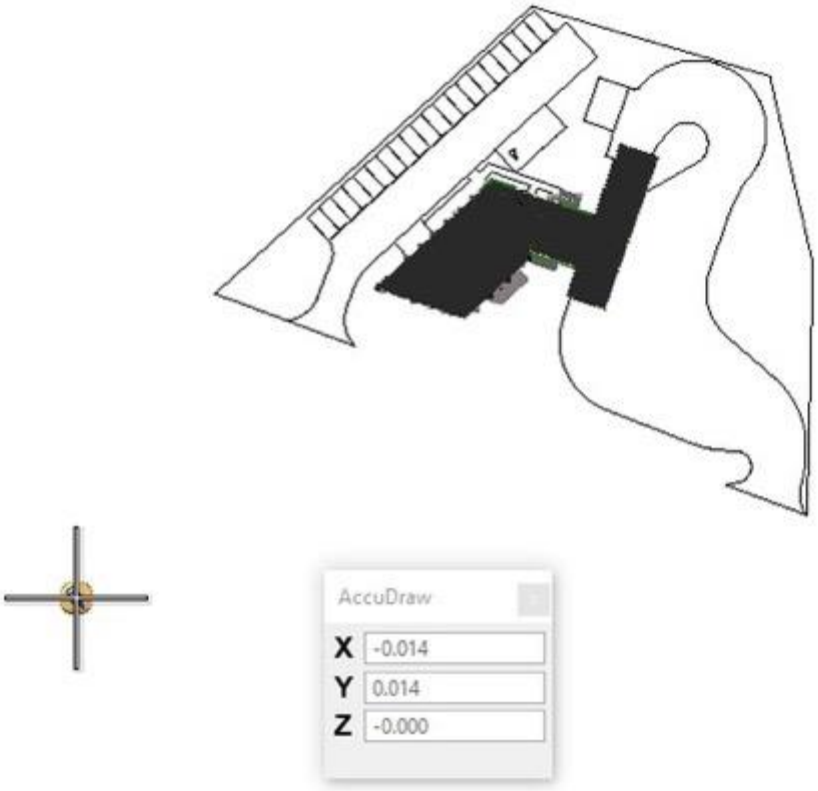
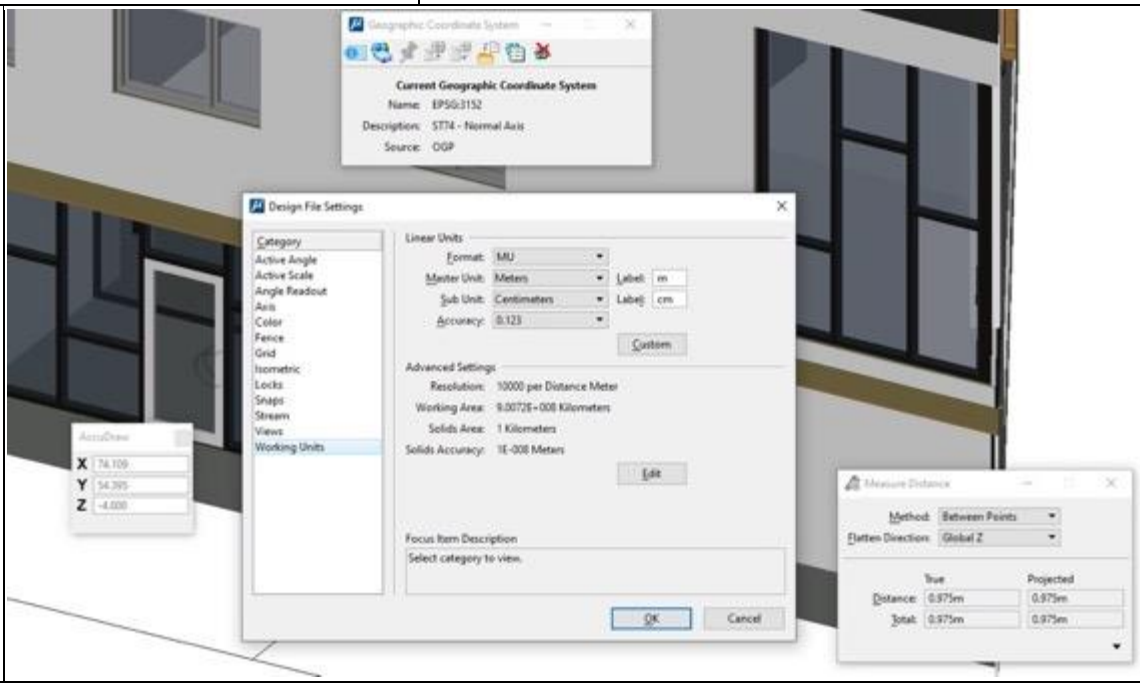
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
	38) Please report on any errors the software gives when importing the file.	No errors
	39) Attach screenshots regarding the eventually reported errors.	
Georeferenci ng	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	The software does not have the necessary tools to check this information
Hei ght	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	The software does not have the necessary tools for checking it
Orie ntati on	42.1) Is the model oriented correctly with respect to the true North?	The software does not have the necessary tools to determine this information
Pro porti ons	43.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC defi nitio	44.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hier arch y	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attri bute s	46.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Rel atio nshi	47.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
G e	48.1) Is geometry read correctly?	Yes
Normal s	49.1) Did the normals change?	No
	49.1.1) What changes / inconsistencies / errors / other issues were noted?	Visually, it seems like it hasn't changed.
	49.1.2) Attach screenshots	
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	55) How long does it take for the data to be exported to IFC?	less than a minute

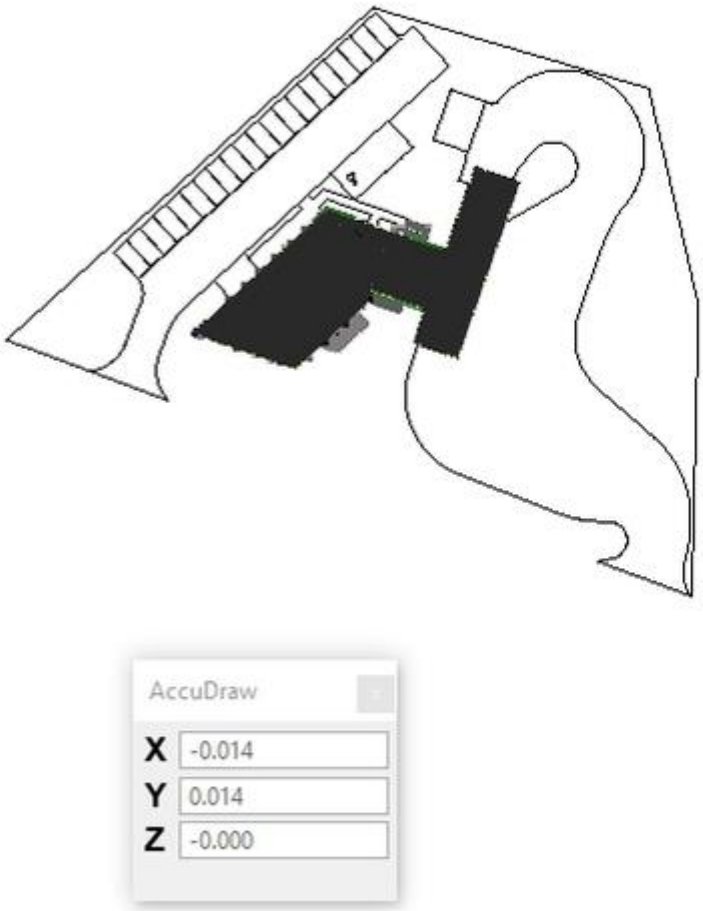
Bentley MicroStation + TerraSolid [MS Connect Edition 10.04.00.46 + TerraScan 19.004] - Windows 10 Home
Proprietary software
CAD
Level of tester expertise: 3 - Expert user (you know very well the technical details and tricks)

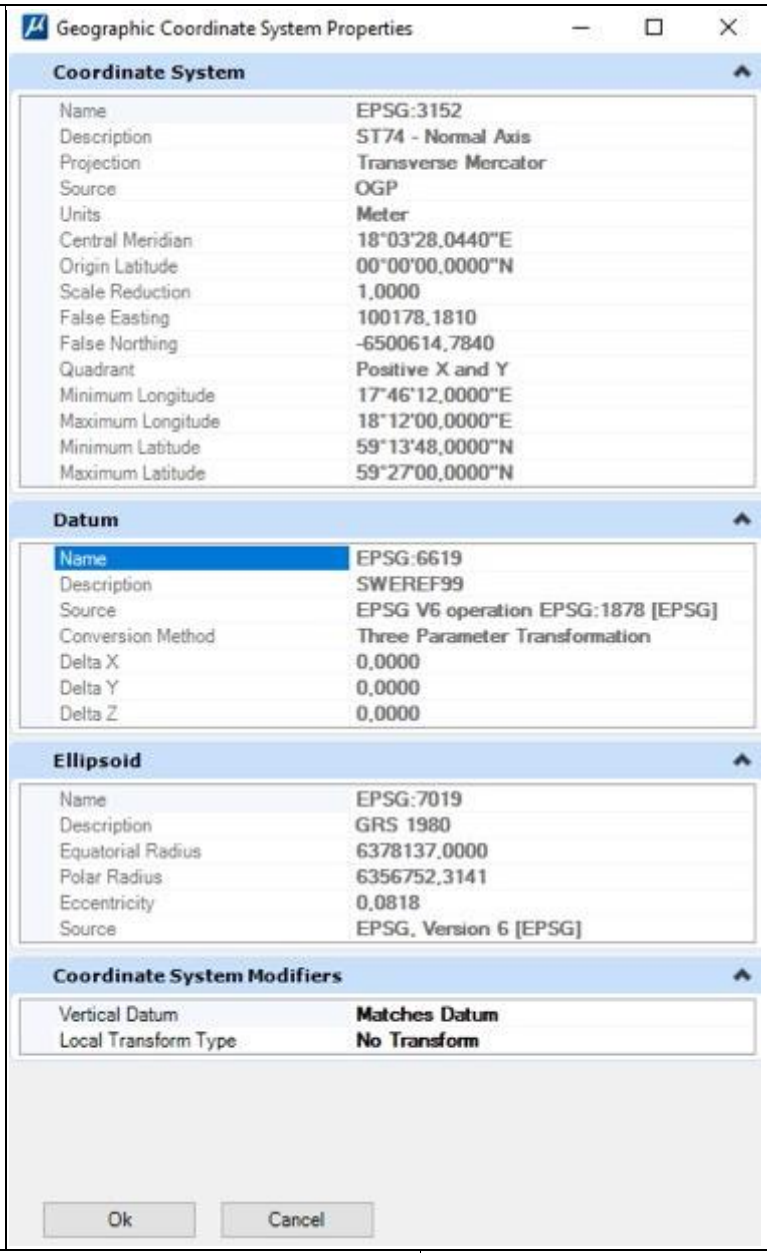
Bentley MicroStation + TerraSolid

Software	Software Name [version]	**MicroStation + TerraSolid [MS Connect Edition 10.04.00.46 + TerraScan 19.004]**		Software house		**Bentley Systems**	
	Proprietary or open source software?			Kind of software			
	proprietary			CAD			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Dell G5 15, 2018	Windows 10 Home	i7-8750H	NVIDIA GeForce GTX1060 6GB	32	461	22
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			

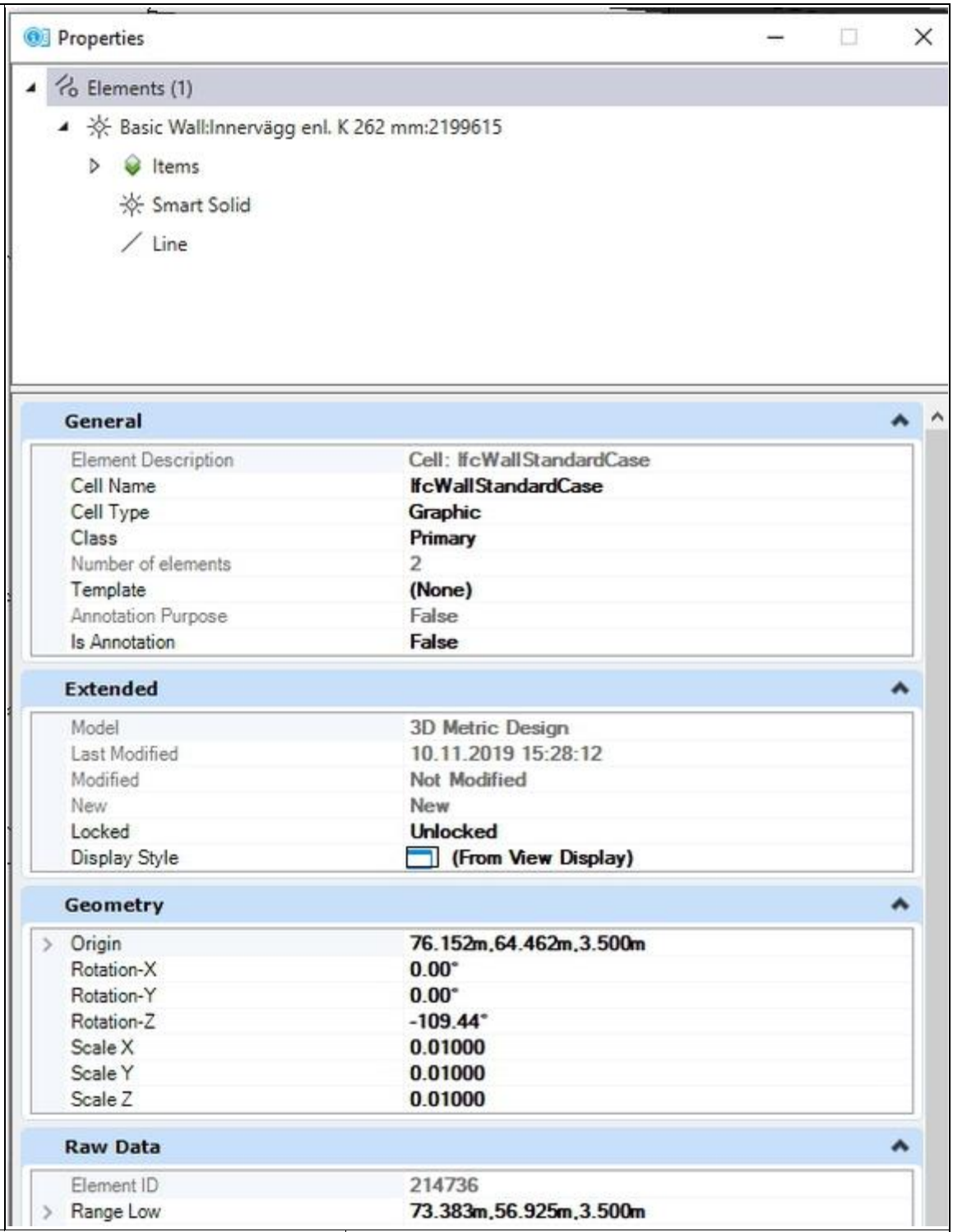
Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
	Please report on any errors the software gives when importing the file.	lack of errors
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	2.1.1) Where is the origin of the model coordinate reference system as imported in the software?	Blue point in almost 0,0,0

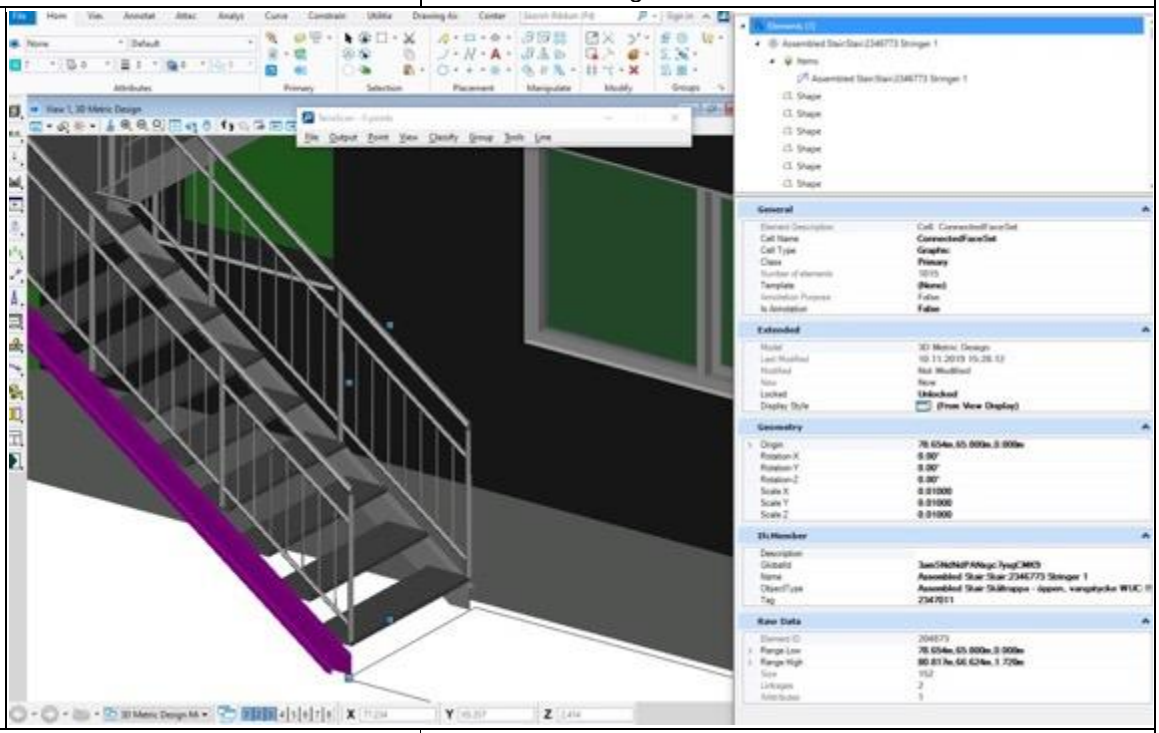
	2.1.2) Attach screenshots	
	2.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	EPSG:3152, meters
	2.1.4) Attach screenshots	

Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	3.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	blue point in 0.000m
	3.1.2) Attach screenshots	
	3.1.3) What is the height reference system?	EPSG:6619

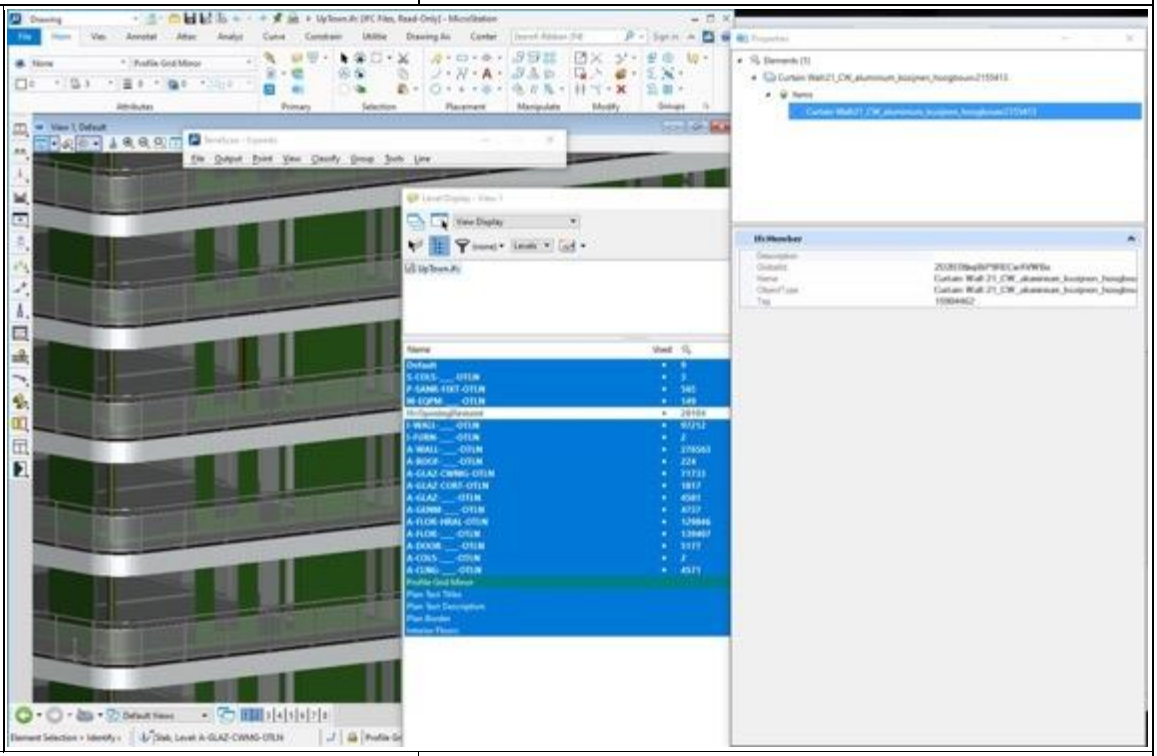
	3.1.4) Attach screenshots	

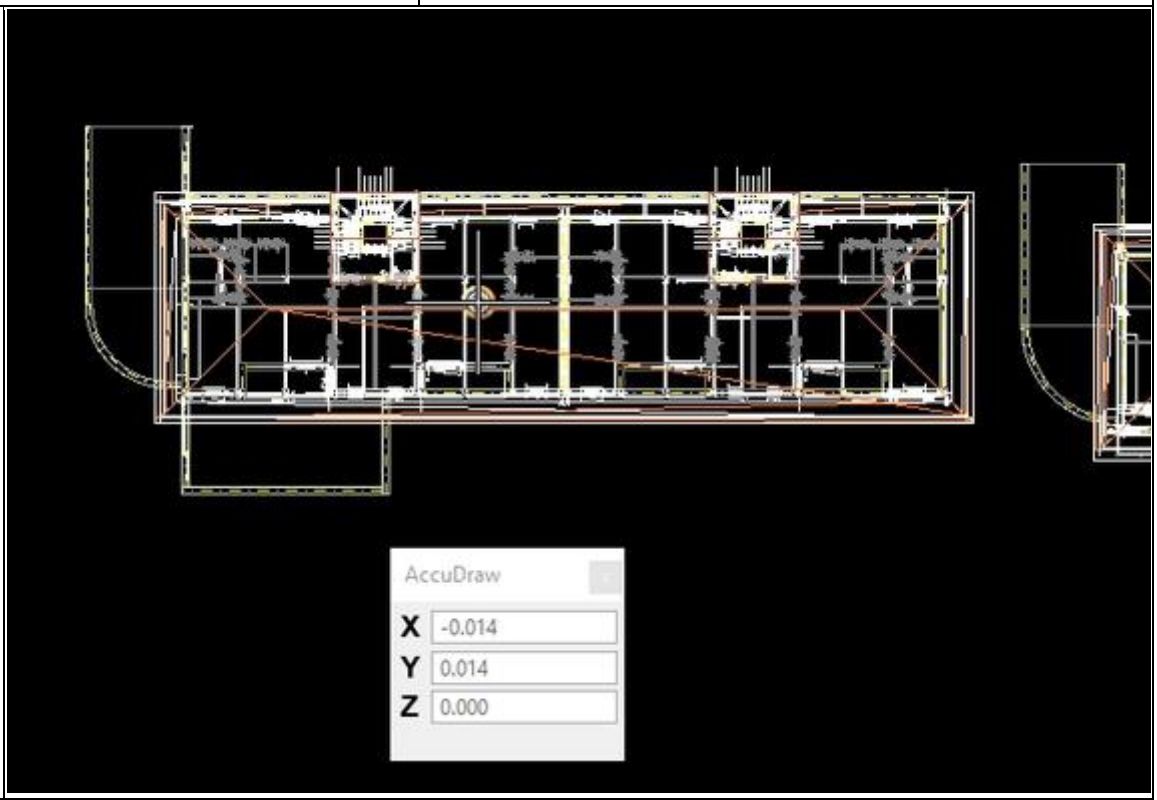
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	No
	6.1.1) What changes / inconsistencies / errors / other issues were noted?	only IfcWall and IfcWallStandardCase were translated

	6.1.2) Attach screenshots	
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	No
	7.2) short comments to the previous question (optional)	there is no hierarchy in MS

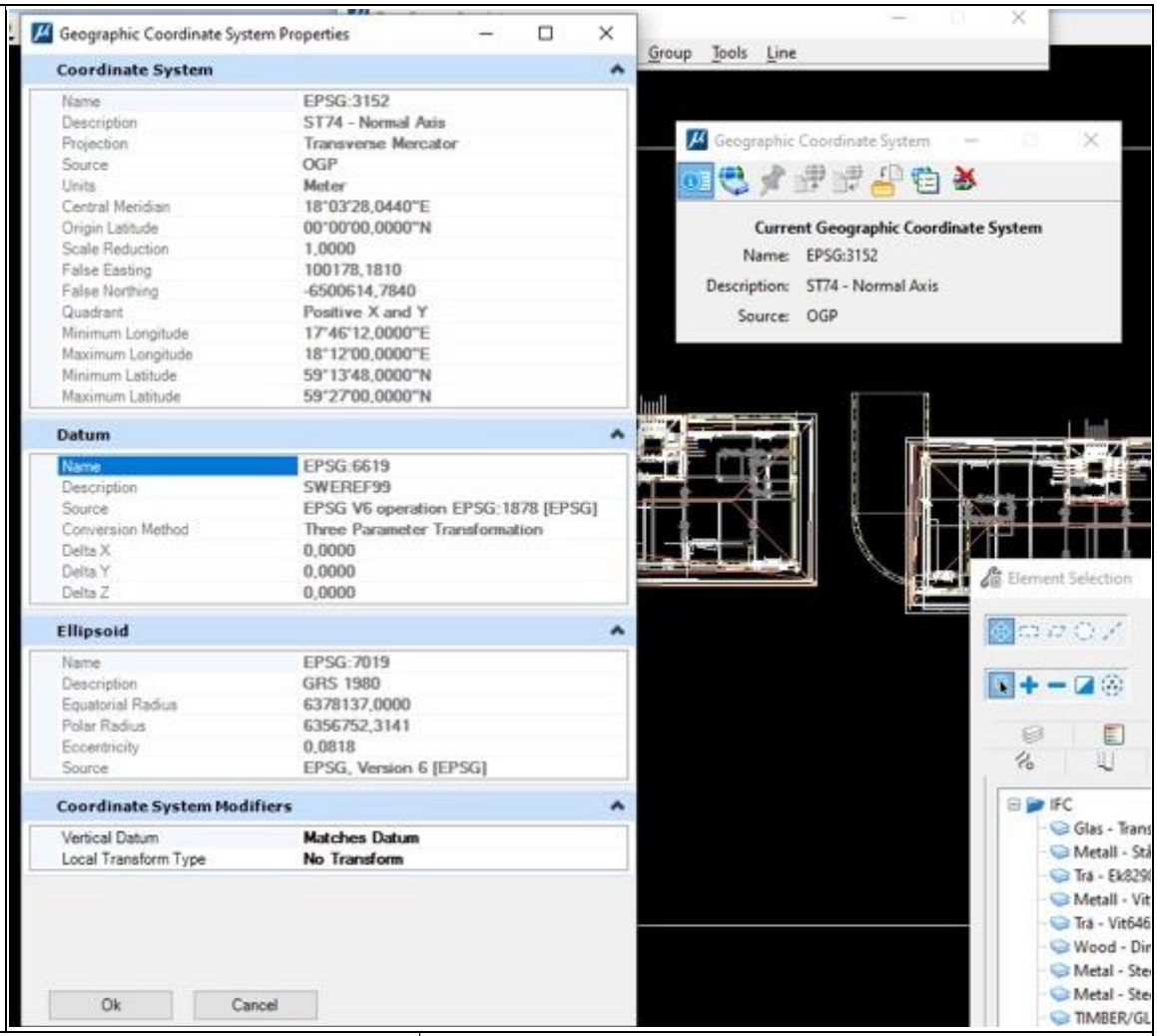
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	No
	8.1.1) What changes / inconsistencies / errors / other issues were noted?	there are no properties like IsExternal and so on, only Reference is assigned
	8.1.2) Attach screenshots	
Relat	9.1) Are the relationships between the objects retained?	Yes
Geo	10.1) Is geometry read correctly?	Yes
Normals	11.1) Did the normals change?	No
	11.1.1) What changes / inconsistencies / errors / other issues were noted?	no changes
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	Yes
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	partially
	14.2) short comments to the previous question (optional)	moving, deleting and changing attributes in IfcClass are available, editing geometry not
Quer	15.1) Is it possible to query the model and the attributes?	No
Analysis	16.1) Is it possible to analyse the objects and the model?	No
	16.1.1) What analysis are possible? Do you know if the results are reliable?	none
	16.1.3) Time required to perform the analysis about the model itself (type 1)	No analysis of type 1 are possible
	16.1.3) Time required to perform the analysis about the model performances (type2)	No analysis of type 2 are possible
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2

Bentley MicroStation + TerraSolid [MS Connect Edition 10.04.00.46 + TerraScan 19.004] - Windows 10 Home
Proprietary software
CAD
Level of tester expertise: 3 - Expert user (you know very well the technical details and tricks)

Test with UpTown.ifc		
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	the software does not allow this
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	the software does not allow this
	Please report on any errors the software gives when importing the file.	lack of errors, via File->Import import was unsuccessful after 18 min, via drag and drop import was successful after 1067 sek
Proprti ons	24.1) Does the model maintain its correct dimensions and proportions?	proportion are OK, dimensions are: 84365.5584 instead of 84171.9, 59210.4897 instead of 59349.0, 23000.0000 instead of 22958.2, 25829.3420 instead of 25018.0
	24.2) short comments to the previous question (optional)	differences in dimensions are similar as in Myran model
IFC defi nitio	25.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	No
	26.1.2) Attach screenshots	
Attri bute	27.1) Are the attributes present in the IFC entities retained and consistent?	Yes
G e	29.1) Is geometry read correctly?	Yes
N o	30.1) Did the normals change?	No
2 D s	31.1) Is it possible to view the model in 3D?	Yes

	32.1) Is it possible to view the model in 2D?	Yes
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	the software does not allow this
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	40.1.1) Where is the origin of the model coordinate reference system as imported in the software?	X=-0.014m, Y=0.014
	40.1.2) Attach screenshots	
	40.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	EPSG:3152, meters

	40.1.4) Attach screenshots	
Height Orientation	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	41.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0.000m, EPSG:6619

	41.1.2) Attach screenshots	
	41.1.3) What is the height reference system?	SWEREF99
Orientation	42.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	43.1) Does the model maintain its correct dimensions and proportions?	proportions are OK, dimensions are different: 51.831m instead of 49582.0, 45.310m instead of 42204.0
IFC definitio	44.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	No
Attributes	46.1) Are the attributes present in the IFC entities retained and consistent?	The software does not have the necessary tools to determine this information
Relat	47.1) Are the relationships between the objects retained?	No
Geo	48.1) Is geometry read correctly?	Yes
Normals	49.1) Did the normals change?	No
	49.1.1) What changes / inconsistencies / errors / other issues were noted?	no changes

Bentley MicroStation + TerraSolid [MS Connect Edition 10.04.00.46 + TerraScan 19.004] - Windows 10 Home

Proprietary software

CAD

Level of tester expertise: 3 - Expert user (you know very well the technical details and tricks)

2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	Yes
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2

FME Desktop 2019.2 build 19800 - Windows 10 Home
Proprietary software
Extract/Transform/Load
Level of tester expertise: 3 - Expert user (you know very well the technical details and tricks)

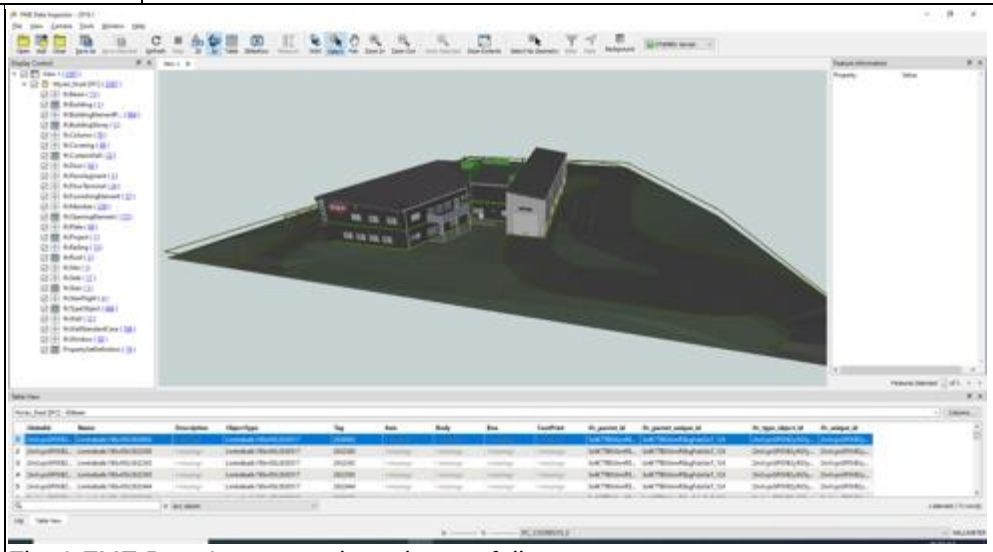
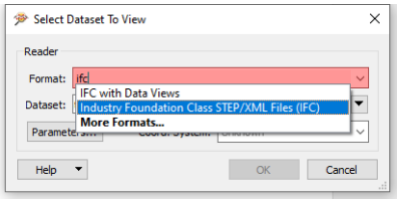
FME Desktop

Software	Software Name [version]	**FME Desktop [2019.2 build 19800]**		Software house		**www.safe.com/downloads**	
	Proprietary or open source software?			Kind of software			
	proprietary			Extract/Transform/Load			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Dell Latitude 3400 x64 i7-8586U 2019	MS Windows 10.0.18362	x64 i7-8586U	GeForce MX130 NVidia	16	940	405
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			

Test with Myran.ifc

Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	less than a minute
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	Relationships such as parent id are read when the dataset is initially read, so these can be used to locate a parent feature using a filter query. Takes a few mouse clicks to do this and user needs to copy the parent_id, select the IFC_Stair feature type, open the filter query, select GlobalID and then paste the parent id value, so that's why it takes about a minute.
	Please report on any errors the software gives when importing the file.	Warnings logged in Data Inspector Log while reading the dataset. Many of these are incidental and do not necessarily indicate an error or problem. The coordinate system was not found in the dataset, and some traits might have been dropped, though these are likely not significant. The warning included text as follows : "Worker 86976 > Coordinate system named IFC_COORDSYS_0 does not exist. Worker 86976 > ... Last line repeated 25 times ... Worker 97736 > Error encountered while copying traits to generated solids. Some solid components may be missing traits, appearances, measures or attributes Error encountered while copying traits to generated solids. Some solid components may be missing traits, appearances, measures or attributes Worker 97736 > ... Last line repeated 4 times ..."
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	FME uses the IfcSite RefLatitude (59.33199999972223) and RefLongitude (18.06499999972222) to geolocate the model.
	2.2) short comments to the previous question (optional)	FME uses the IfcSite RefLatitude (59.33199999972223) and RefLongitude (18.06499999972222) to geolocate the model. In this dataset these values seem to be not very accurate. FME can use northing and easting values as offsets to correct the georeferencing. The model is stored in millimeters, so we use a Scaler to scale to meters which is the default unit of EPSG 3013

	Other	Other_ FME uses IfcSite RefElevation (148200 mm or 148.2m) when geolocating.	
Orientation	4.1) Is the model oriented correctly with respect to the true North?		Yes
	4.2) short comments to the previous question (optional)		Orientation looks the same in FME as in the GeoBIM website sample screenshots
Proportions	5.1) Does the model maintain its correct dimensions and proportions?		Yes
	Other	Other_ Dimensions and proportions are correct in 2D. Data Inspector does not allow the measurement of dimensions in 3D. These measurements could be made in an FME Workspace using transformers (Zmax - Zmin etc), but there is no gui tool for doing this interactively in Data Inspector.	
	5.2) short comments to the previous question (optional)	Dimensions and proportions are correct in 2D. Data Inspector does not allow the measurement of dimensions in 3D. These measurements could be made in an FME Workspace using transformers (Zmax - Zmin etc), but there is no interface tool for doing this interactively in Data Inspector. Proportions appear correct in 3D. The spatial extents of an object appear in the bbox range shown for the selected object. This could be used to estimate 3D dimension.	
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?		Yes
	6.2) short comments to the previous question (optional)	All significant properties and ids appear to be read correctly. Compared to the GeoBIM screenshots, there appear to be some properties that are not read, including OwnerHistory, ObjectPlacement, Representation. With the exception of OwnerHistory, most of these properties are really internal file references - specifically file line number references. Some of the relationship information looks quite different between FME and the tool screen shots shown on the Benchmark Myran.ifc data webpage. This is because FME resolves the relationships and inserts the parent ids.	
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?		Yes
	7.2) short comments to the previous question (optional)	Yes the relationships are maintained, both in terms of feature type and ifc_parent_id relationships. Some of the relationship information looks quite different between FME and the tool screen shots shown on the GeoBIM benchmark Myran.ifc dataset webpage. Most of the reference properties shown are really internal file references - specifically file line number references. FME does not display these internal properties but rather resolves these references and reads the associated parent ids, properties, geometries or appearances instead. For example, Element 1 has the following properties in the GeoBIM example screenshot: Has Associations (#923061), IsDefinedBy (#528514), ObjectPlacement (#926190), ContainedInStructure (#919402). Rather than display these line number references, FME resolves them to include the parent id such as ifc_parent_id: 2p1EsZz71B6BQESW$gr9GJ for Element 1. For example, the attached screen shots show how the parent_id can be used to find the containedInStructure. Following the reference using filter features function in Data Inspector allows the user to find the opening that the door belongs to and then the wall that the opening belongs to.	
	Other	Other_ Attributes that are found agree: GlobalId, Name, ObjectType, Tag. Missing: OwnerHistory ObjectPlacement Representation	
	8.2) short comments to the previous question (optional)	The properties and ids are read correctly except for internal file reference properties described in 7.1 above	
Relati	9.1) Are the relationships between the objects retained?		Yes

	9.2) short comments to the previous question (optional)	Basic visual inspection for previous question. Screen shots show how parent objects such as containing walls can be found by following the parent id references.
Geometry	10.1) Is geometry read correctly?	Yes
	10.2) short comments to the previous question (optional)	There are several different read modes in FME which can affect how geometries are grouped. The default mode for the FME IFC reader is relational mode. In this mode FME reads primary object properties as attributes. Object geometries and their properties are read as nested, named FME geometries and geometry traits. So for IFCDoor, the attributes store properties such as GlobalID, ifc_unique_id, Name, etc, and the geometry contains a combination of null and Body geometries. The null geometries store traits such as property sets, appearances and materials. Body geometries store multi-surfaces and solids as appropriate. In the case of IFCDoor, the combination of materials, appearances, properties and property sets are stored as an aggregate of null and body geometries with the geometry name = IfcDoor. For more info see: https://docs.safe.com/fme/html/FME_Desktop_Documentation/FME_ReadersWriters/ifc/IFC_reader.htm
Normals	11.1) Did the normals change?	No
	11.1.1) What changes / inconsistencies / errors / other issues were noted?	No obvious differences were found between the way FME displayed the Myran dataset vs the GeoBIM website screenshots or Solibri viewer
	11.1.2) Attach screenshots	 Fig. 1 FME Data Inspector show dataset full extents  Fig. 2 FME Data Inspector alternate reader formats for IFC: 'Industry Foundation Class STEP/XML files (IFC)' and 'IFC with Data Views' Note that FME has 2 different readers for reading data from the IFC format: 'Industry Foundation Class STEP/XML files (IFC)' and 'IFC with Data Views'. The IFC reader is the standard reader for IFC and preserves the data model and structure of IFC. This is the best format to use when writing or updating IFC.

The 'IFC with Data Views' is a consolidated data view version of the IFC reader / writer. It uses the standard IFC reader / writer under the hood but also builds data views that have all the geometry traits embedded in the geometry model such as PropertySets added to the feature attributes. This means you don't have to scroll through the nested geometry structure to inspect geometry sets but can see all the values together in the feature attributes. This also makes it a lot easier to map these values to new values such as for a translation to CityGML. This evolved from an earlier version of our Revit importer that imported from Revit via IFC before we had a native Revit reader. That is why it still has 'revit' as the short name. IFC with Data Views is the best reader to use for inspecting IFC data and for IFC to GIS workflows such as IFC to CityGML. Note that this format reader has more overhead than the standard reader, so it is advisable to create an IFC to FFS workspace using this reader for larger datasets and then inspect the FFS instead of IFC.

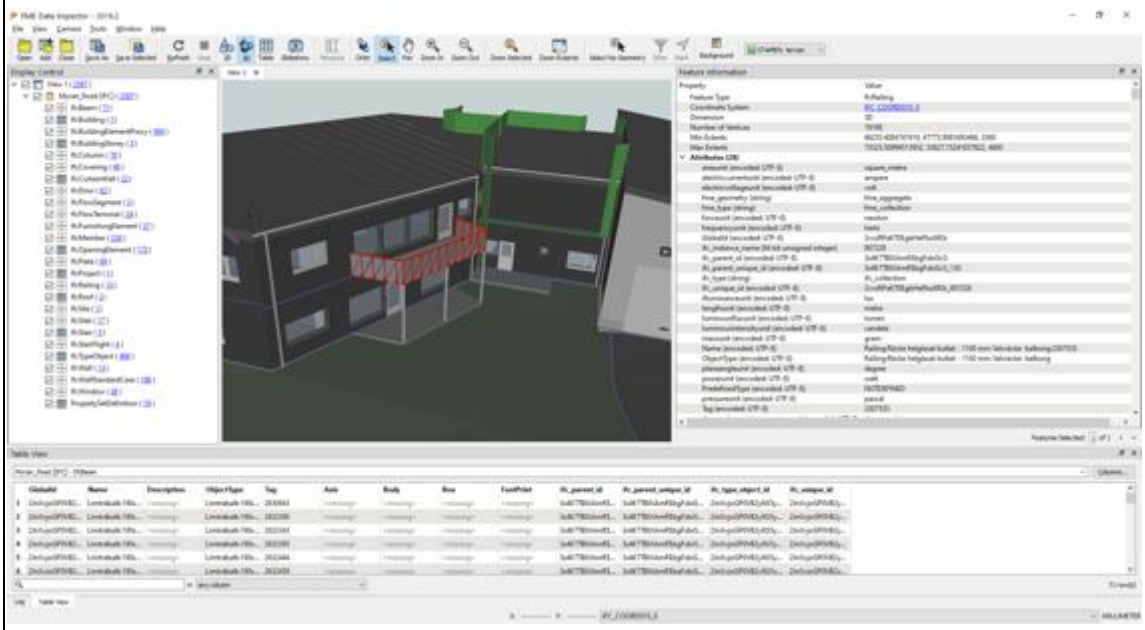


Figure 2. Zoom to view of railing

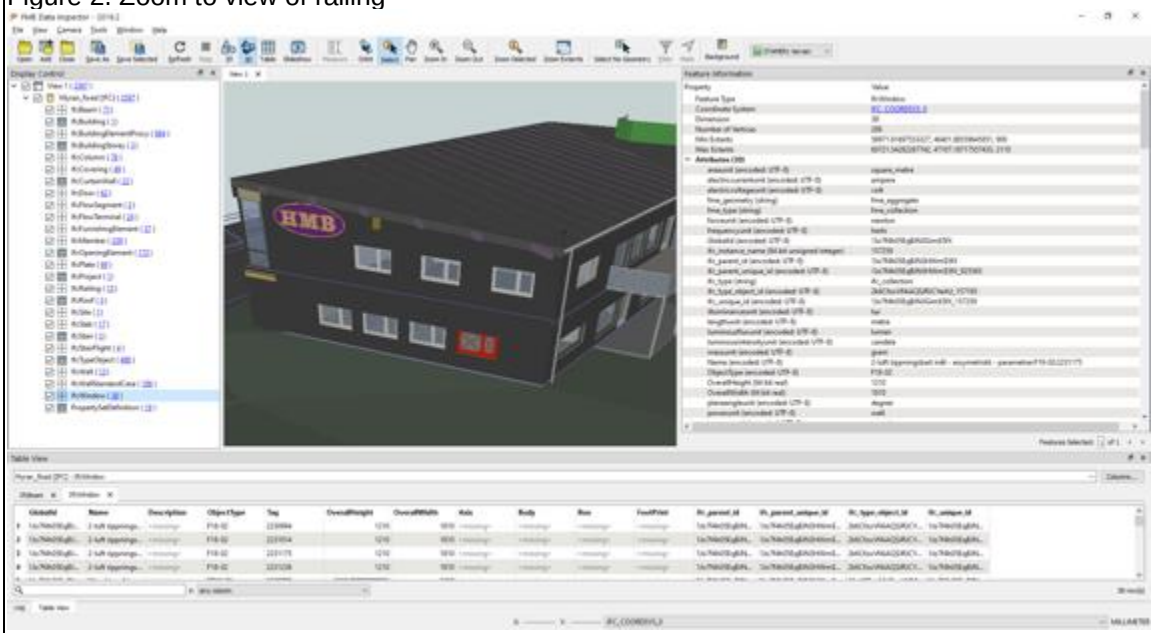


Figure 3. Zoom to view of window

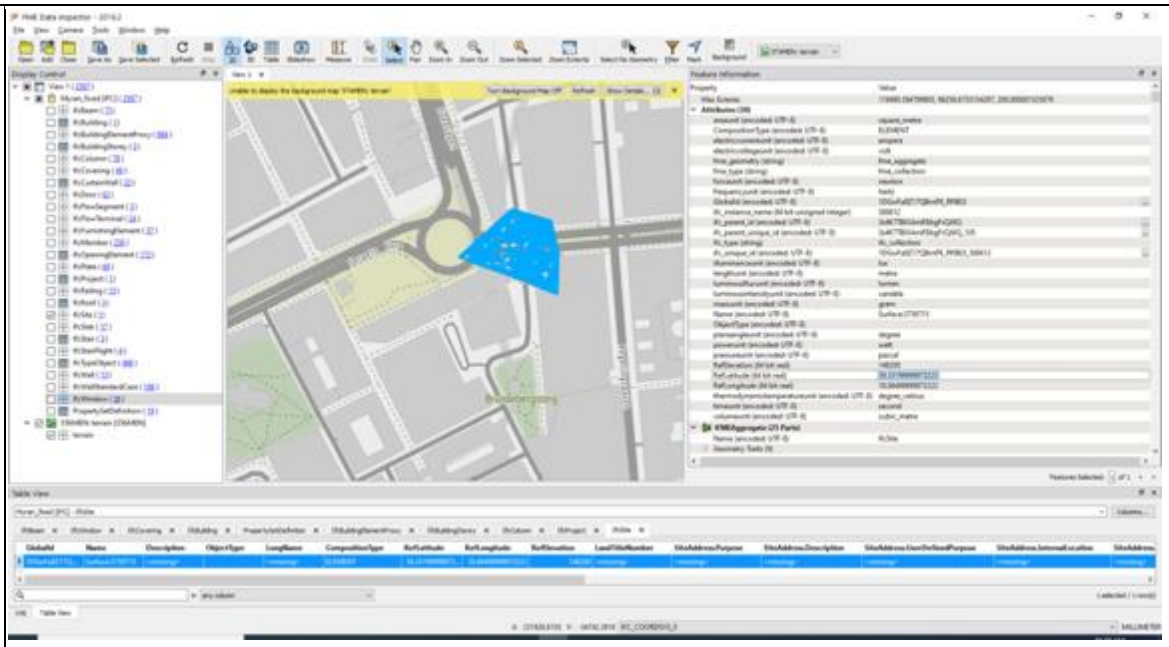


Figure 4. Default georeferencing

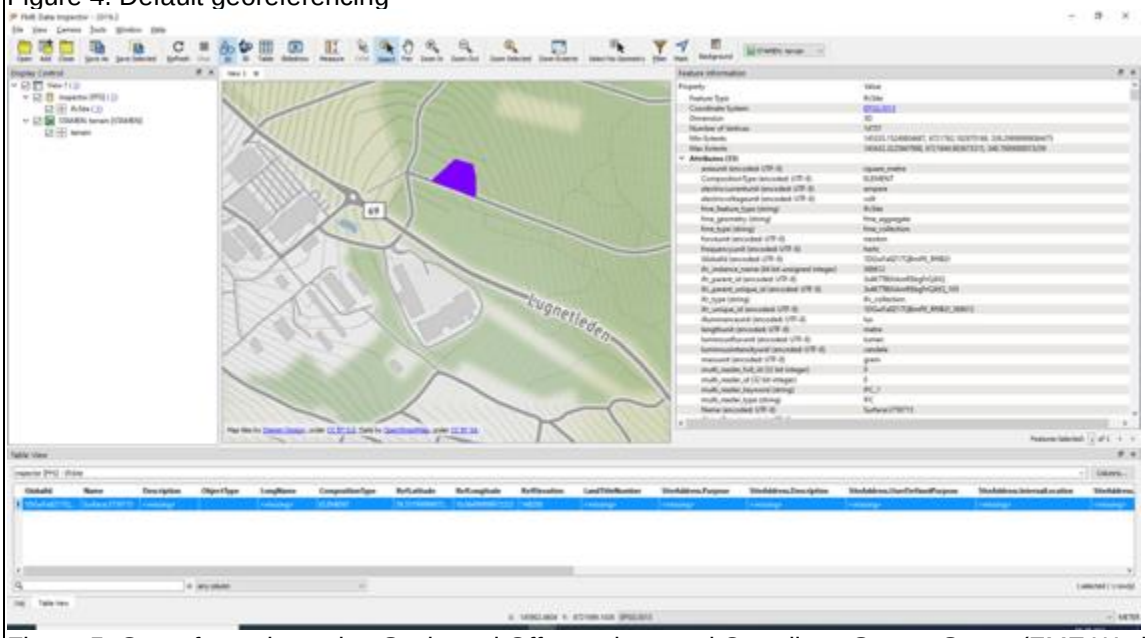


Figure 5. Georeferencing using Scale and Offset values and CoordinateSystemSetter (FME Workspace).

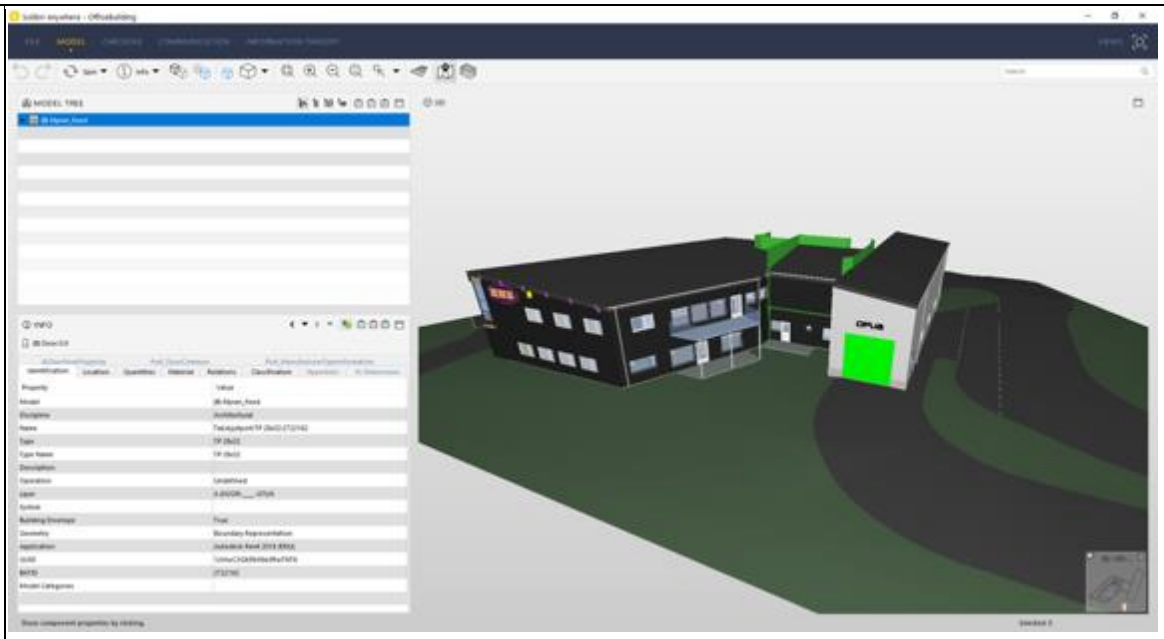


Figure 6. Comparison screenshot using Solibri

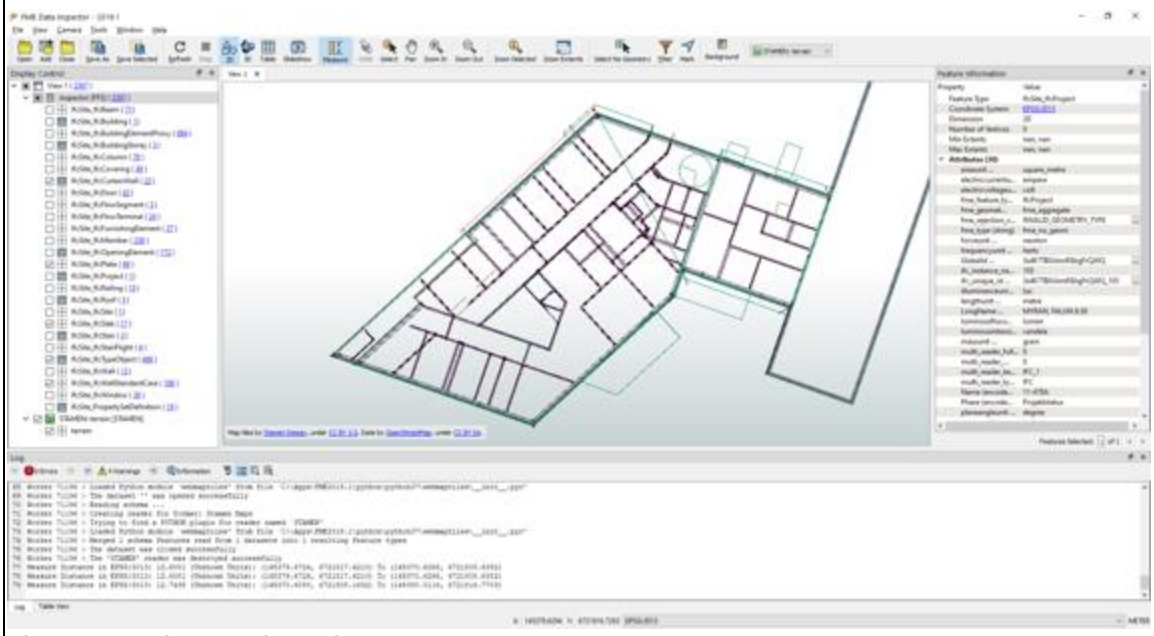


Figure 7. Task1 3.1 Dimension measurements

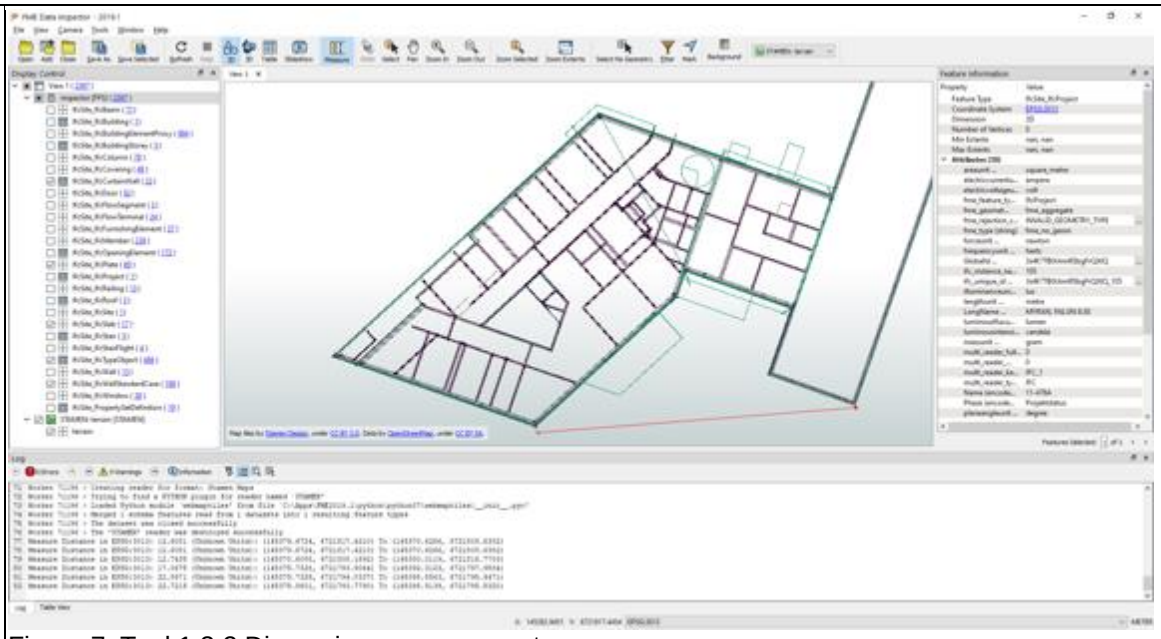


Figure 7. Task1 3.2 Dimension measurements

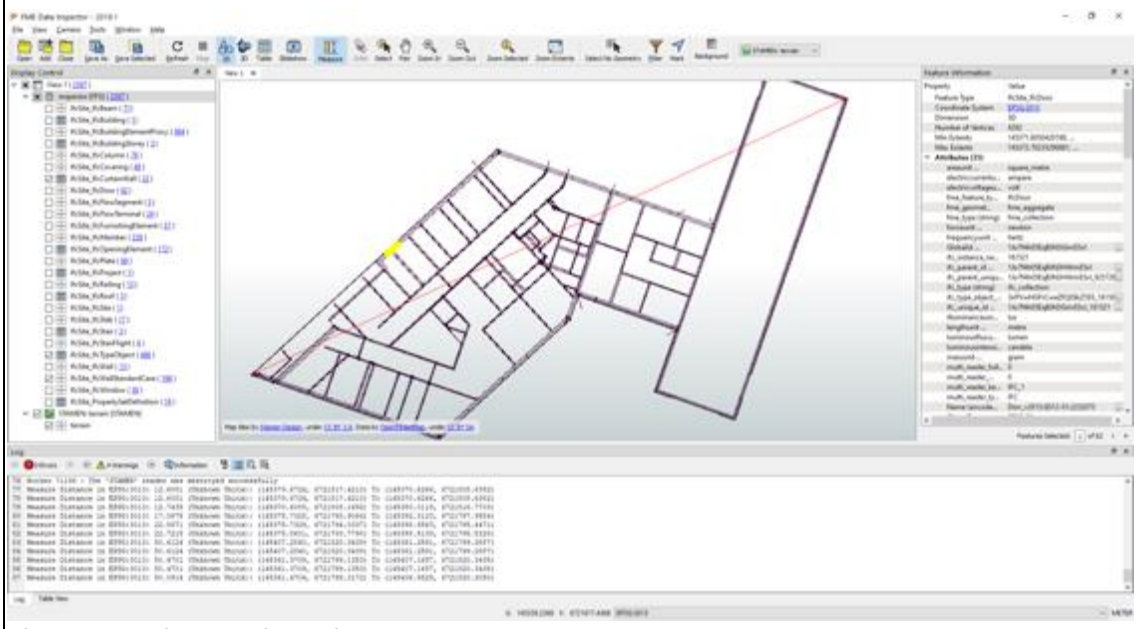


Figure 7. Task1 3.3 Dimension measurements

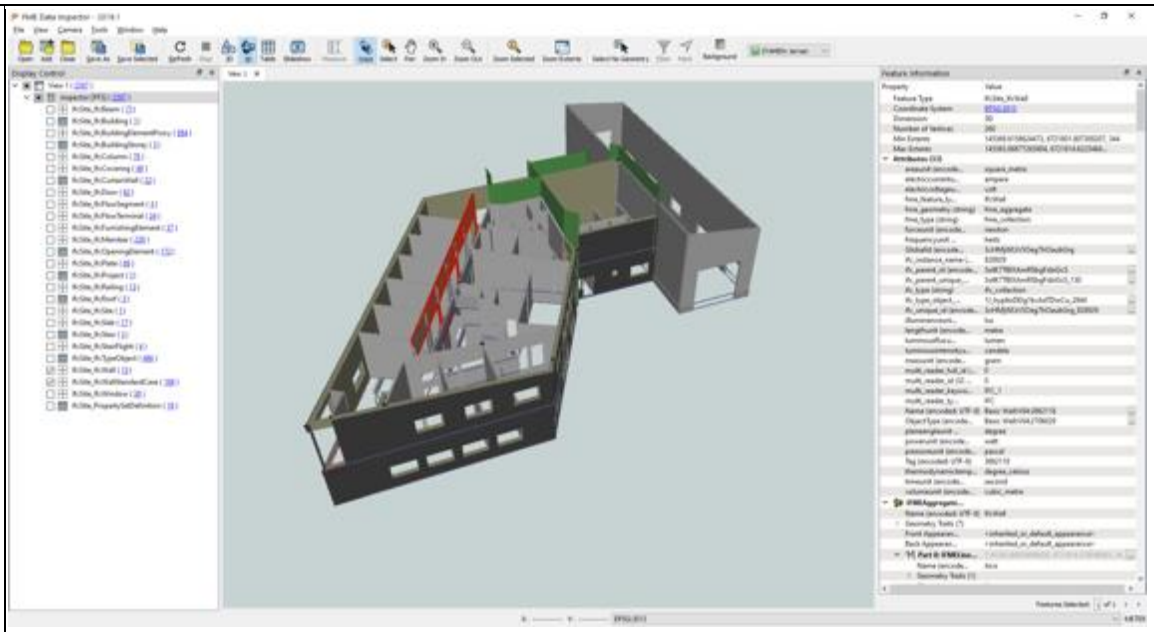


Figure 8. Task1 Part4 6.1 Inspect Wall classification and properties

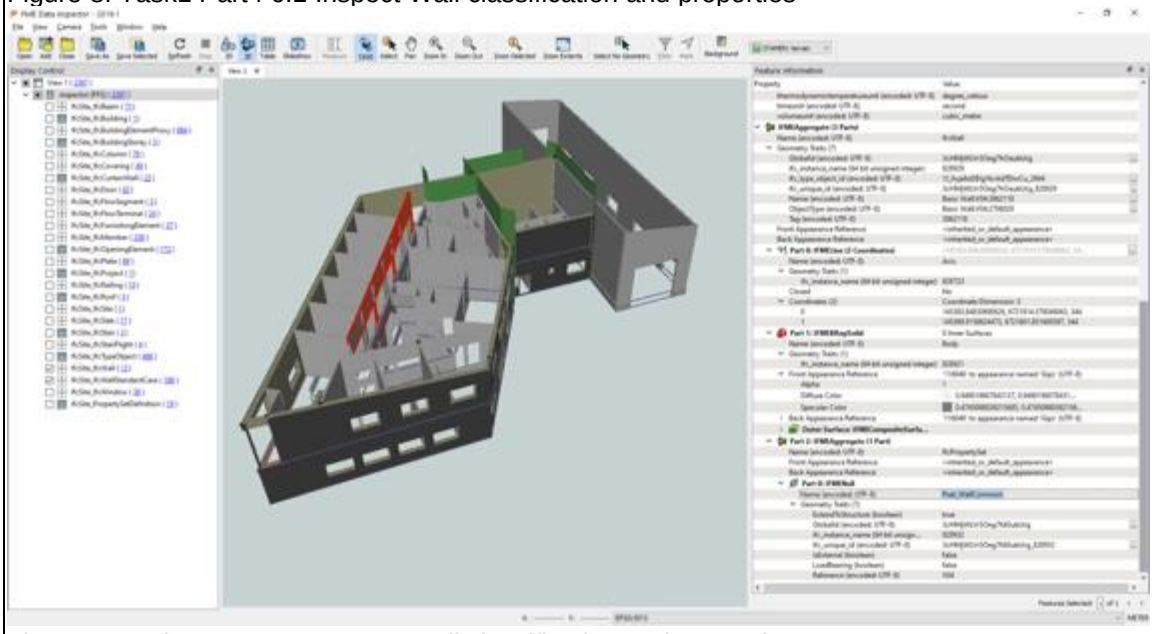


Figure 9. Task1 Part4 6.2 Inspect Wall classification and properties

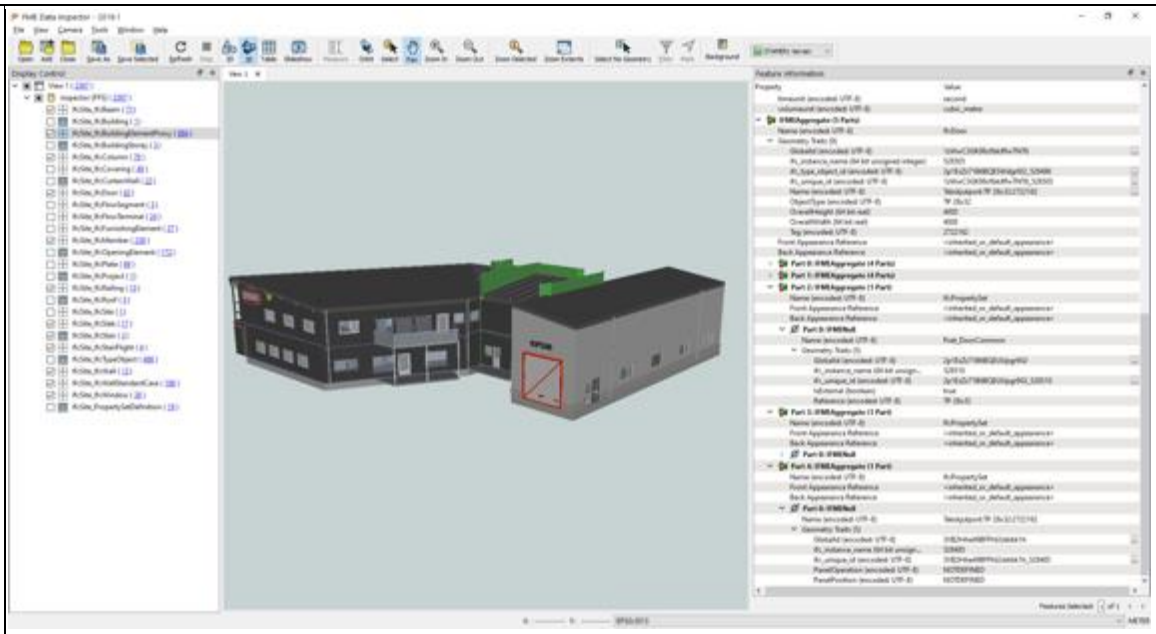


Figure 10. Task1 Part4 7.1 Inspect Wall classification and properties

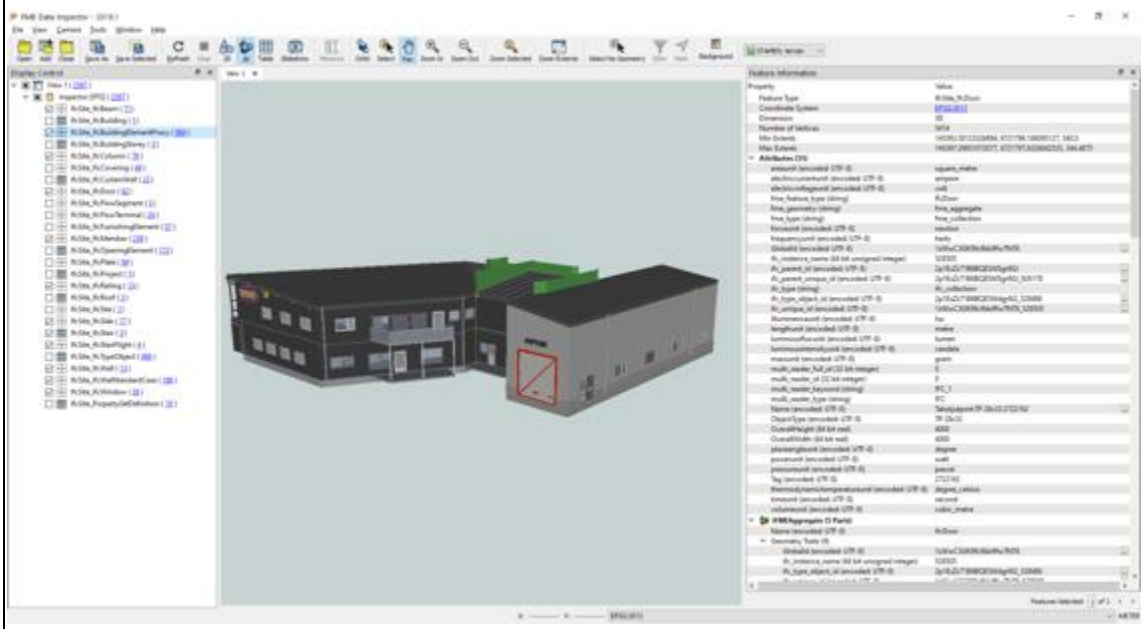


Figure 10. Task1 Part4 7.2 Inspect Wall classification and properties

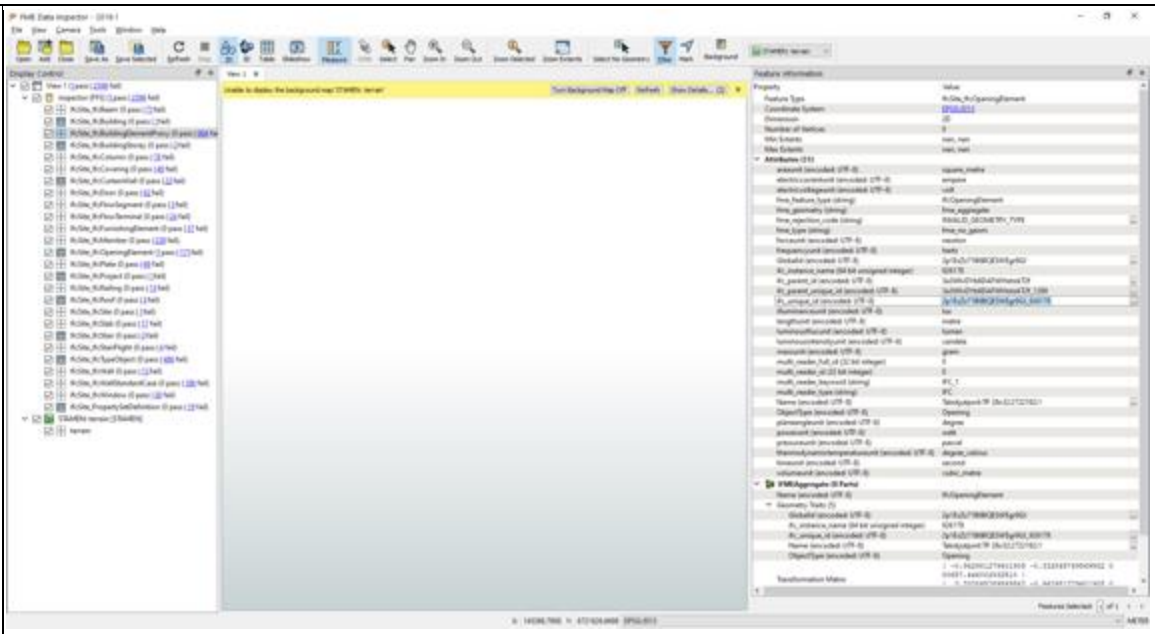


Figure 11. Task1 Part4 7.2 Use ifc_unique_parent_id from IFCDoor to find parent IfcOpeningElement with same ifc_unique_id

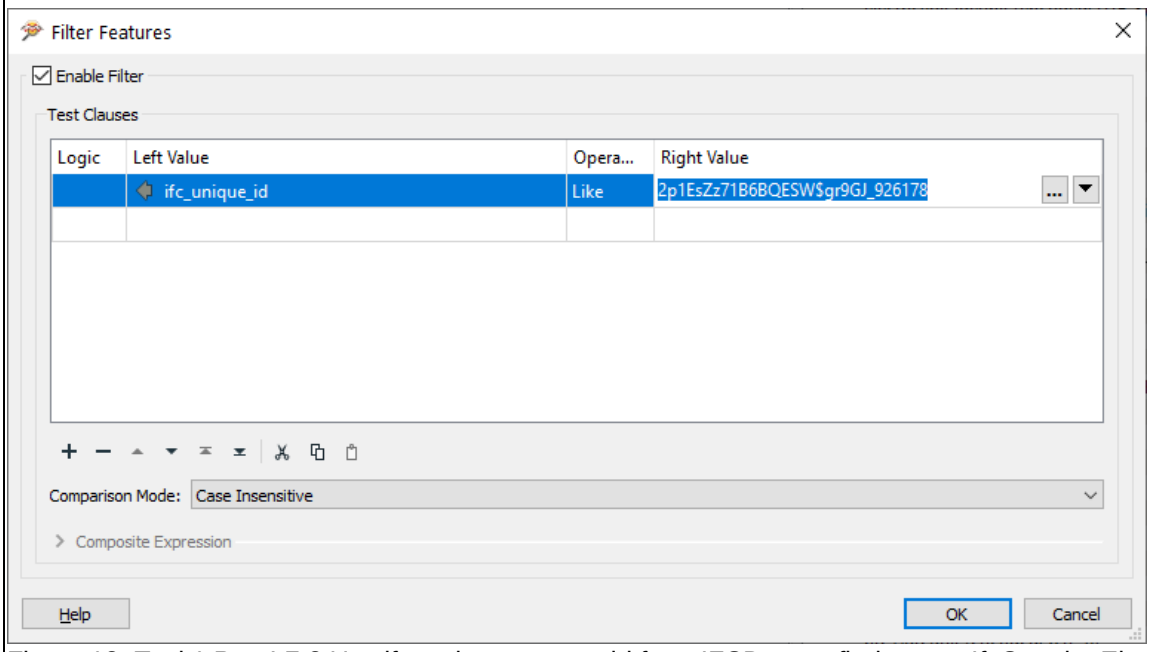


Figure 12. Task1 Part4 7.2 Use ifc_unique_parent_id from IFCDoor to find parent IfcOpeningElement with same ifc_unique_id – filter query.

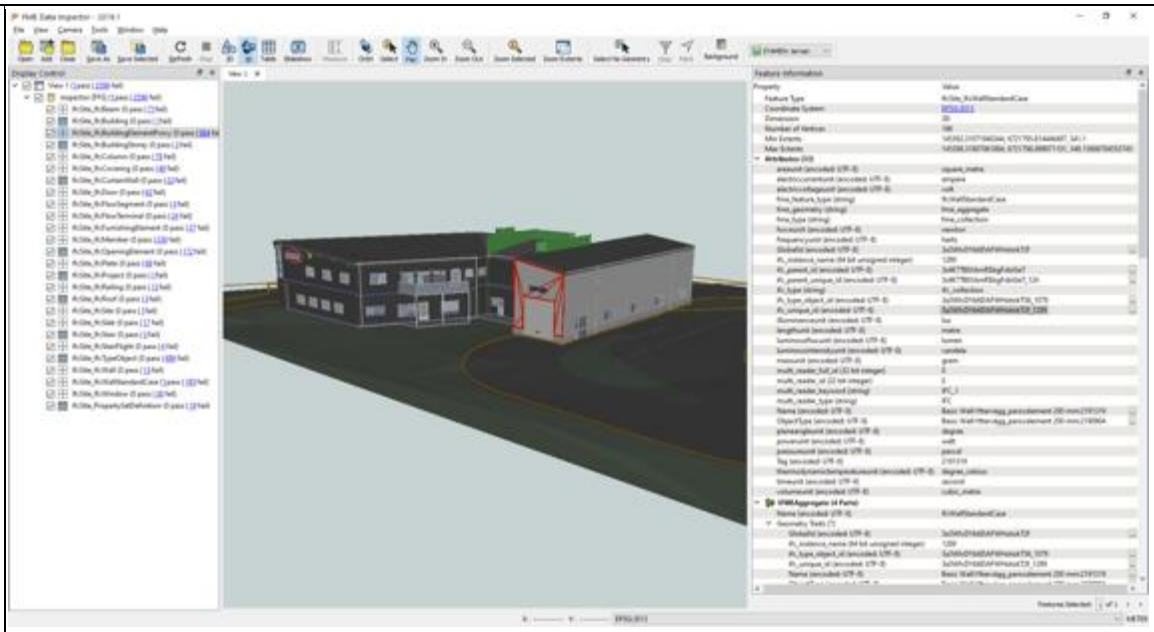


Figure 13. Task1 Part4 7.2 Use ifc_unique_parent_id from IFCDoor to find parent IfcOpeningElement with same ifc_unique_id – parent containing wall.

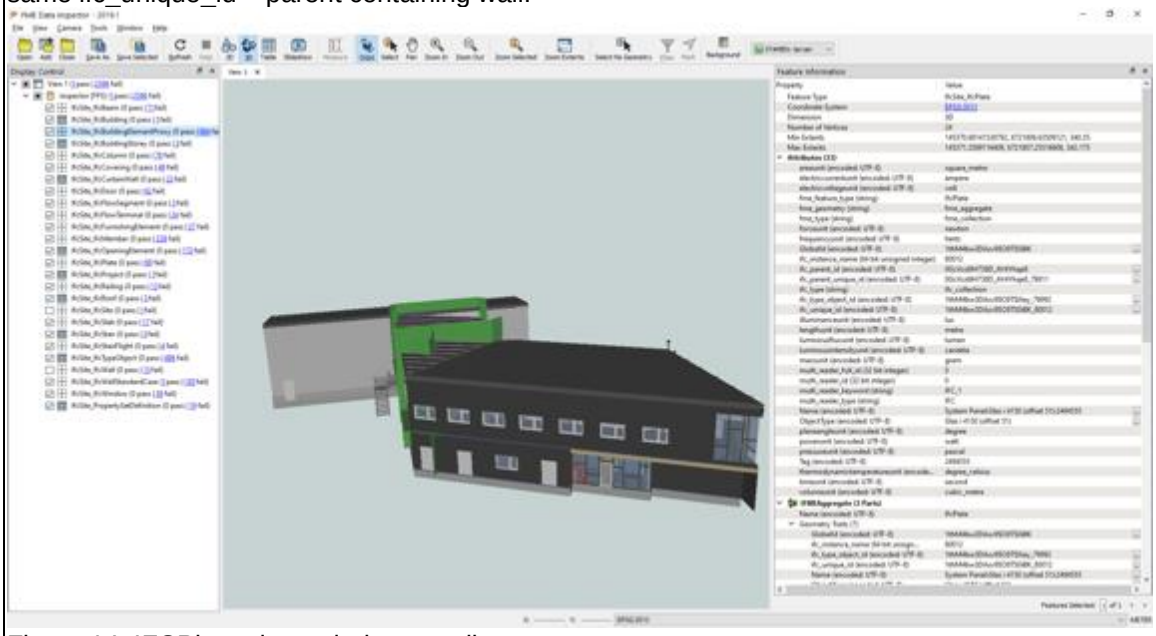


Figure 14. IFCPlate glass window - attributes

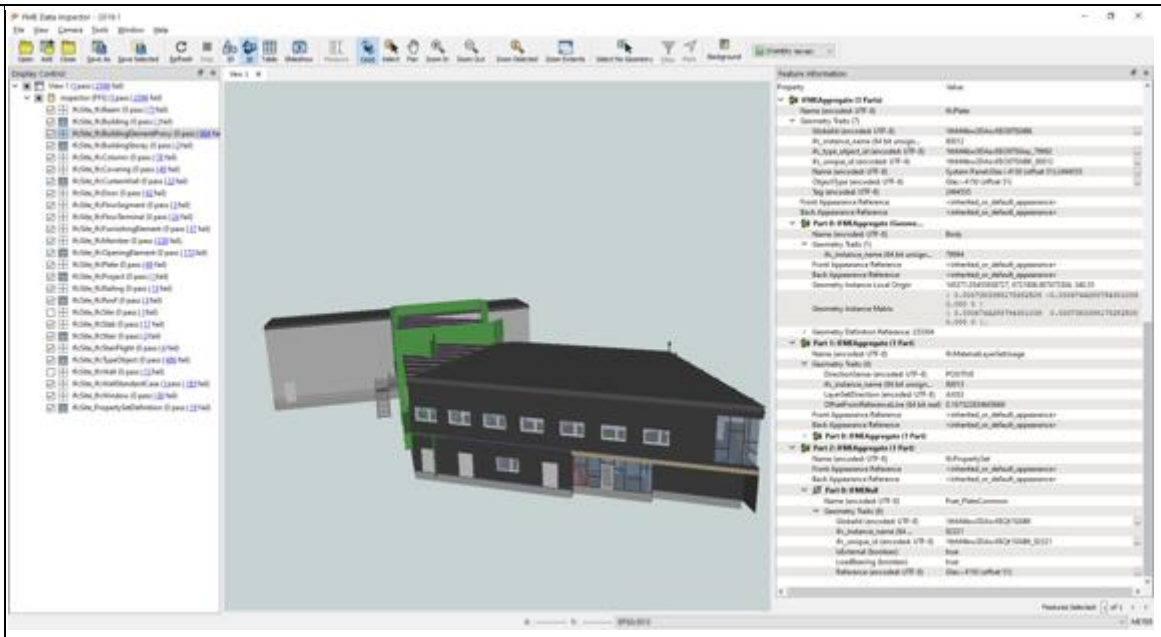
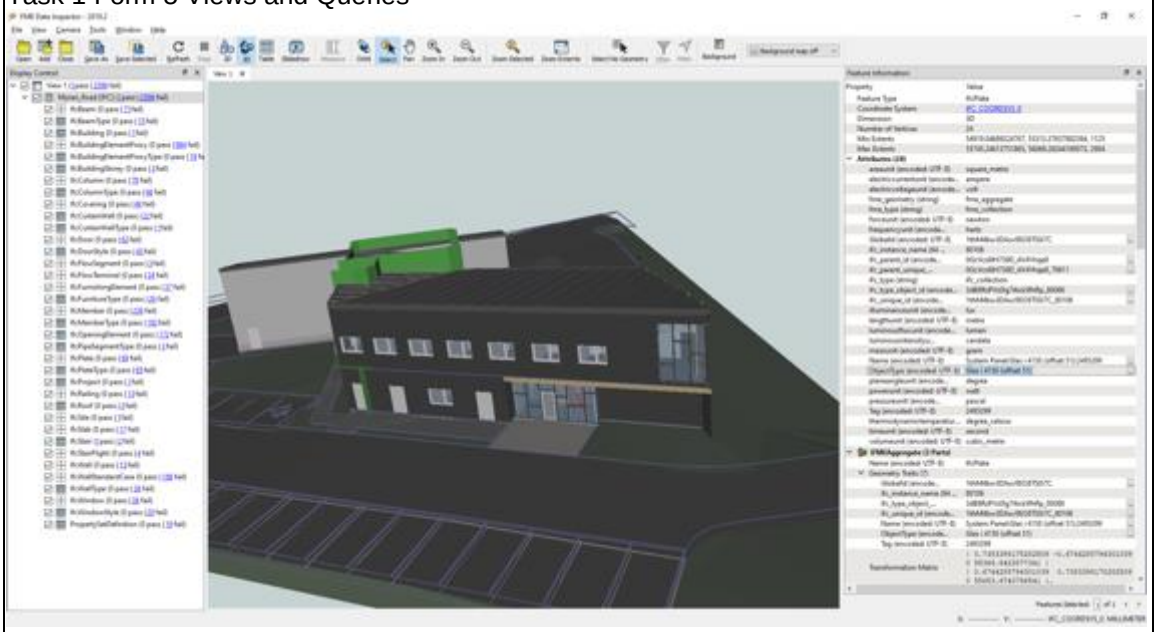
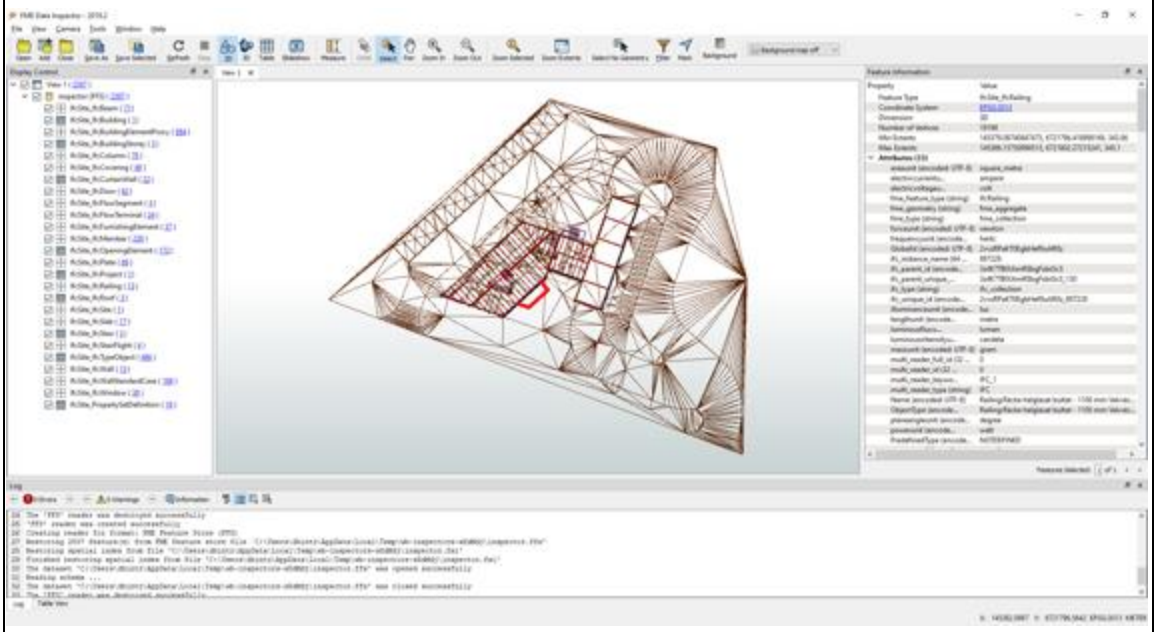


Figure 15. IFCPlate glass window - geometry

2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	12.2) short comments to the previous question (optional)	FME has 2 main desktop applications, FME Data Inspector and FME Workbench. FME Data Inspector allows you to view the model in 2D or 3D. FME Workbench is a tool for define translation and transformation workflows. One advantage of not rendering the model in FME Workbench is that it allows FME to process large models object by object without having to render the whole model at once. This allows FME to process larger models than it might be able to render. You can also use an FME workspace to query a large model so that you only display a small part of it at any one time. Finally, 2D and 3D modes have different functionality. 2D mode is georeferenced, allows the measurement of distance, and can display a background map. 3D mode is a richer viewing experience but doesnt support background maps or distance measurement.
	13.1) Is it possible to view the model in 2D?	Yes
	13.2) short comments to the previous question (optional)	2D mode allows for the model georeferencing to be viewed, along with distances, dimensions and background maps. see 12.2 above
	Other	Data Inspector does not allow for any editing. FME Workbench can be used to define a transformation model that can be used to modify model attributes, geometries or appearances.
Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	You can filter by any attribute value, such as GlobalID, or by category, such as ObjectType = Glas i 4150 (offset 51)

	15.1.2) Attach screenshots	Task 1 Form 5 Views and Queries  Figure 16. 3D View of model  Figure 17. 2D View of model showing georeferencing – EPSG 3013

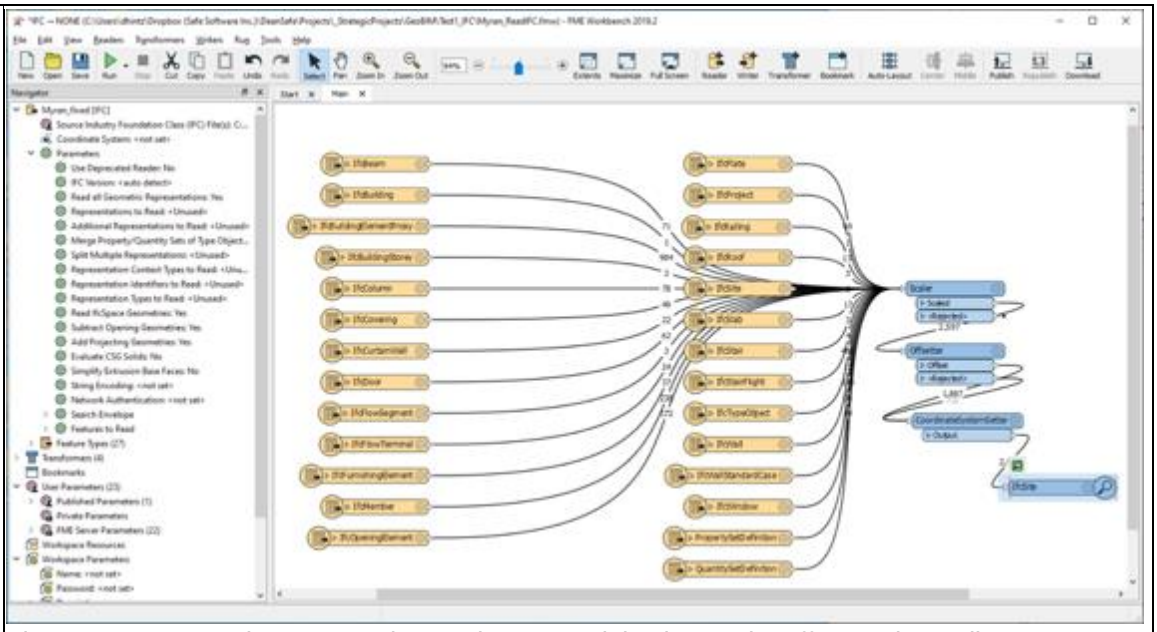


Figure 18. FME Workspace used to geolocate model using scale, offset and coordinate system settings.

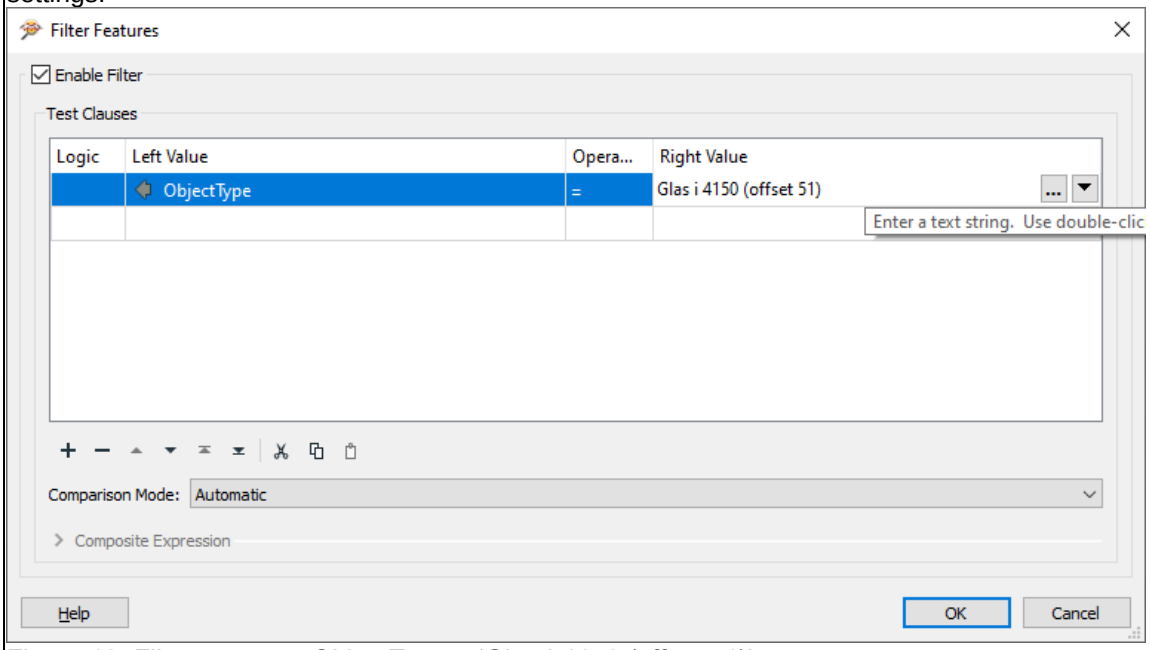
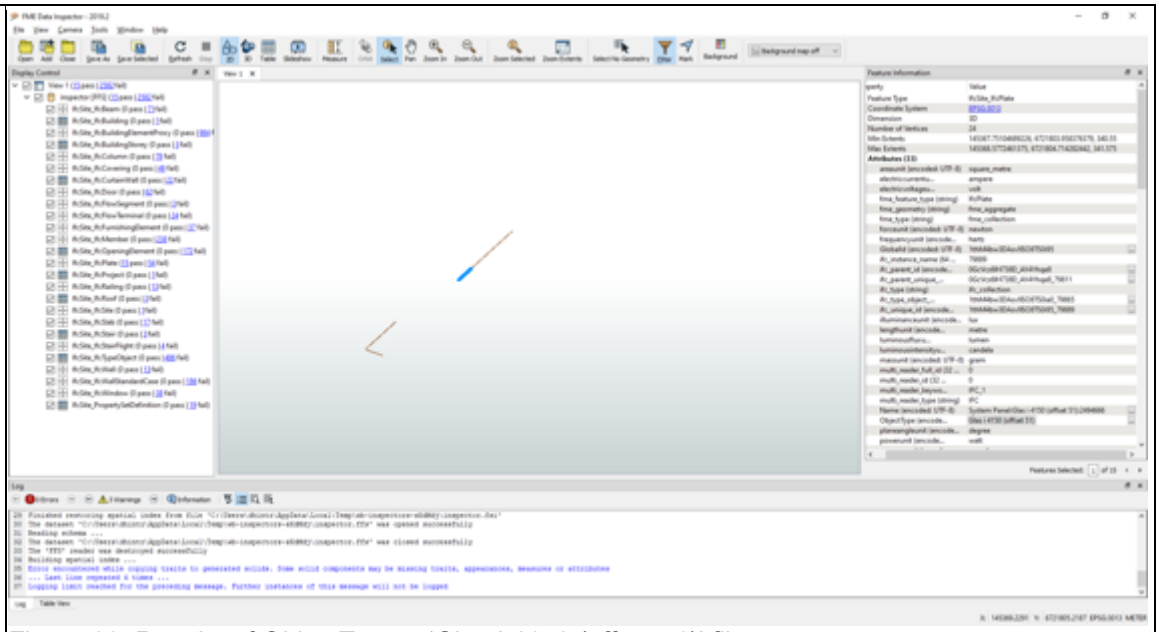
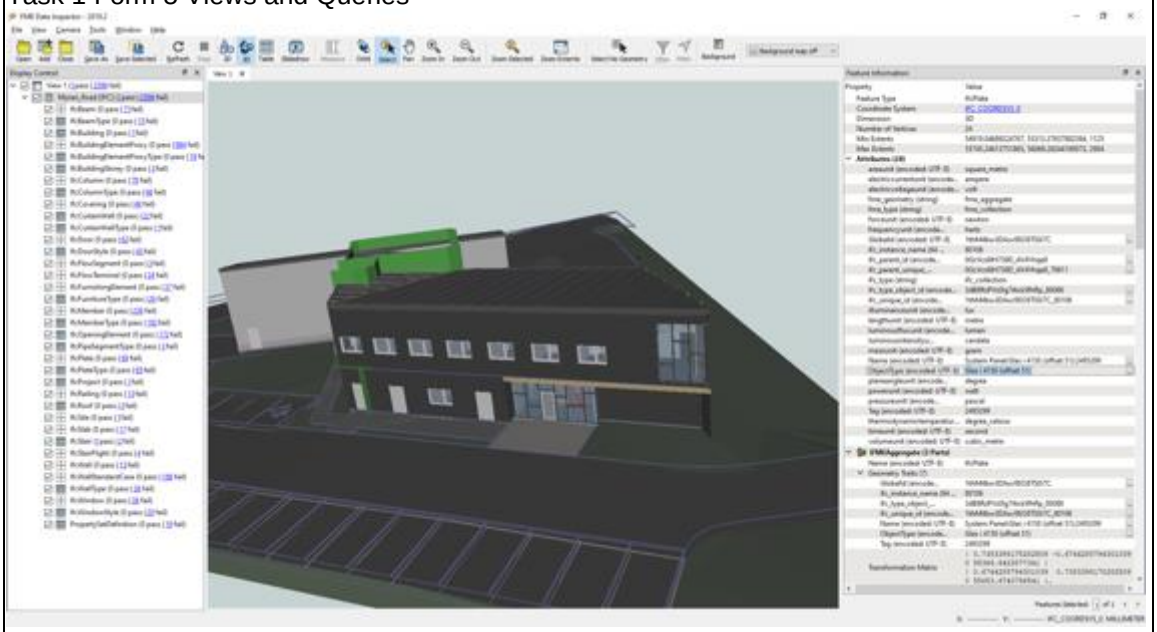
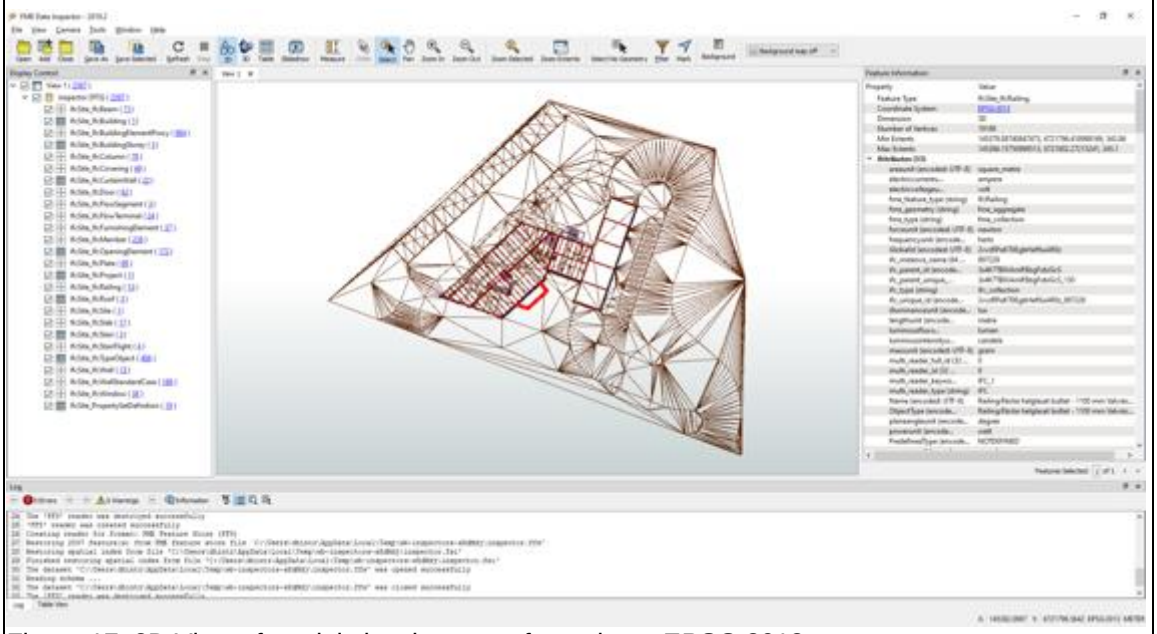


Figure 19. Filter query on ObjectType = 'Glas I 4150 (offset 51)'

		 Figure 20. Results of ObjectType = 'Glas I 4150 (offset 51)' filter query.
	15.2) short comments to the previous question (optional)	FME workbench allows users to create ETL or transformation workflows called FME workspaces. Workspaces can be used to automate changes or updates to individual model components or to the model as a whole. Transformations can also be used to convert the model to an alternate representation suitable for another format such as CityGML or 3DPDF
Analysis	16.1) Is it possible to analyse the objects and the model?	Yes, both analysis about the model and its performances are possible (type 1 and 2)
	16.1.1) What analysis are possible? Do you know if the results are reliable?	Analysis of both model validity and performance are possible. However, typically domain experts are required to conduct performance analysis such as energy. FME has tools such as GeometryValidator, AttributeValidator, AreaCalculator , VolumeCalculator, Tester and many other transformers which can be used in combination to do model validity analysis. FME also supports slope and aspect analysis so this has been used to conduct analysis of solar photovoltaic potential. However, Safe Software does not provide out of the box solutions for either type of building analysis. Users can design their own workflows for this or share them via the FME Community and FME Hub.

	16.1.2) Attach screenshots	Task 1 Form 5 Views and Queries  Figure 16. 3D View of model  Figure 17. 2D View of model showing georeferencing – EPSG 3013

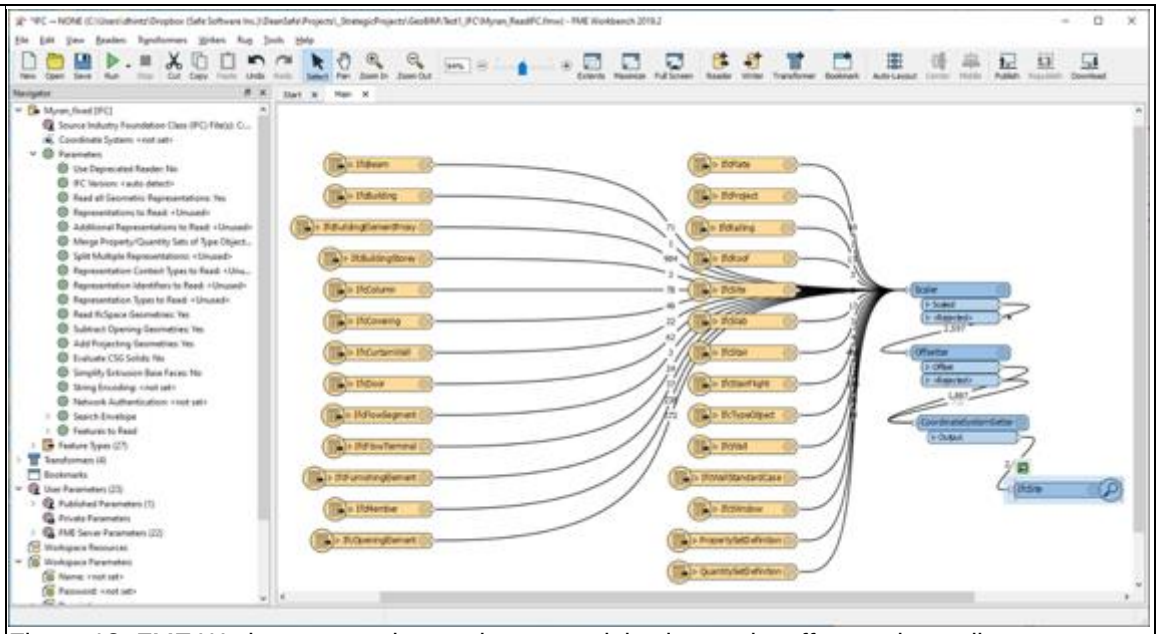


Figure 18. FME Workspace used to geolocate model using scale, offset and coordinate system settings.

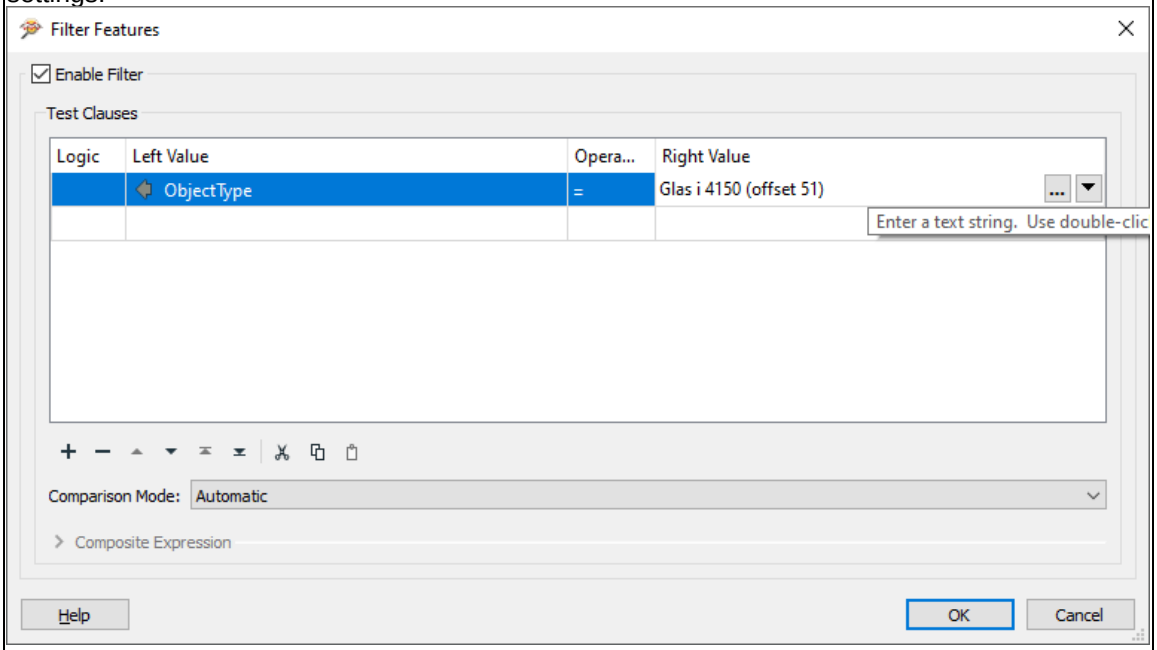


Figure 19. Filter query on ObjectType = 'Glas I 4150 (offset 51)'

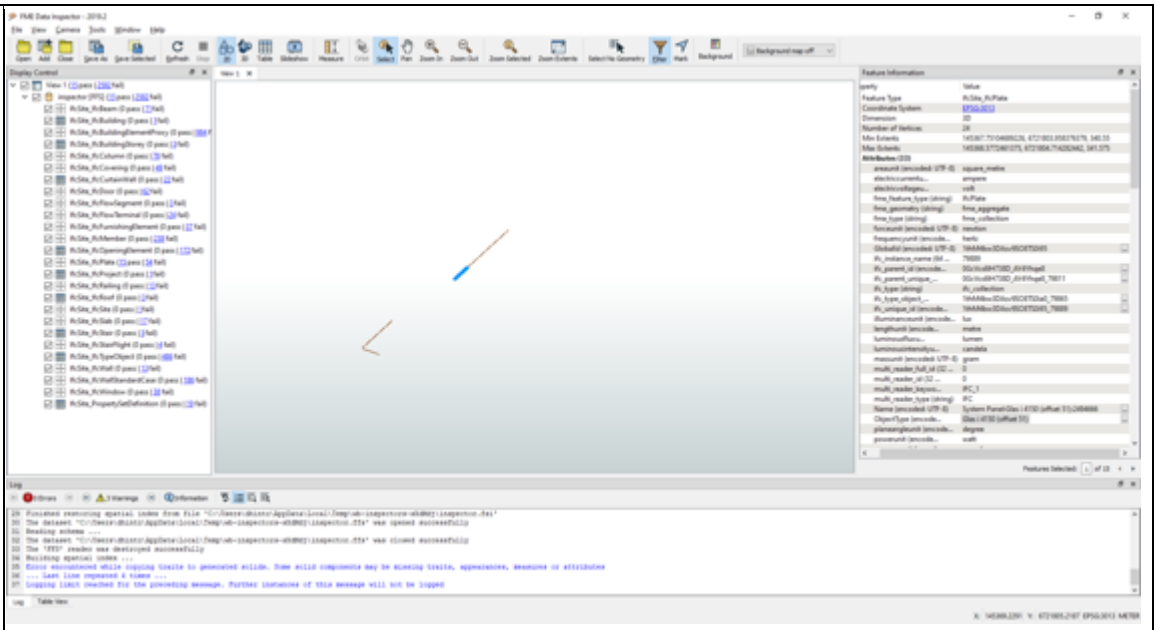


Figure 20. Results of ObjectType = 'Glas I 4150 (offset 51)' filter query.

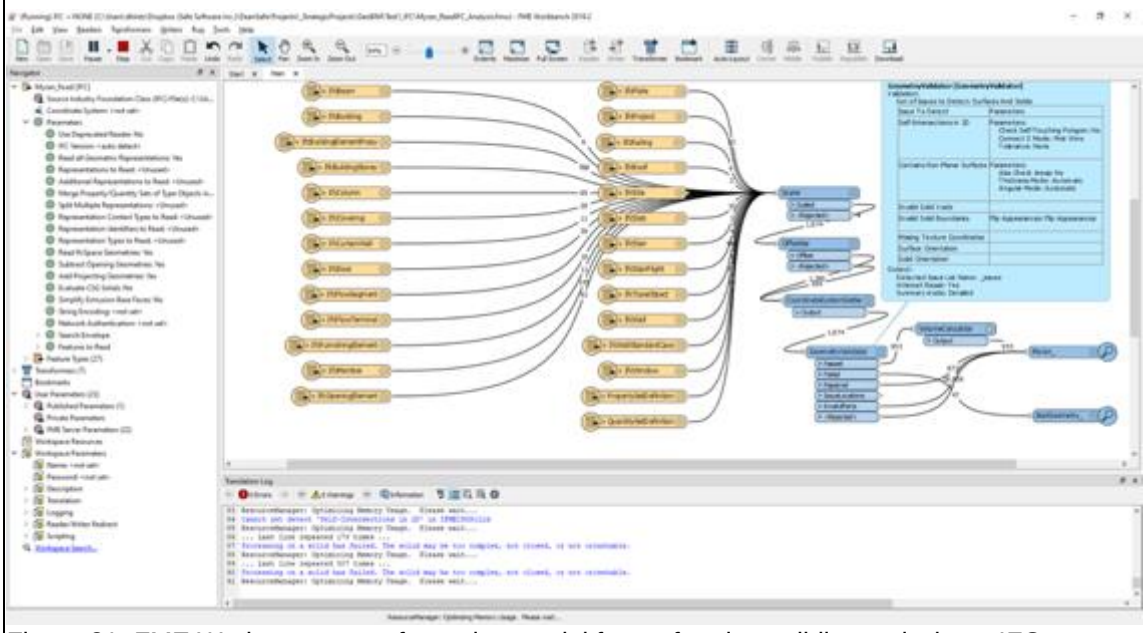
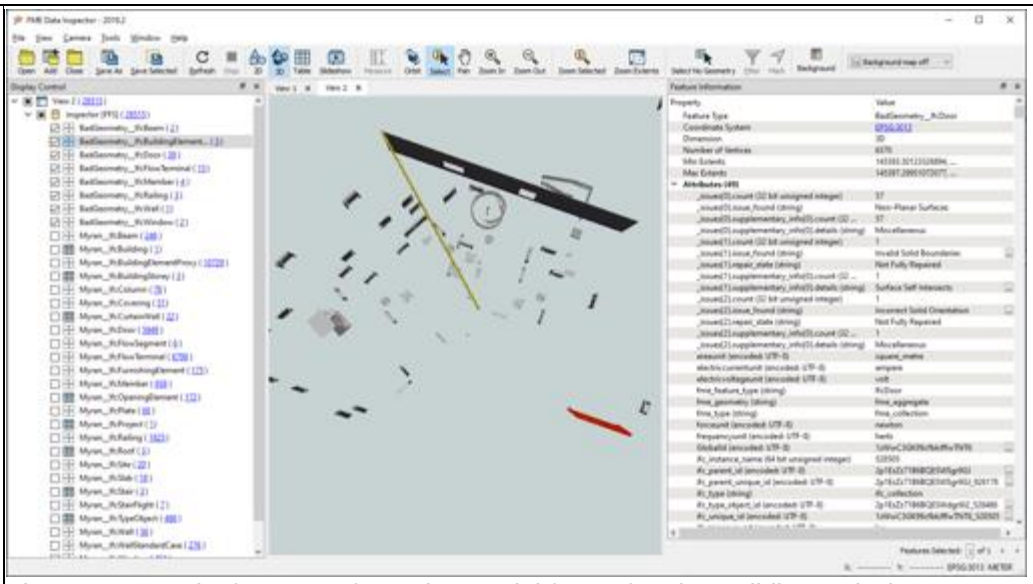
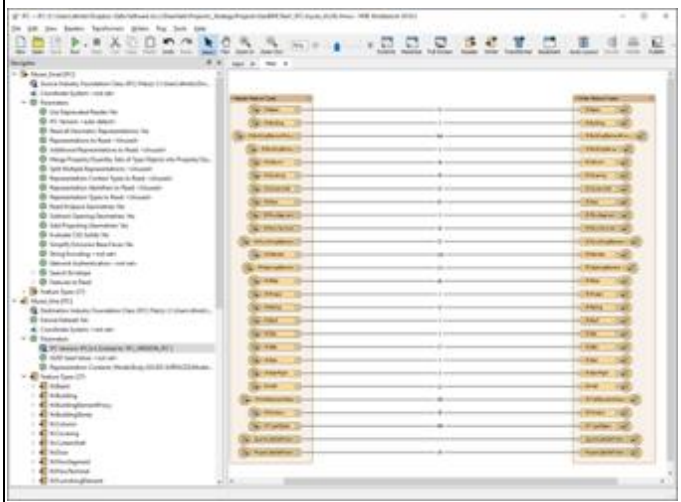


Figure 21. FME Workspace transformation model for performing validity analysis on IFC geometries.

		 Figure 22. Results from transformation model for performing validity analysis on IFC geometries. Shows IFCDoor with invalid geometry including non-planar surfaces, invalid solid boundaries and self intersections
	16.1.3) Time required to perform the analysis about the model itself (type 1)	1-5 minutes
	16.1.3) Time required to perform the analysis about the model performances (type2)	1-5 minutes
	16.2) short comments to the previous question (optional)	The time required depends on the size of the model and the type of analysis being performed.
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	17.2) short comments to the previous question (optional)	No setting or pre-processing required. However, since the default IFC version is 4 on the writer, you need to set it to 2x3 if you want to keep it the same as the source for Myran_fixed.ifc  Figure 23. IFC Export – IFC to IFC FME Workspace

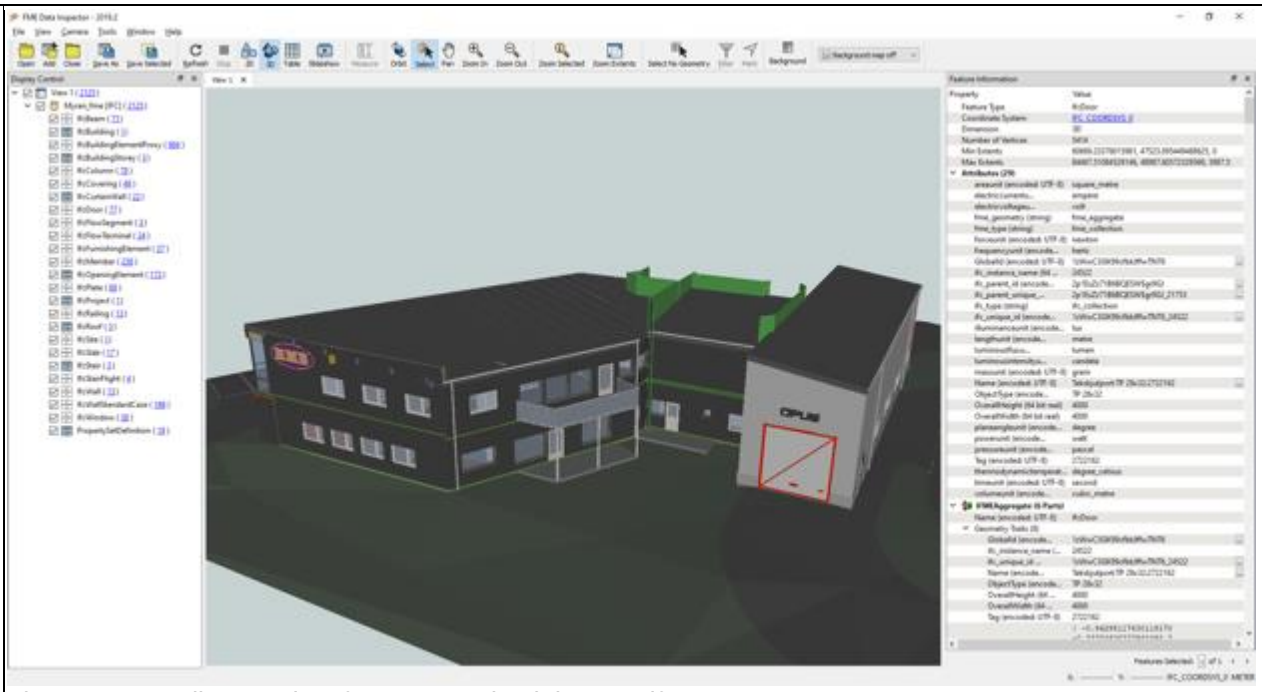
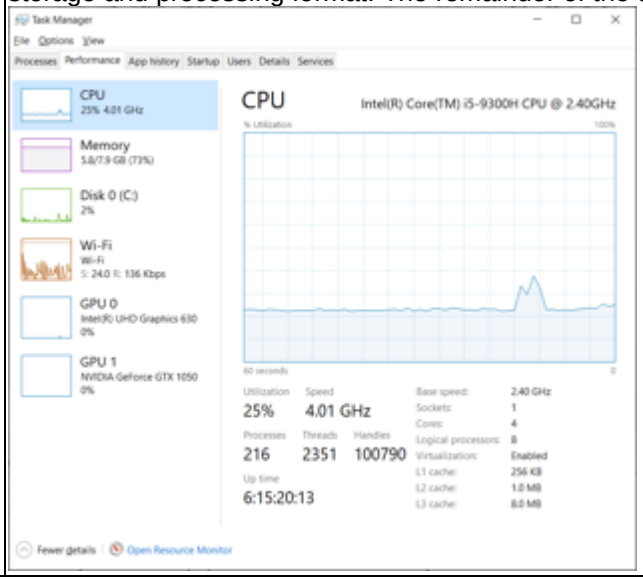
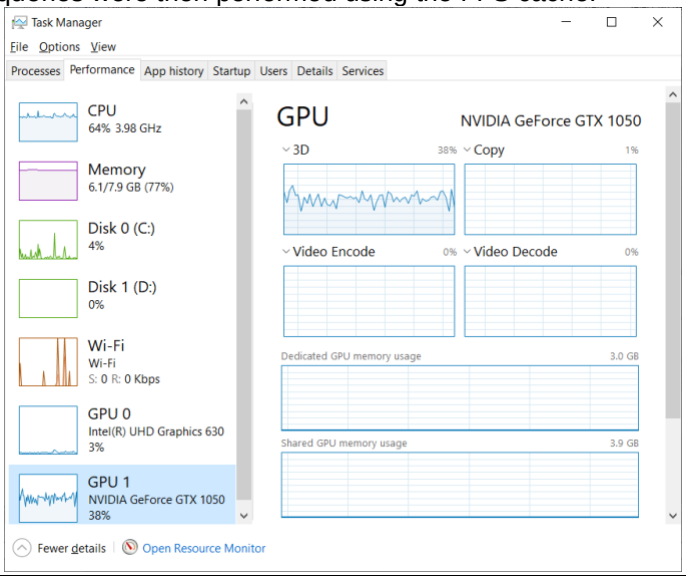
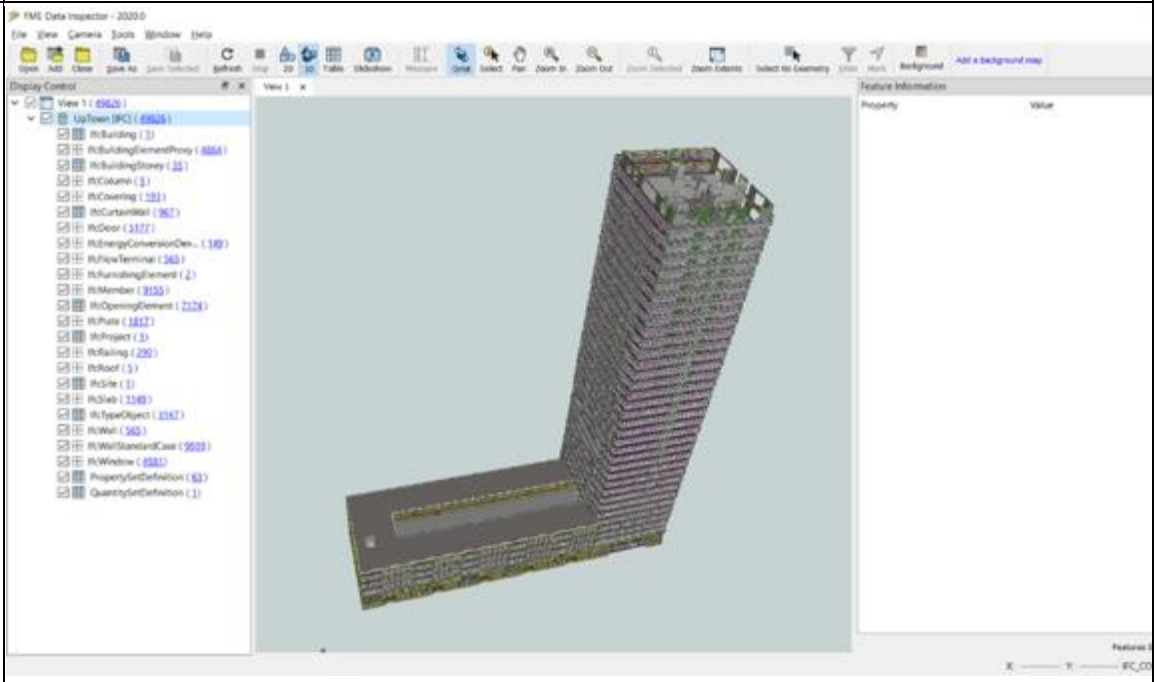
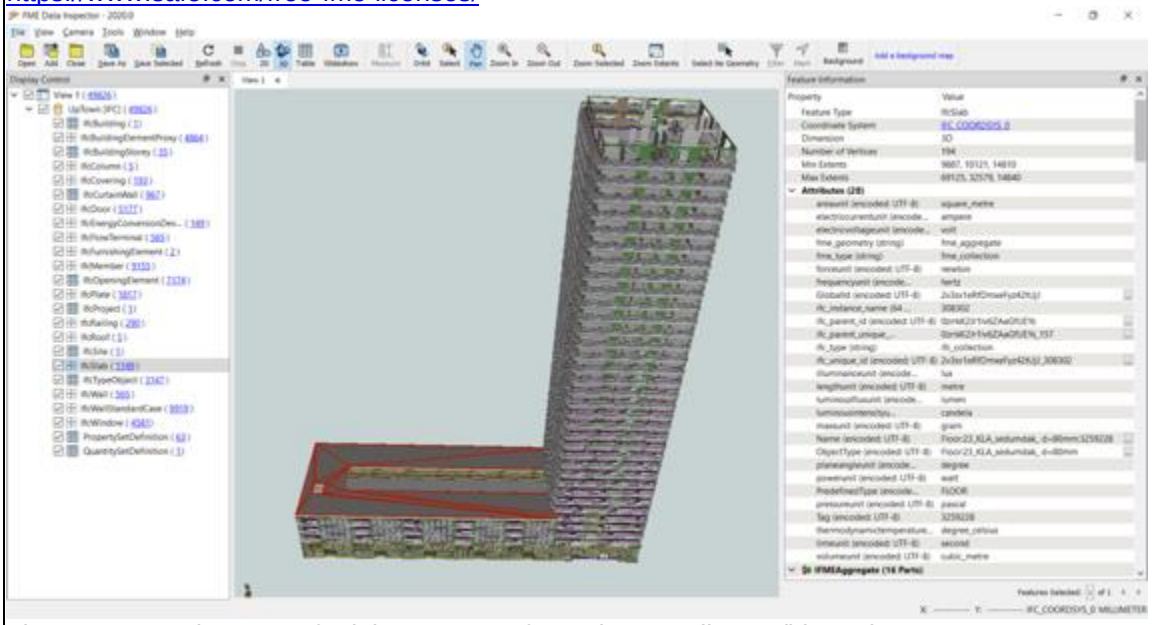
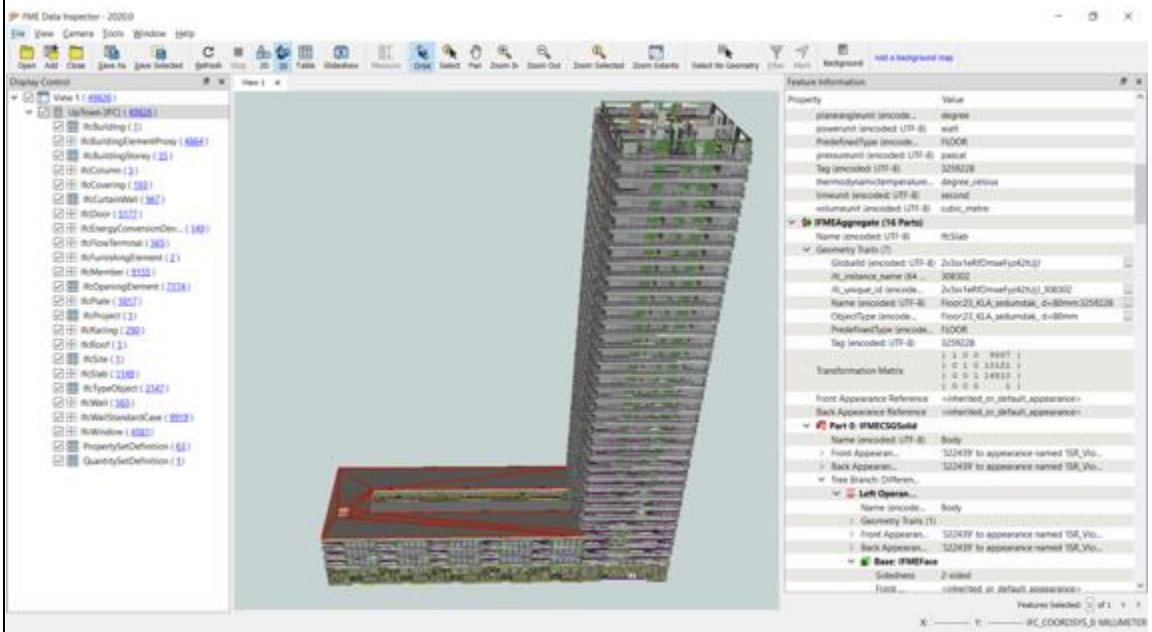


Figure 24. Reading results of IFC Export back in to verify content

	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	No
	18.2) short comments to the previous question (optional)	FME does not support MVD out of the box. However, users can define their own model view definitions using FME's data model filtering and transformation tools. For an example of this see: https://knowledge.safe.com/questions/86339/using-xml-to-filter-ifc.html
	19) How long does it take for the data to be exported to IFC?	less than a minute
Test with UpTown.ifc		How mo
Performance	How long does it take, approximately, to:Zoom into the model to see more detail	less than a minute
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	less than a minute
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	1-5 minutes

	Please report on any errors the software gives when importing the file.	The approach to evaluating the object link is using a filter query as described for the Myran.ifc dataset. Filter queries in FME Data Inspector are only supported in 2D mode. When attempting to switch from 3D to 2D I had a process crash (a child worker process, not the parent application). This required me to reload the data. Given the long load time, I decided to create a cache file to do the remainder of the processing and queries for Uptown.ifc. This involved creating an IFC to FFS FME default workspace. FFS = FME feature store which is our internal storage and processing format. The remainder of the queries were then performed using the FFS cache.  
Proportions	24.1) Does the model maintain its correct dimensions and proportions?	Yes
	24.2) short comments to the previous question (optional)	There did not appear to be complete georeferencing information discoverable in the model, so the offsets, scaling, rotation and coordinate system provided on the GeoBIM dataset webpage were applied using an FME workspace before these dimensions and orientation observations were taken.
IFC definitions	25.1) Is the eventual translation consistent with the IFC definitions?	Yes
	25.2) short comments to the previous question (optional)	All significant classifications, hierarchy, properties, property sets, and ids appear to be read correctly: GlobalId, Name, ObjectType, feature_type, Tag, Area, Height, Width, berekende_diepte_glaslat, glas_dikte, NLRS_C_breedte, Mark, Workset, Category, Family, positie_rooster_lengte, Type, materiaal_draaiend_deel etc. Compared to the GeoBIM screenshots, there appear to be some properties that are not displayed, at least not in the same way, including OwnerHistory, ObjectPlacement, Representation. With the exception of OwnerHistory, most of these properties are really internal file references - specifically file line number references. Some of the relationship information looks quite different between FME and the tool screen shots shown on the Benchmark Myran.ifc data webpage. This is because FME resolves the relationships and inserts the parent ids (ifc_parent_id etc).
Hierarchy	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
	26.2) short comments to the previous question (optional)	Yes the hierarchical relationships are maintained, in terms of feature type, class / categories, and ifc_parent_id relationships. Some of the relationship reference link information looks quite different between FME and the screen shots shown on the GeoBIM benchmark dataset webpage. Most of the reference properties shown are really internal file references - specifically file line number references. FME does not display these internal properties but rather resolves these references and reads the associated parent ids, properties, geometries or appearances instead.

Attributes	27.1) Are the attributes present in the IFC entities retained and consistent?	Yes
	27.2) short comments to the previous question (optional)	as above
Relationships	28.1) Are the relationships between the objects retained?	Yes
	28.2) short comments to the previous question (optional)	as above
Geometry	29.1) Is geometry read correctly?	Yes
	29.2) short comments to the previous question (optional)	There are several different read modes in FME which can affect how geometries are grouped. The default mode for the FME IFC reader is relational mode. In this mode FME reads primary object properties as attributes. Object geometries and their properties are read as nested, named FME geometries and geometry traits. Representations are stored in the geometry names. So for IFCDoor, the attributes store properties such as GlobalID, ifc_unique_id, Name, etc, and the parent geometry is named IFCDoor and contains a combination of null and Body geometries. The null geometries store traits such as property sets, appearances and materials. Body geometries store multi-surfaces and solids as appropriate. In the case of IFCDoor, the combination of materials, appearances, properties and property sets are stored as an aggregate of null and body geometries with the geometry name = IfcDoor. For more info see: https://docs.safe.com/fme/html/FME_Desktop_Documentation/FME_ReadersWriters/ifc/IFC_reader.htm
Normals	30.1) Did the normals change?	No
	30.1.1) What changes / inconsistencies / errors / other issues were noted?	No obvious problems with normals were observed. If there were issues with normals, we would expect to see differences in transparency, materials on the wrong side etc. Refer to screen shots for UpTown.ifc
	30.1.2) Attach screenshots	 Fig 1. FME Data Inspector show Uptown.IFC dataset at full extents Note that in the screen shots below, comparison with GeoBIM website screenshots can be somewhat challenging since the properties, relationships and attributes are displayed differently. What FME calls 'Attributes' seem to correspond to a lot of the relationship or hierarchy information shown on the website (ids and classification). Also, for much of what

		GeoBIM calls ‘attributes’, with FME this information is stored as traits within the geometry aggregates (materials, property sets, appearances etc). The following screenshots simply page through all the attributes, geometries and traits available for the Elements in question using the Feature Information window in FME Data Inspector. Please contact the author if there are any questions on how to interpret these results. Note that free demo licenses of FME are available for educational and research purposes, so that is always an option for anyone who wishes to test this for themselves from https://www.safe.com/free-fme-licenses/  Fig 2. Uptown Element 1 IfcSlab: Feature Information - Attributes (hierarchy: FeatureType, GlobalId, Name, ObjectType)  Fig 3. Uptown Element 1 IfcSlab: Feature Information - Geometry screenshot/snap 1 (geometry aggregate part 0 traits / attributes: Name, PredefinedType, Tag, ObjectType, ids)

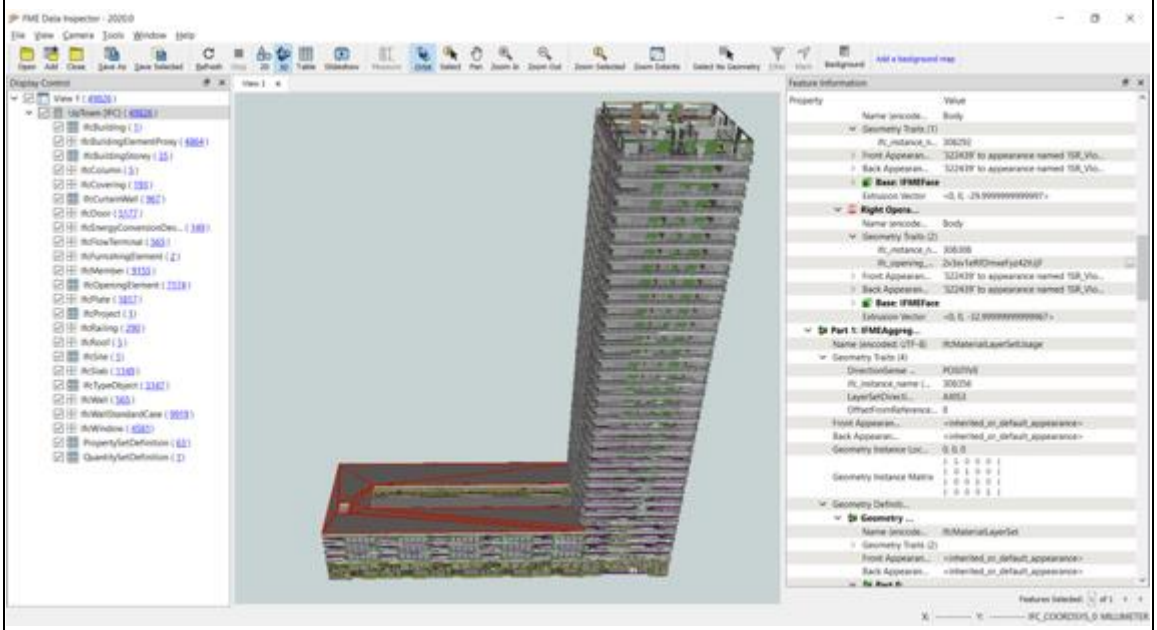


Fig 4. Uptown Element 1 IfcSlab: Geometry snap 2 (geometry trait – attributes2)

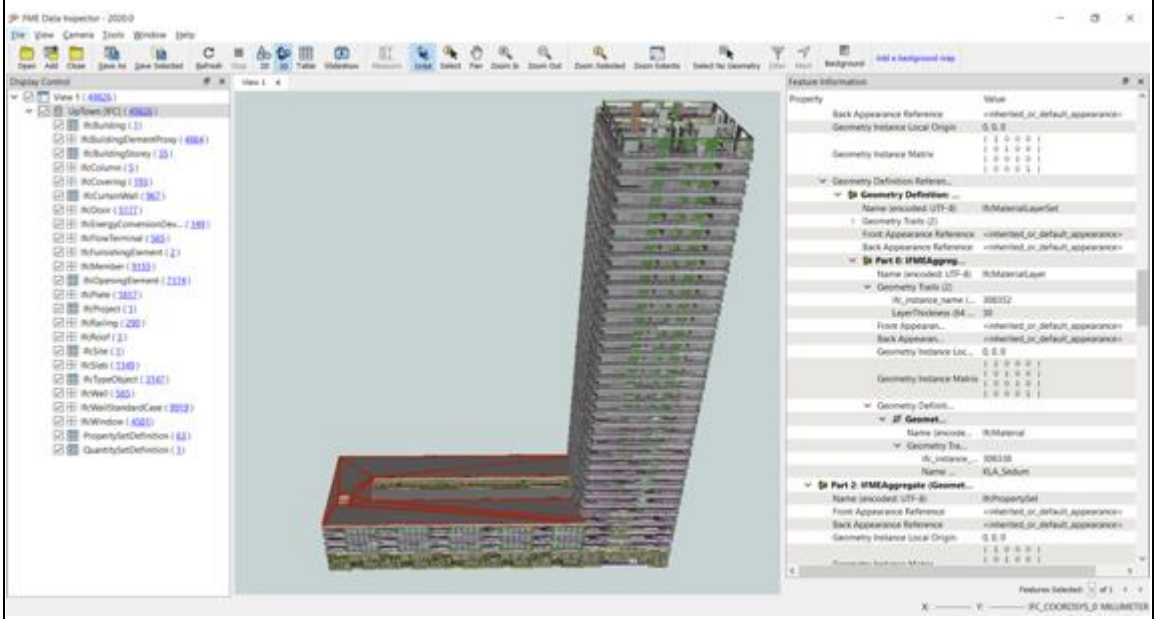


Fig 5. Uptown Element 1 IfcSlab: Geometry snap 3 (geometry trait – attributes3: Materials)

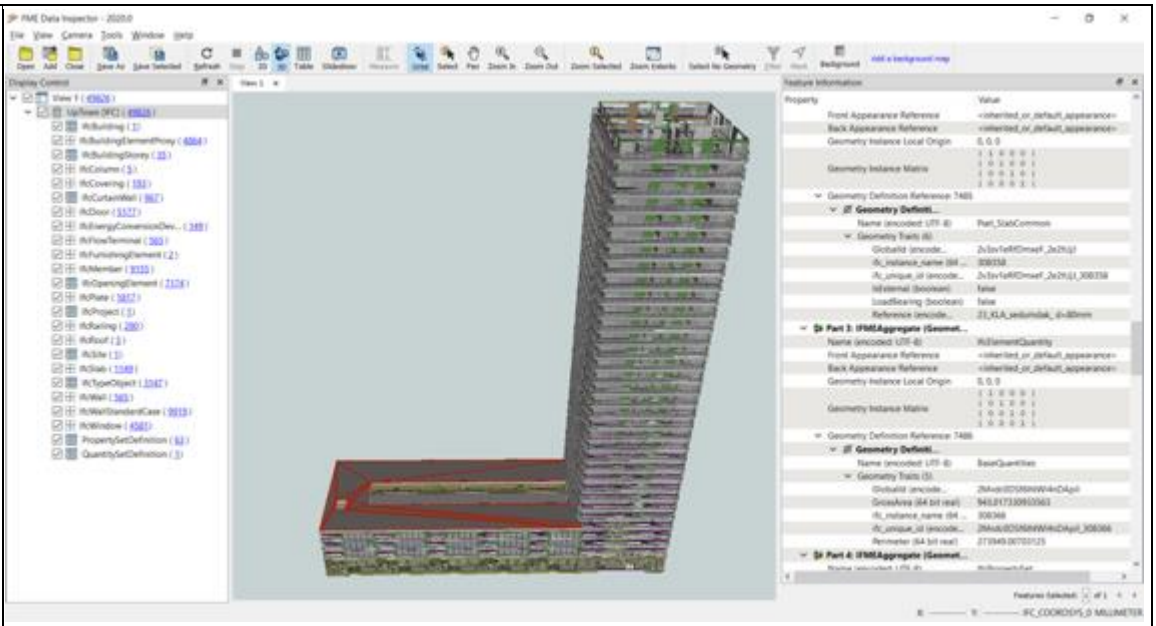


Fig 6. Uptown Element 1 IfcSlab: Geometry snap 4 (geometry trait – attributes4: Name, LoadBearing, Reference, GrossArea, Perimeter)

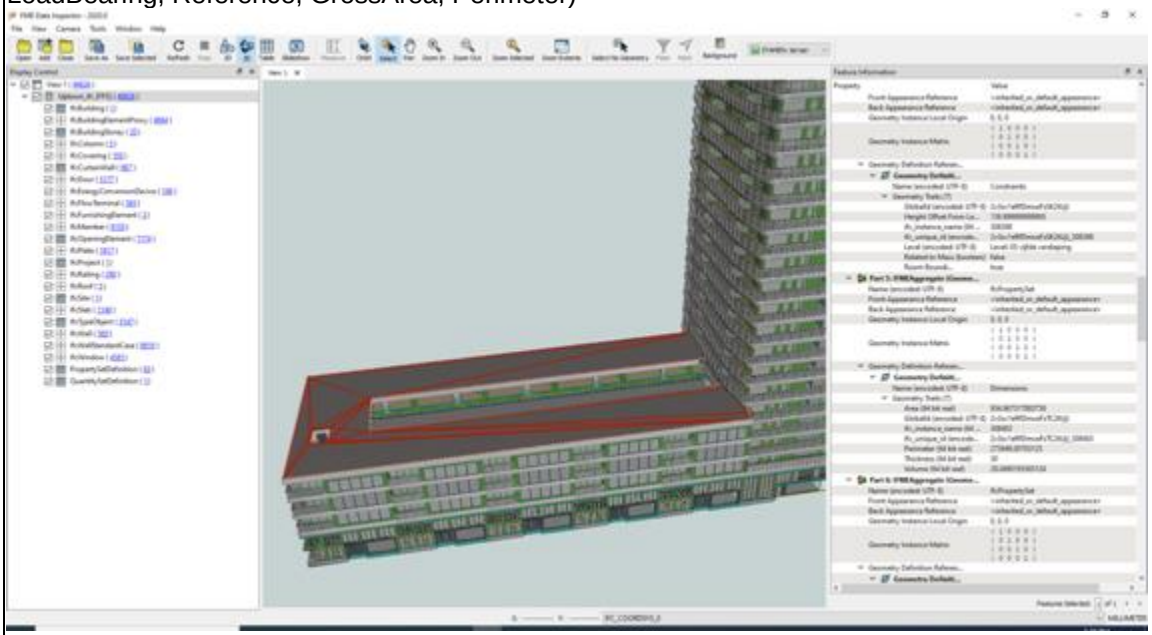


Fig 7. Uptown Element 1 IfcSlab: Geometry snap 5 (geometry aggregate parts 4-6 – traits/attributes: Height Offset, Level, Area, Volume, Perimeter, Thickness)

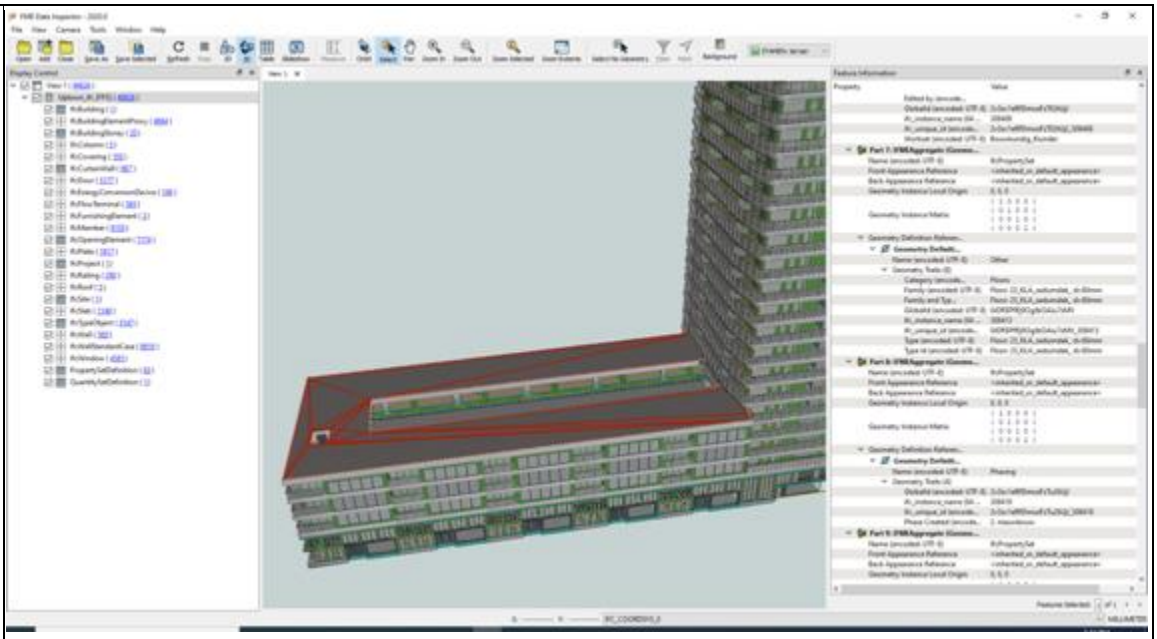


Fig 8. Uptown Element 1 IfcSlab: Geometry snap 6 (geometry aggregate parts 7-9 – traits/attributes: Category, Family, Type, Phase Created)

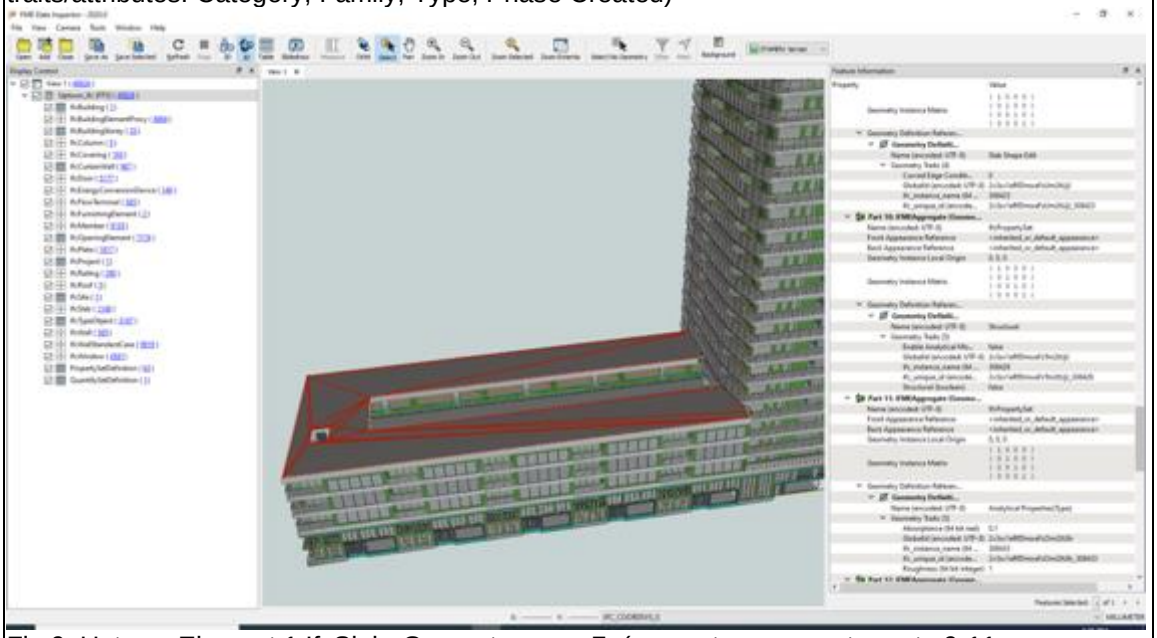


Fig 9. Uptown Element 1 IfcSlab: Geometry snap 7 (geometry aggregate parts 9-11 – traits/attributes: Absorptance, Roughness)

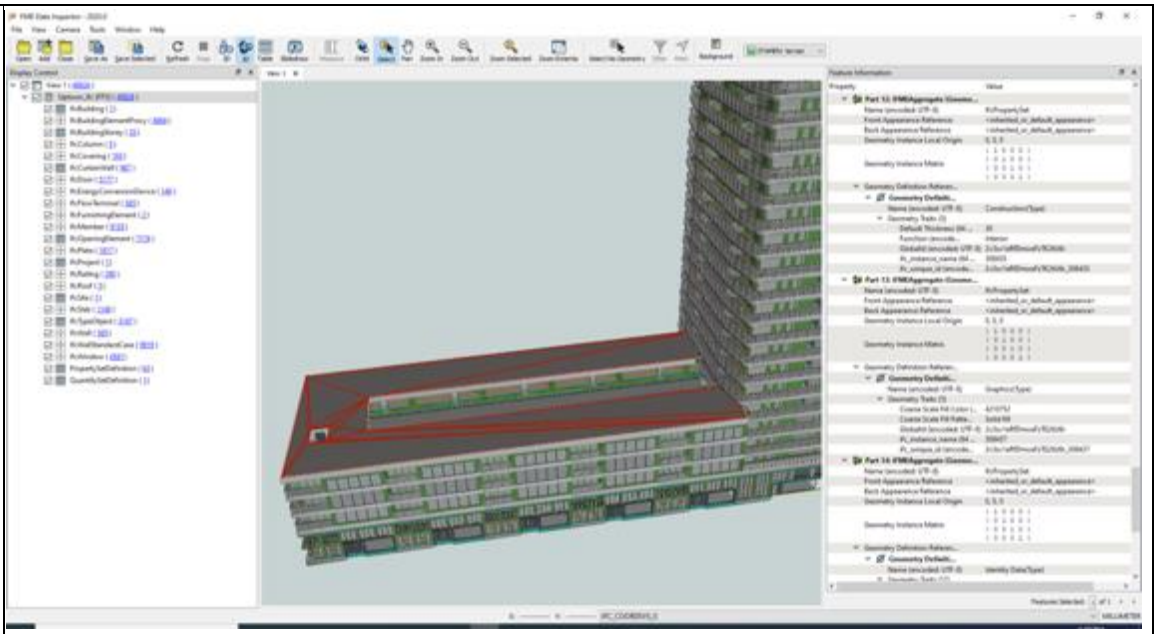


Fig 10. Uptown Element 1 IfcSlab: Geometry snap 8 (geometry aggregate parts 12-14 – traits/attributes: Default Thickness, Function, Appearances)

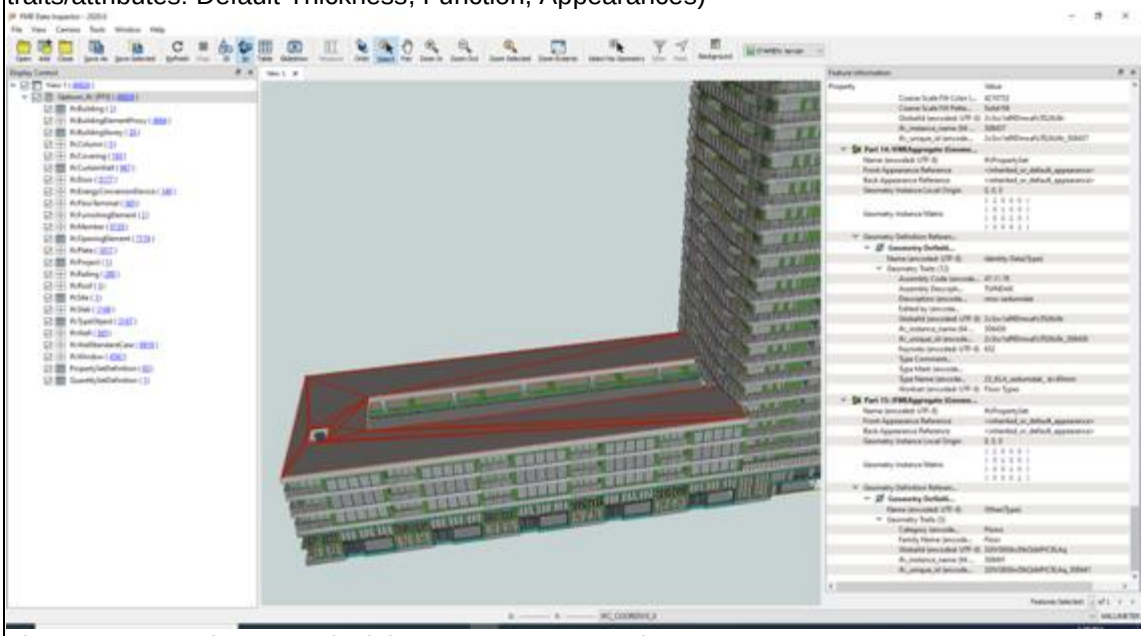


Fig 11. Uptown Element 1 IfcSlab: Geometry snap 9 (geometry aggregate parts 14-15 – traits/attributes: Assembly Code, Assembly Description, Type Name, Workset)

Given the relatively large size of the dataset, for the remainder of the IFC read tests, it was found to be more efficient to do the processing, inspection and queries for Uptown.ifc using an FME feature store cache called FFS - our internal storage and processing format. This involved creating an IFC to FFS default FME workspace. The FME Workspace was used to read from the Uptown.IFC source file and write to an FFS FME cache file. The remainder of the queries were then performed using the FFS cache (UpTown.FFS).

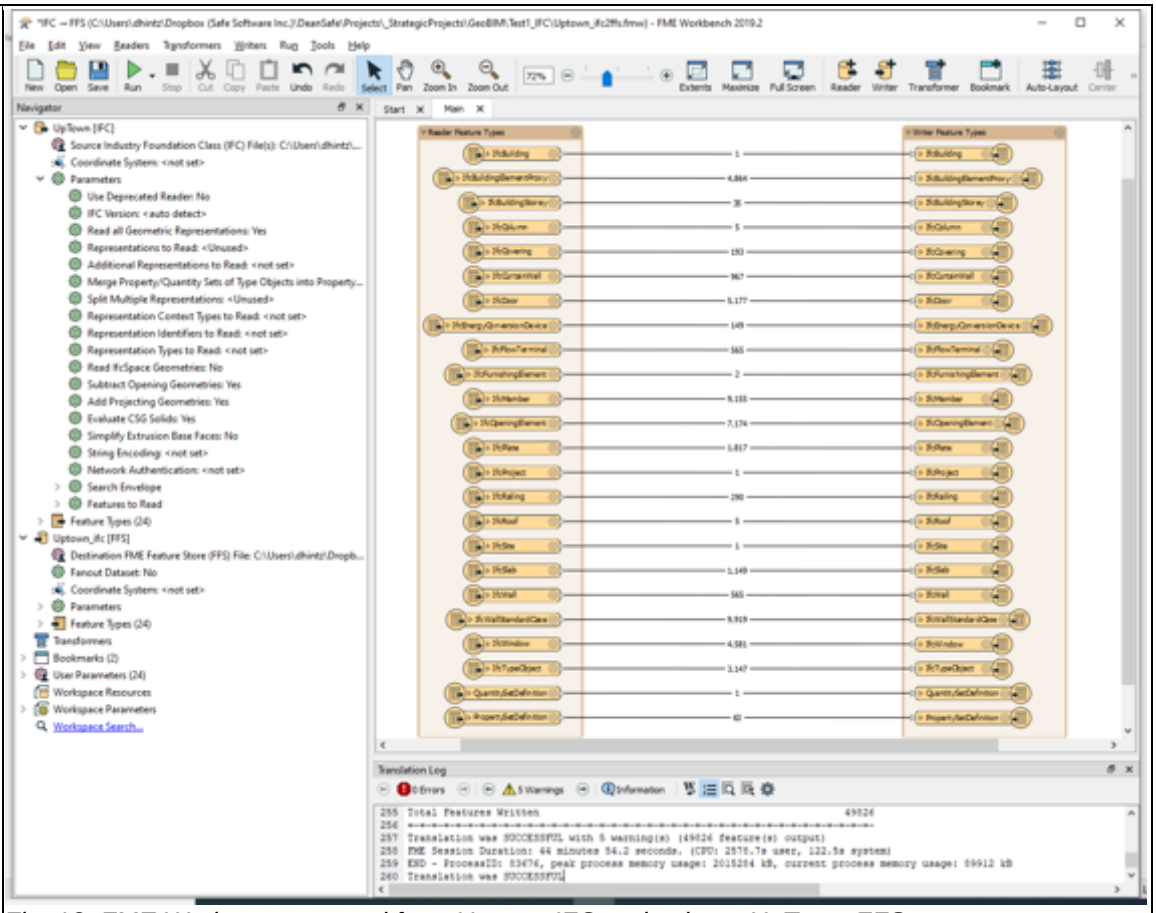


Fig. 12. FME Workspace to read from Uptown.IFC and write to UpTown.FFS

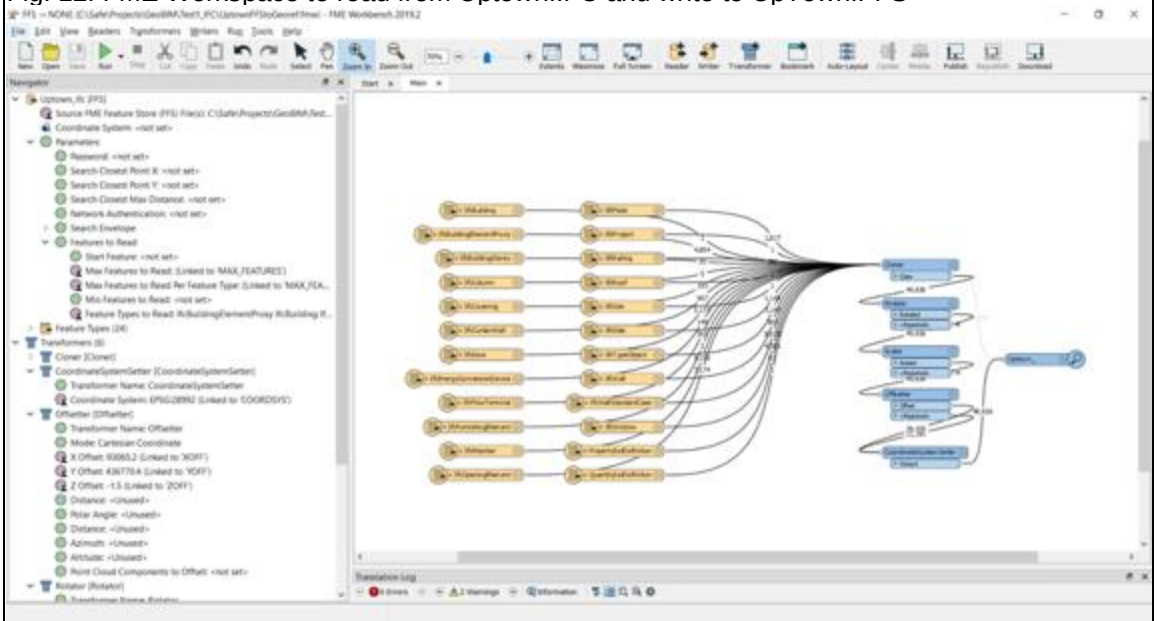


Fig 13. FME Workspace to read from Uptown.FFS, perform georeferencing and display results in FME Data Inspector.

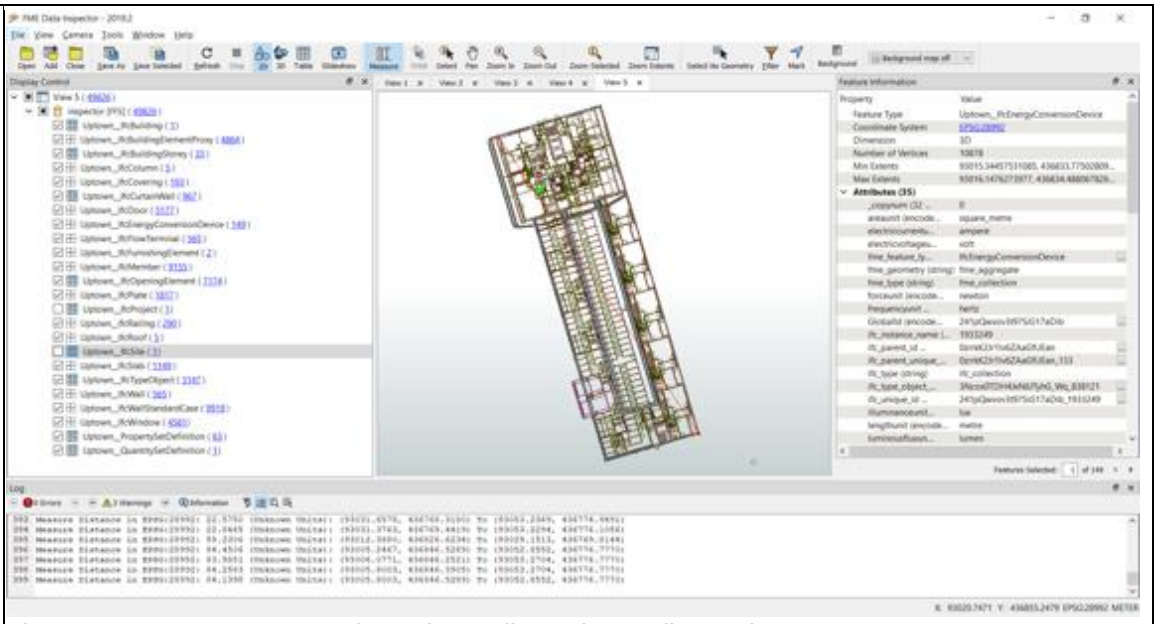


Fig 14. Form 8 Uptown georeferencing & dimensions - diagonal

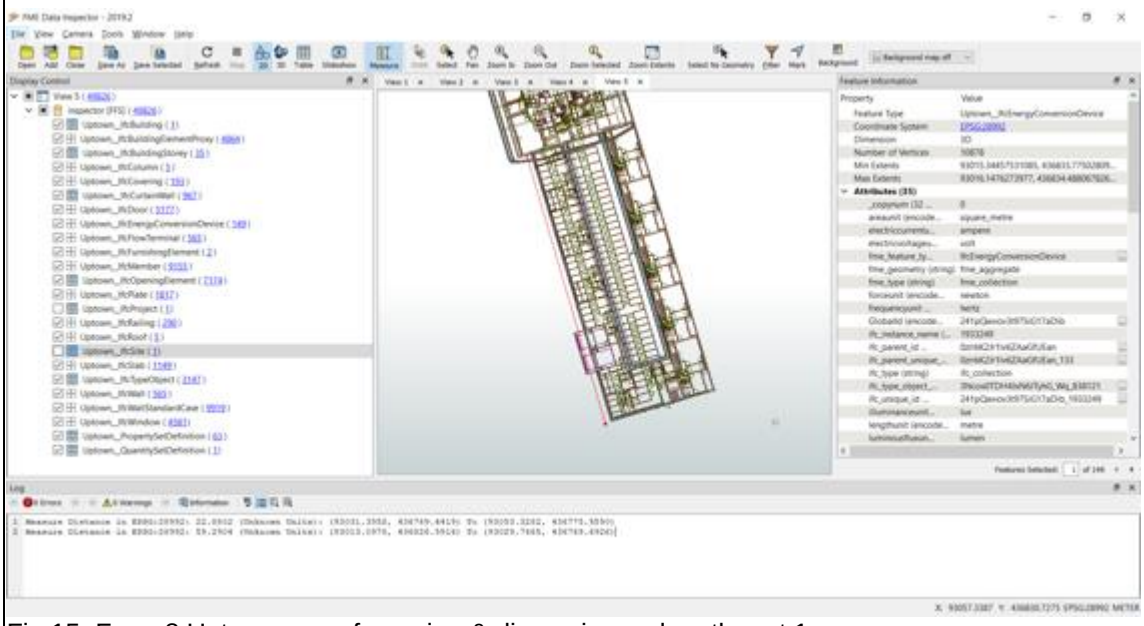


Fig 15. Form 8 Uptown georeferencing & dimensions – length part 1

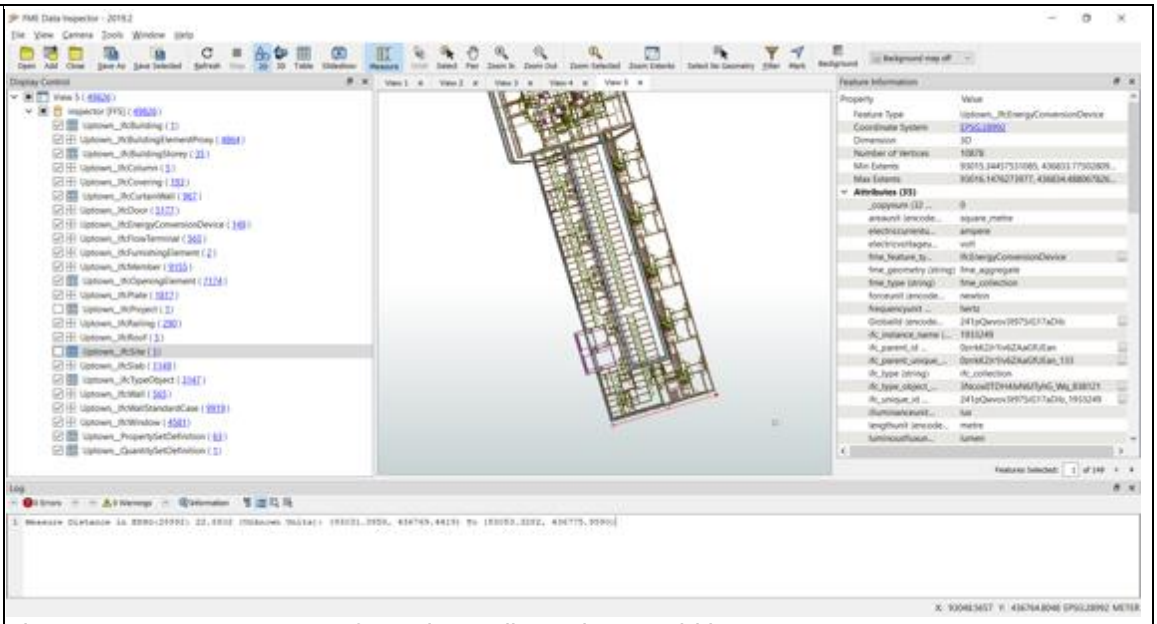


Fig 16. Form 8 Uptown georeferencing & dimensions – width

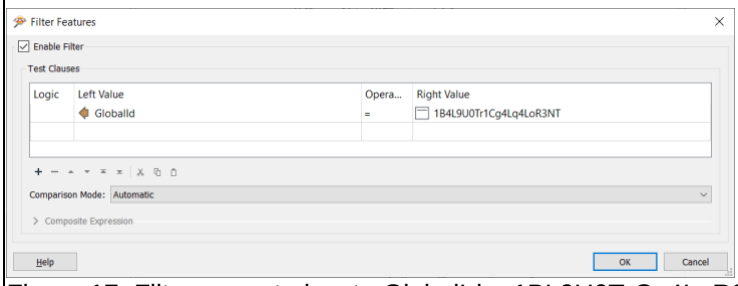


Figure 17. Filter query to locate GlobalId = 1BL9U0TrCg4LoR3NT

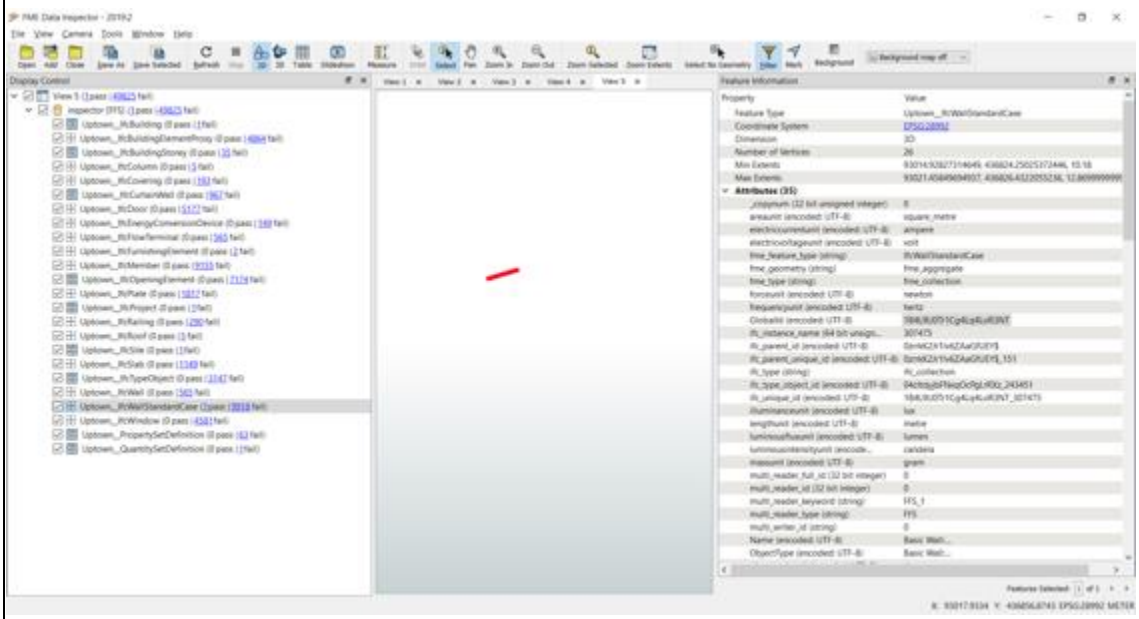


Figure 18. Display of Wall feature with GlobalId = 1BL9U0TrCg4LoR3NT – snap 1

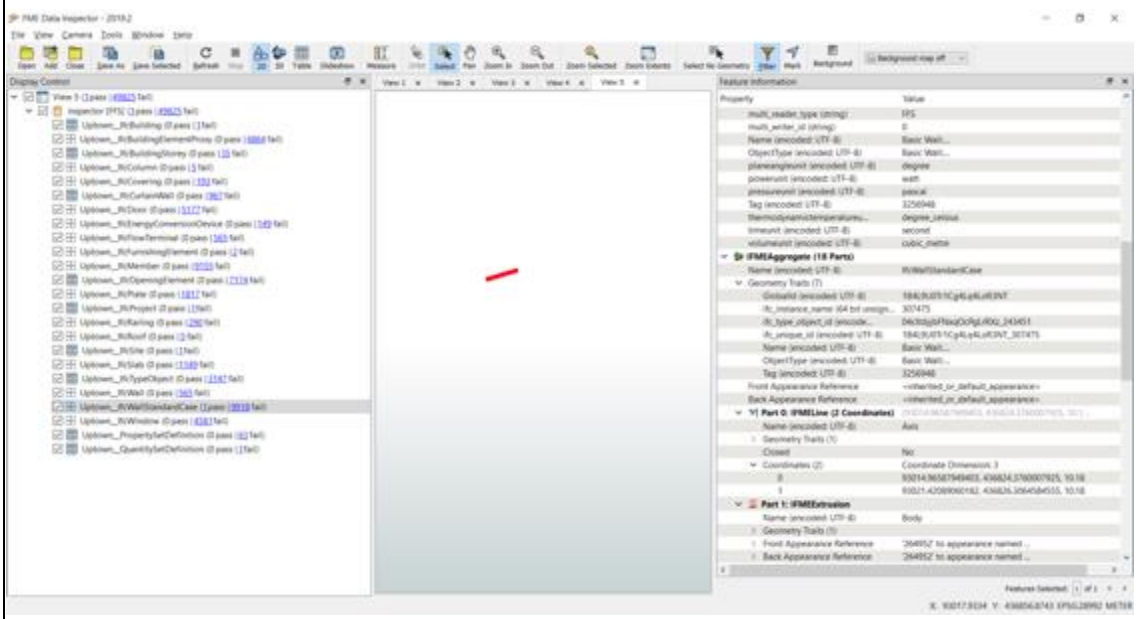


Figure 19. Display of Wall feature with GlobalId = 1BL9U0TrCg4LoR3NT – snap 2

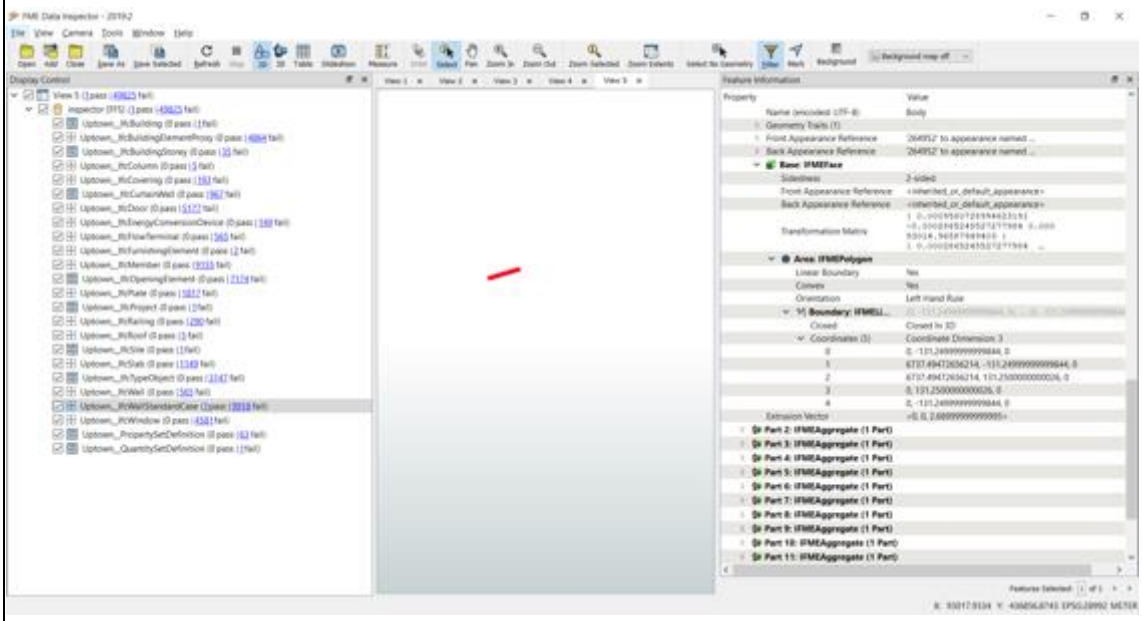


Figure 20. Display of Wall feature with GlobalId = 1BL9U0TrCg4LoR3NT – snap 3

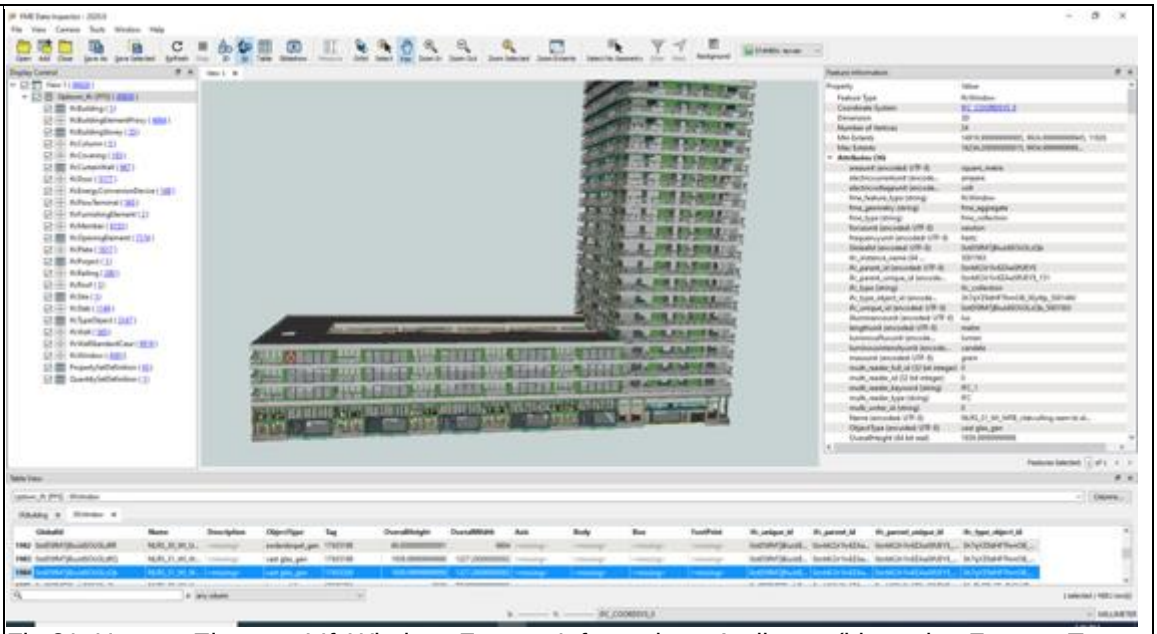


Fig 21. Uptown Element 4 IfcWindow: Feature Information - Attributes (hierarchy: Feature Type, GlobalId, Name, ObjectType)

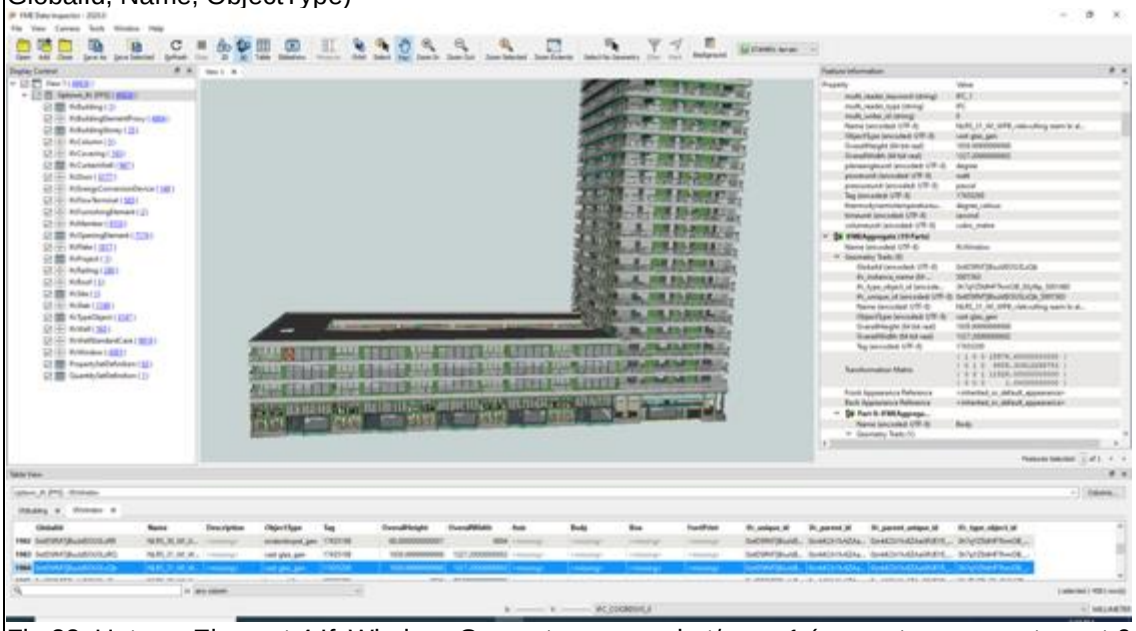


Fig 22. Uptown Element 4 IfcWindow: Geometry screenshot/snap 1 (geometry aggregate part 0 traits / attributes: OverallHeight, OverallWidth, Tag)

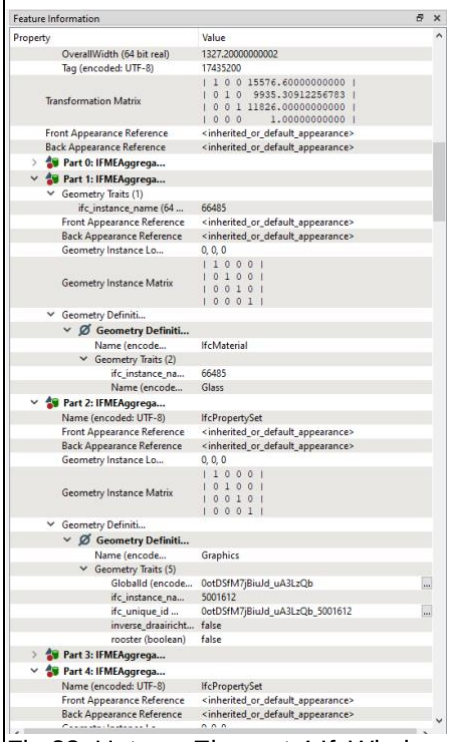


Fig 23. Uptown Element 4 IfcWindow: Geometry snap 2 (geometry aggregate parts 0-4 traits / attributes: Name, Appearances)

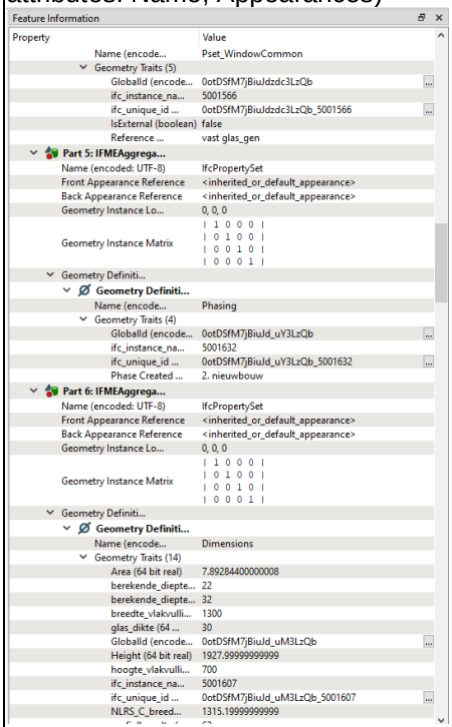


Fig 24. Uptown Element 4 IfcWindow: Geometry snap 3 (geometry aggregate parts 5-6 traits / attributes: Area, Height, Berekende_*, glas_dikte, hoogte_*)

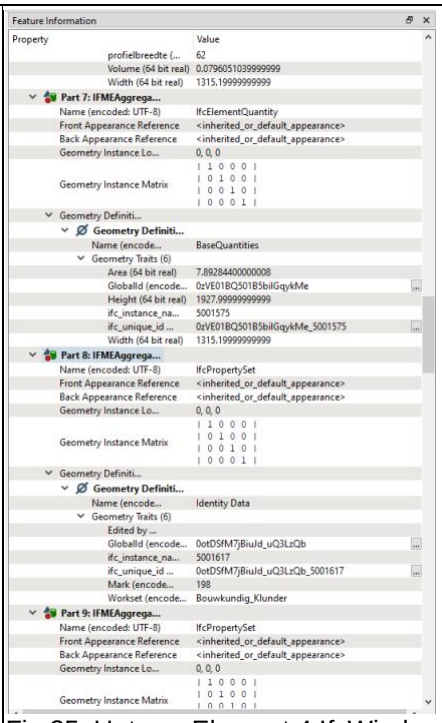


Fig 25. Uptown Element 4 IfcWindow: Geometry snap 4 (geometry aggregate parts 7-9 traits / attributes: Mark, Workset)

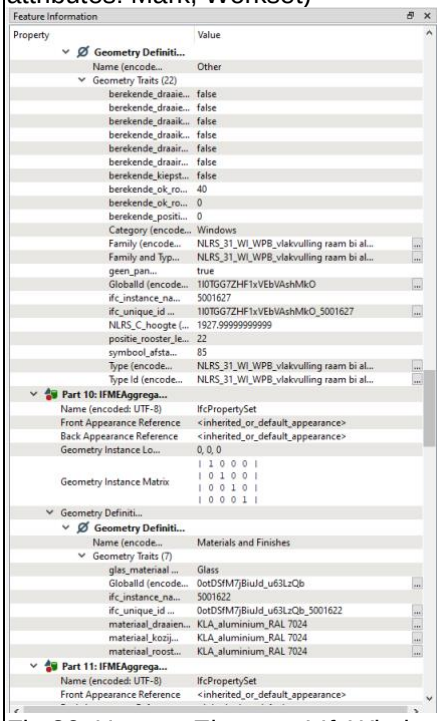


Fig 26. Uptown Element 4 IfcWindow: Geometry snap 5 (geometry aggregate parts 9-11 traits / attributes: berekende_*, Category, Family, NLRS_C_Hoogte*, positive_rooster*, Type, glas_materiaal)

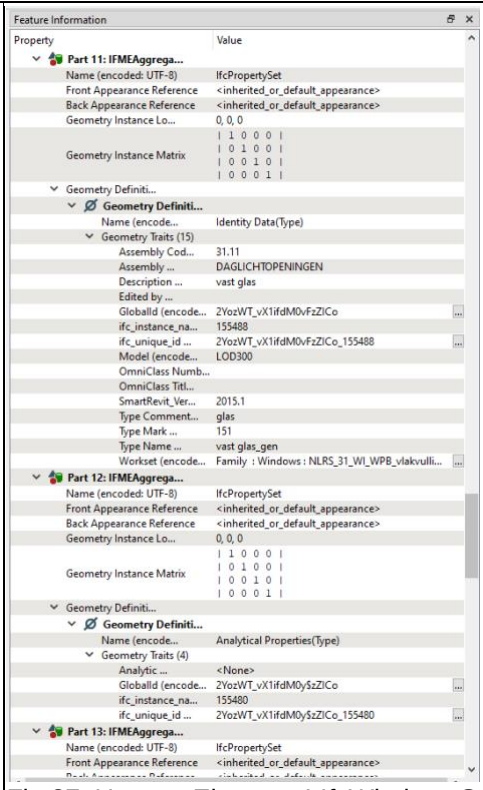


Fig 27. Uptown Element 4 IfcWindow: Geometry snap 6 (geometry aggregate parts 11-13 traits / attributes: Assembly Code, Description, Model, SmartRevit_Version, Type*, Workset, Property Sets)

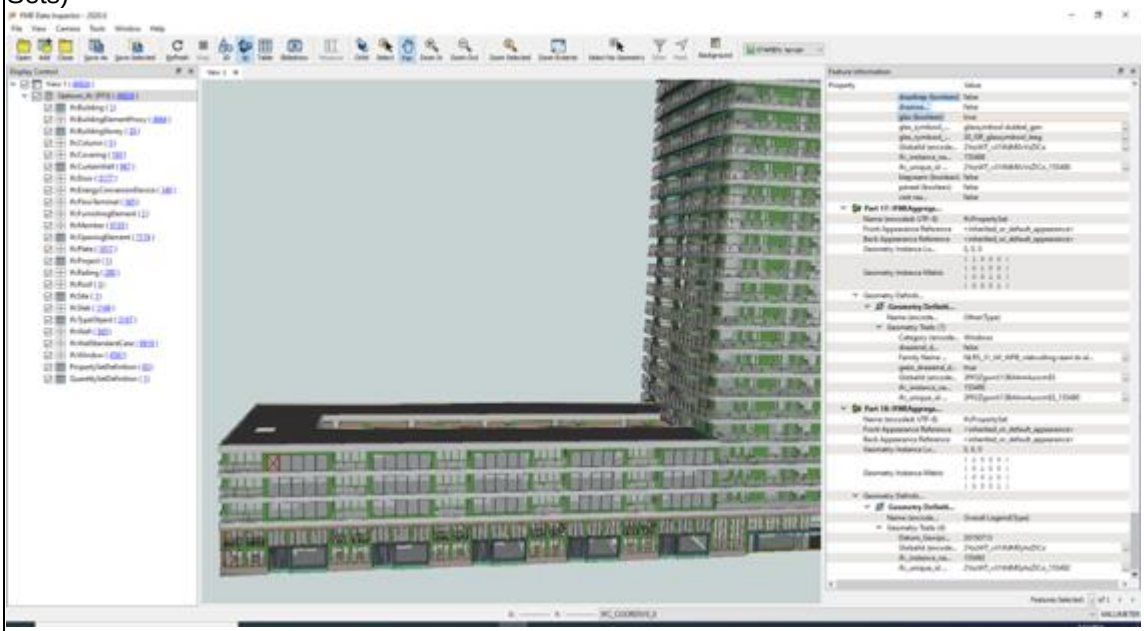


Fig 28. Uptown Element 4 IfcWindow: Geometry snap 7 (geometry aggregate parts 17-18 traits / attributes: glas*, Category, Family Name, Datum, paneel)

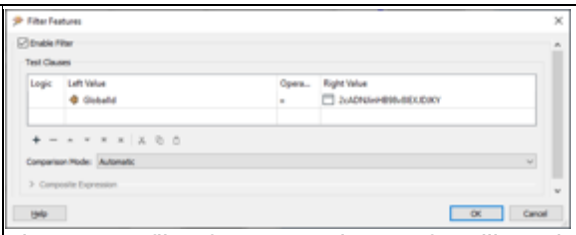


Fig 29. Use filter features to locate IfcRailing GlobalID = 2cADNJinHB98v8IEXJDJKY

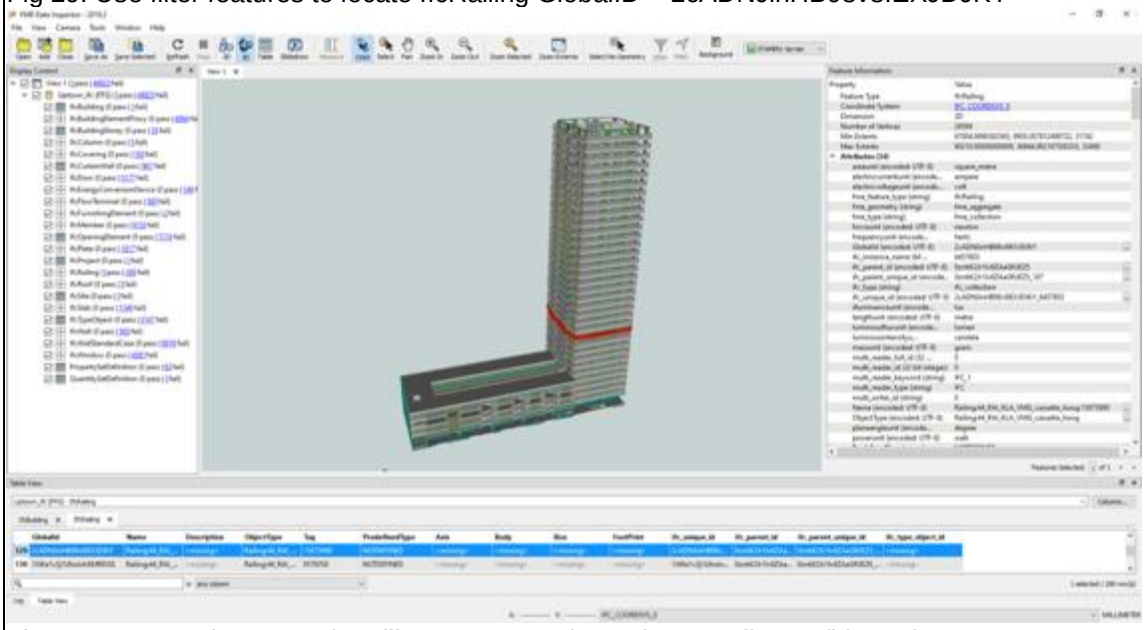


Fig 30. Uptown Element 2 IfcRailing: Feature Information - Attributes (hierarchy: FeatureType, GlobalId, Name, ObjectType)

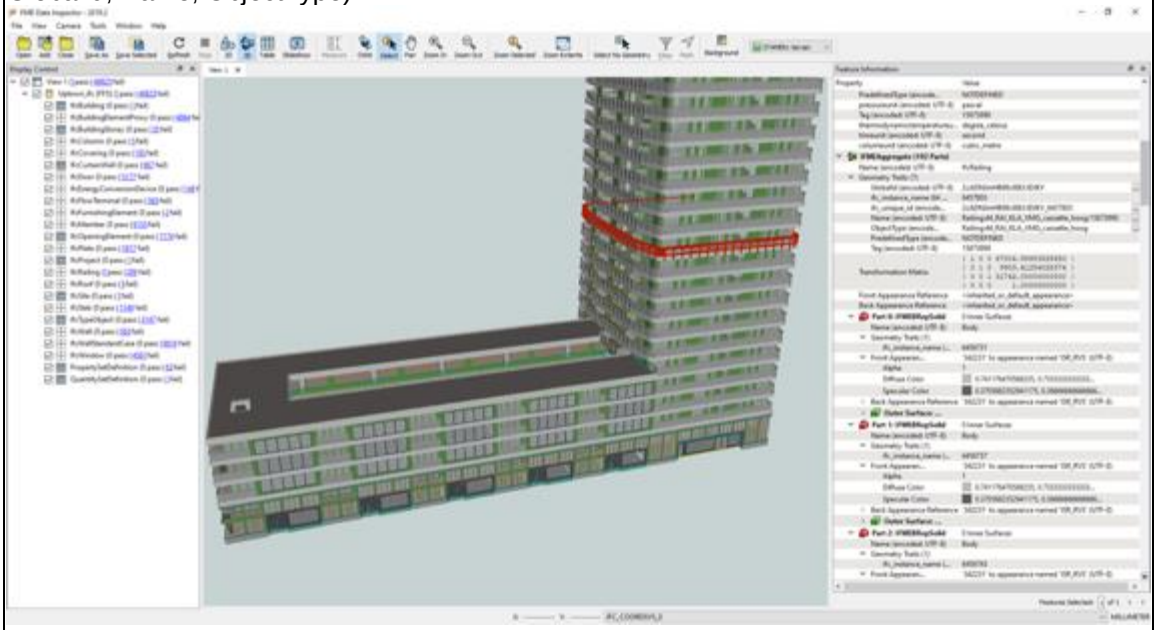


Fig 31. Uptown Element 2 IfcRailing: Geometry screenshot / snap 1 (geometry aggregate parts 0-2 traits / attributes) showing Name, ObjectType, Tag, IDs

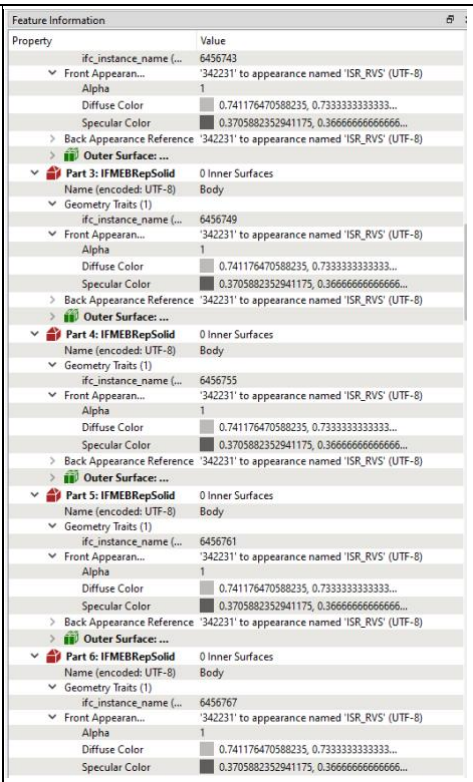


Fig 32. Uptown Element 2 IfcRailing: Geometry snap 2 (aggregate parts 3-6 traits / attributes) showing appearances

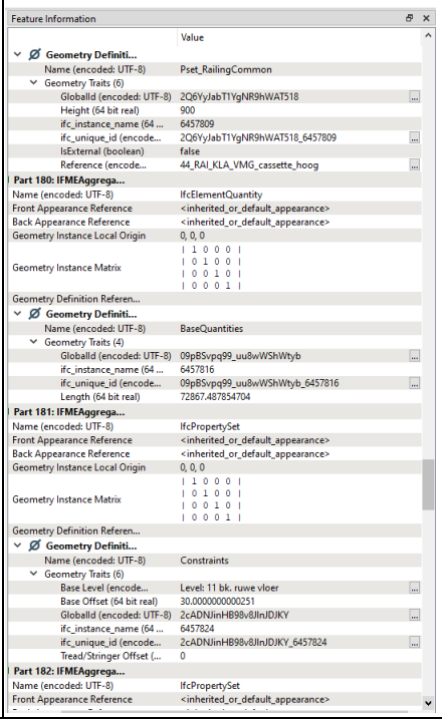


Fig 33. Uptown Element 2 IfcRailing: Geometry snap 3 (aggregate parts 180-182 traits / attributes) showing BaseQuantities, Base Level, Base Offset, Length

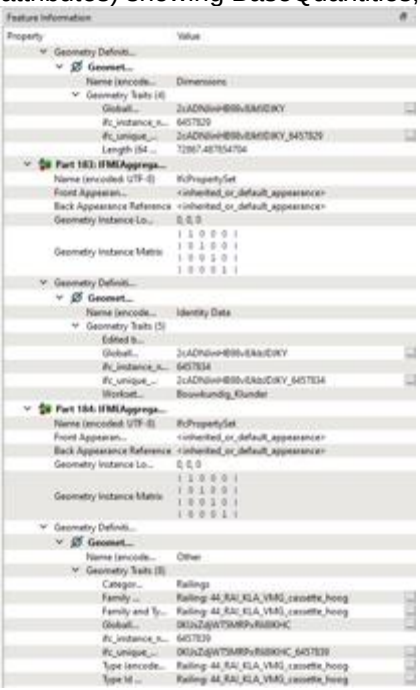


Fig 34. Uptown Element 2 IfcRailing: Geometry snap 4 (aggregate parts 183-184 traits / attributes) showing Workset, Family, Type

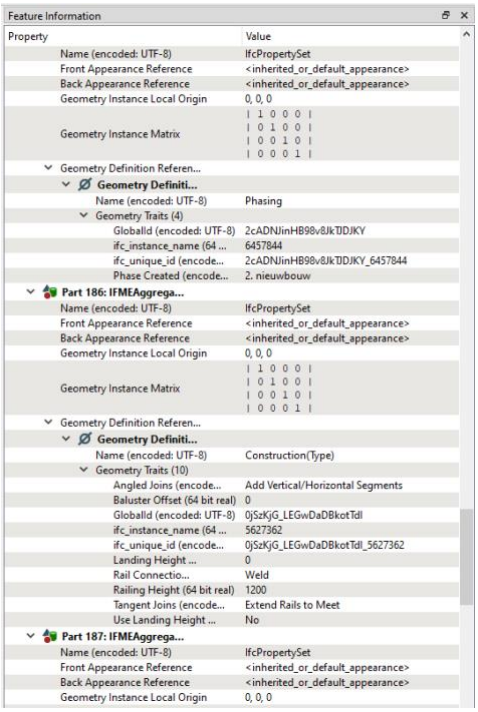


Fig 35. Uptown Element 2 IfcRailing: Geometry snap 5 (aggregate parts 186-187 traits / attributes) showing Name, Phase Created, Construction, Angled Joins, Rail Connection, Railing Height

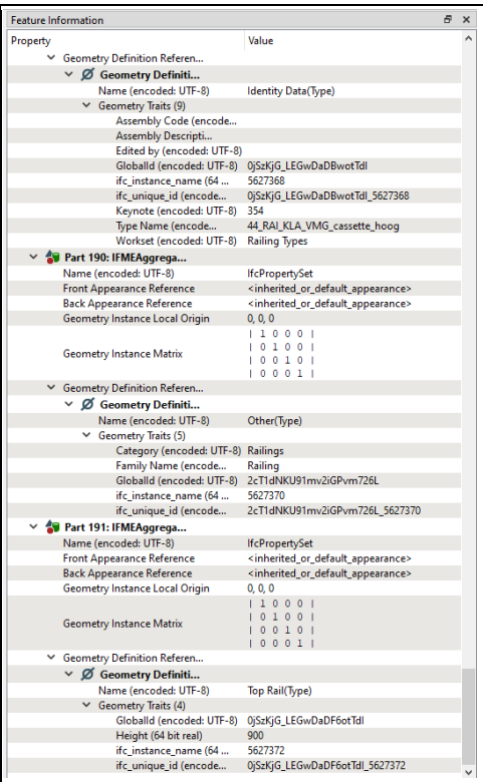


Fig 36. Uptown Element 2 IfcRailing: Geometry snap 6 (aggregate parts 186-187 traits / attributes) showing Asssembly Code, Description, Keynote, Type Name, Workset, Category, Family, Height

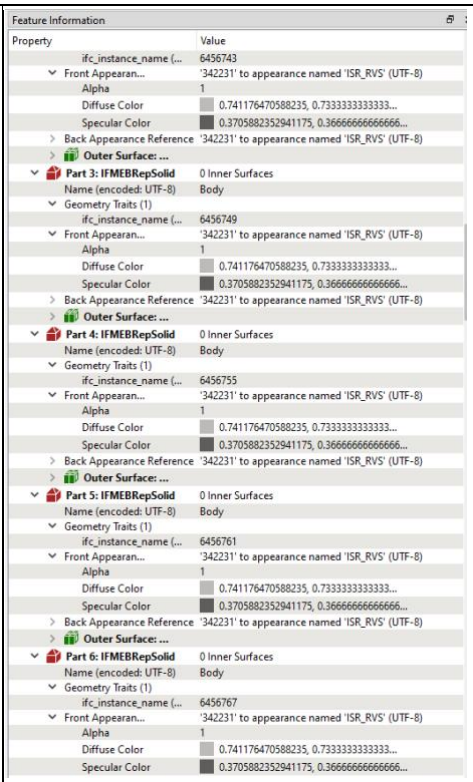


Fig 37. Uptown Element 2 IfcRailing: Geometry snap 2 (aggregate parts 3-6 traits / attributes) showing appearances

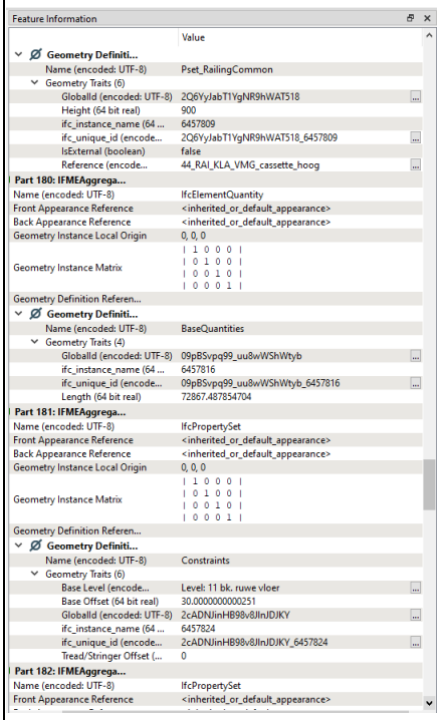


Fig 38. Uptown Element 2 IfcRailing: Geometry snap 3 (aggregate parts 180-182 traits / attributes) showing BaseQuantities, Base Level, Base Offset, Length

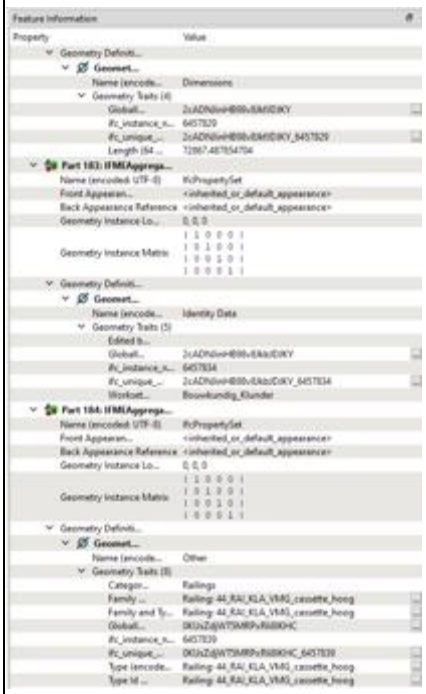


Fig 39. Uptown Element 2 IfcRailing: Geometry snap 4 (aggregate parts 183-184 traits / attributes) showing Workset, Family, Type

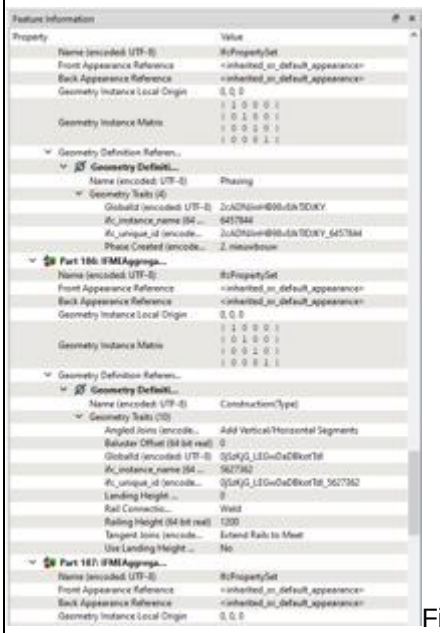


Fig 40. Uptown Element 2 IfcRailing: Geometry snap 5 (aggregate parts 186-187 traits / attributes) showing Name, Phase Created, Construction, Angled Joins, Rail Connection, Railing Height

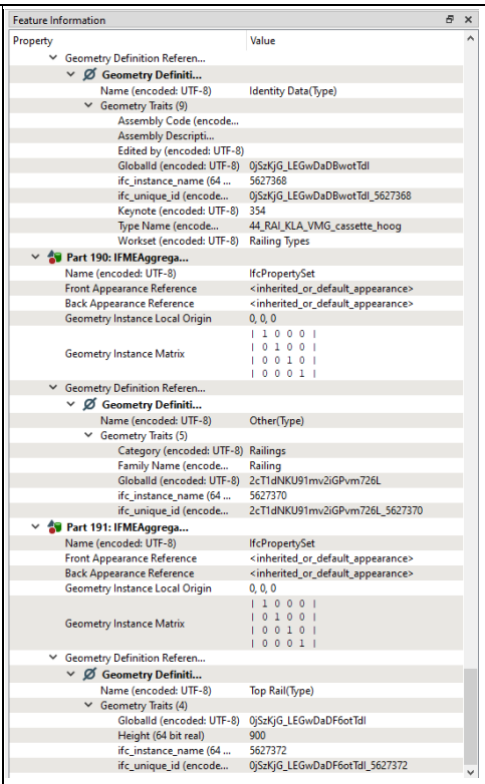
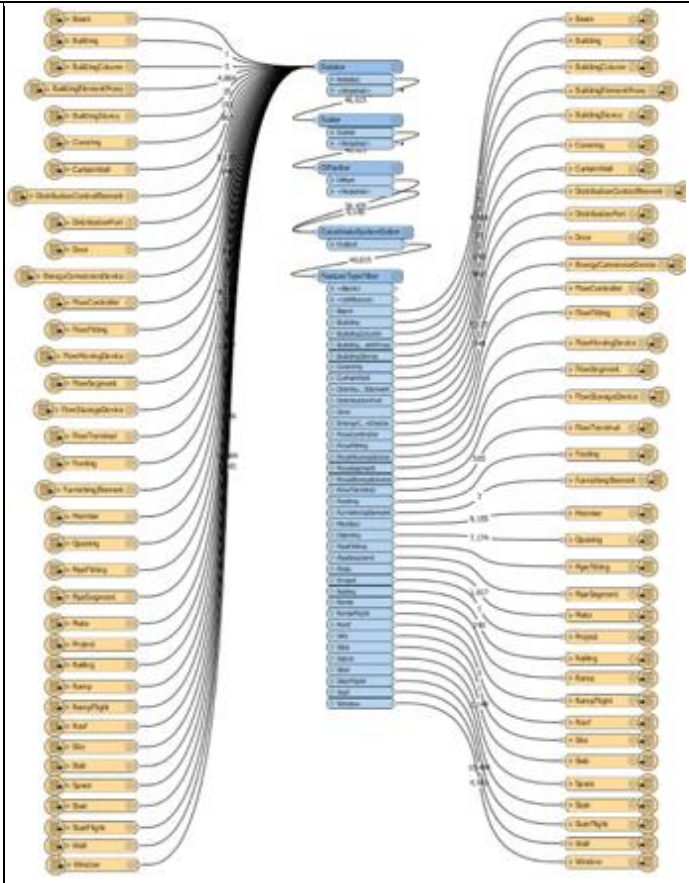


Fig 41. Uptown Element 2 IfcRailing: Geometry snap 6 (aggregate parts 186-187 traits / attributes) showing Asssembly Code, Description, Keynote, Type Name, Workset, Category, Family, Height



IFC 42. IFC with Data Views to FFS workspace

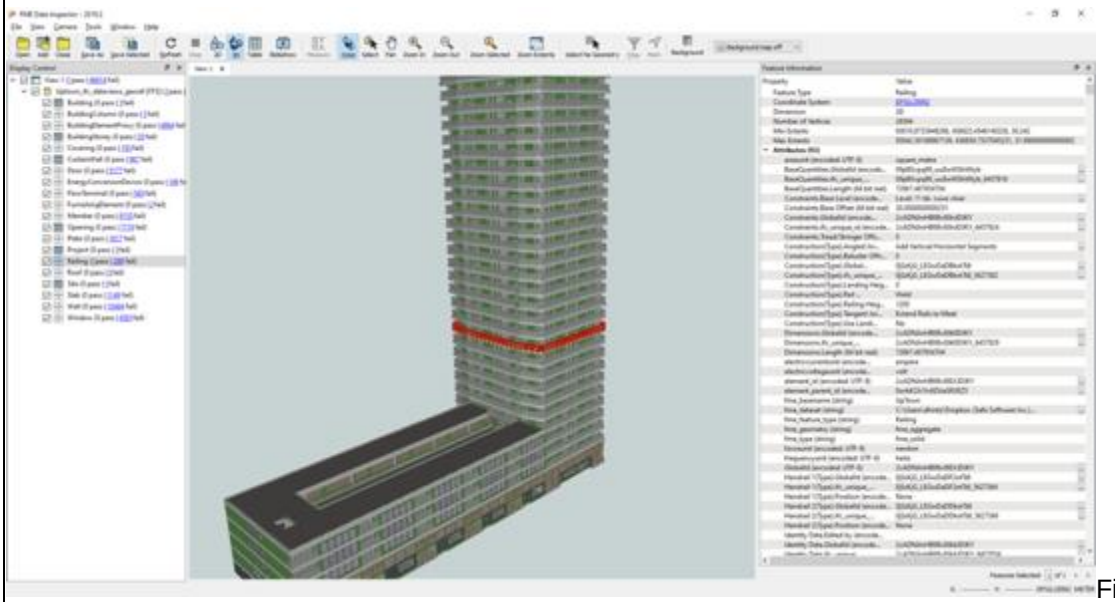


Fig 43. Uptown Element 4 IfcRailing: Feature Information – Attributes (page 1) using IFC with Data Views reader cached to FFS. Note the property sets are added to the attribute schema.

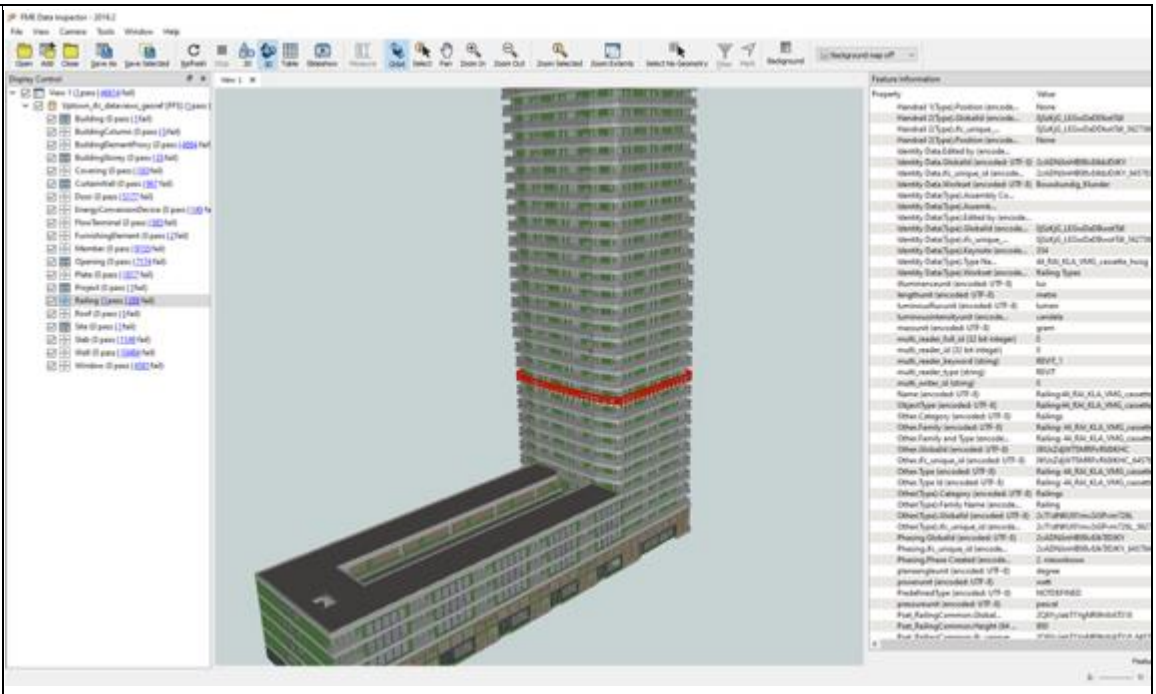


Fig 44. Uptown Element 4 IfcRailing: Feature Information – Attributes (page 2) using IFC with Data Views reader cached to FFS. Note the property sets are added to the attribute schema.

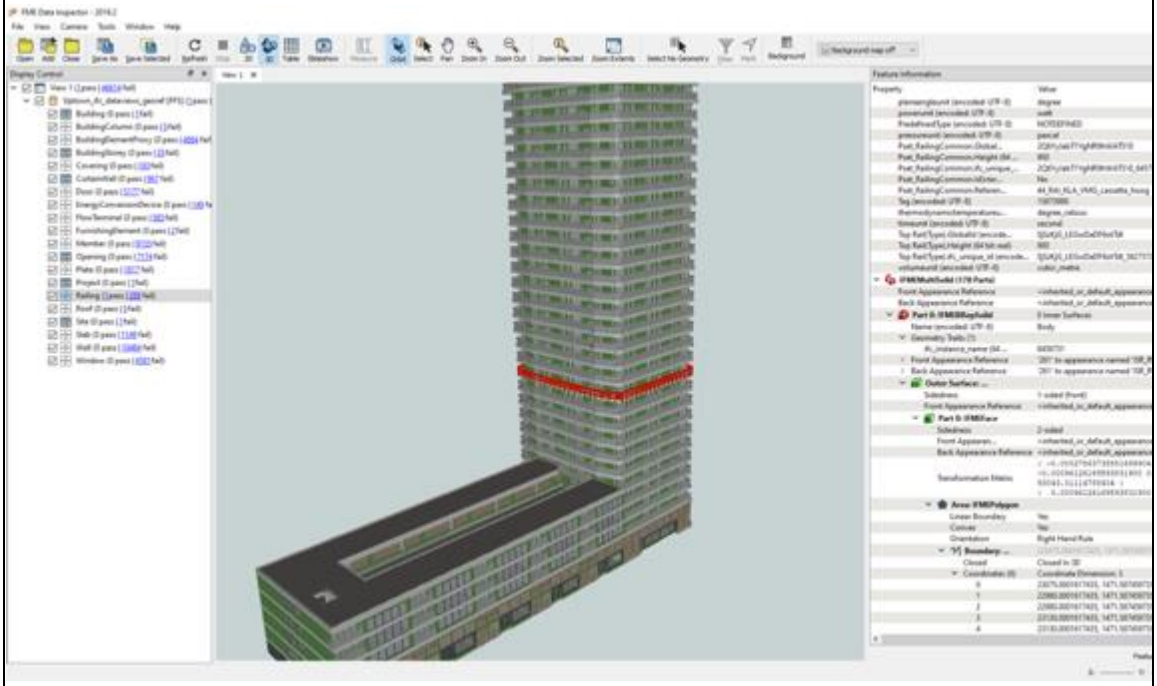
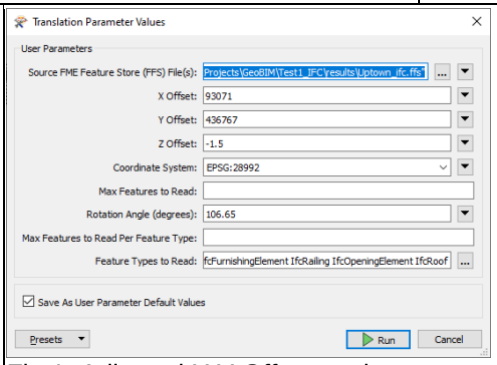
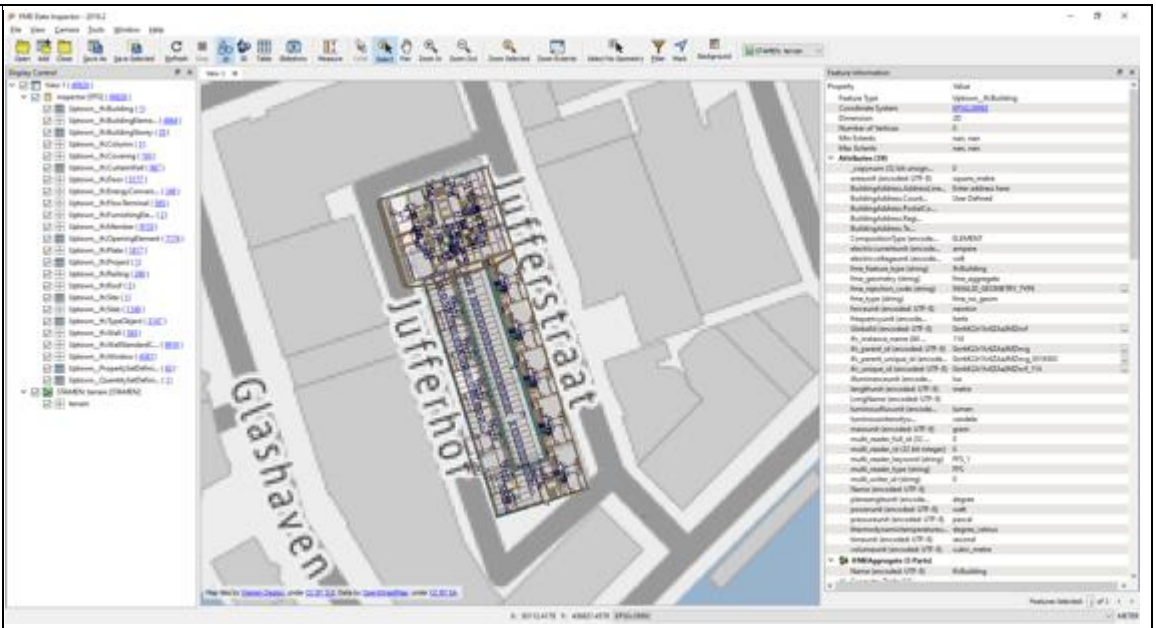
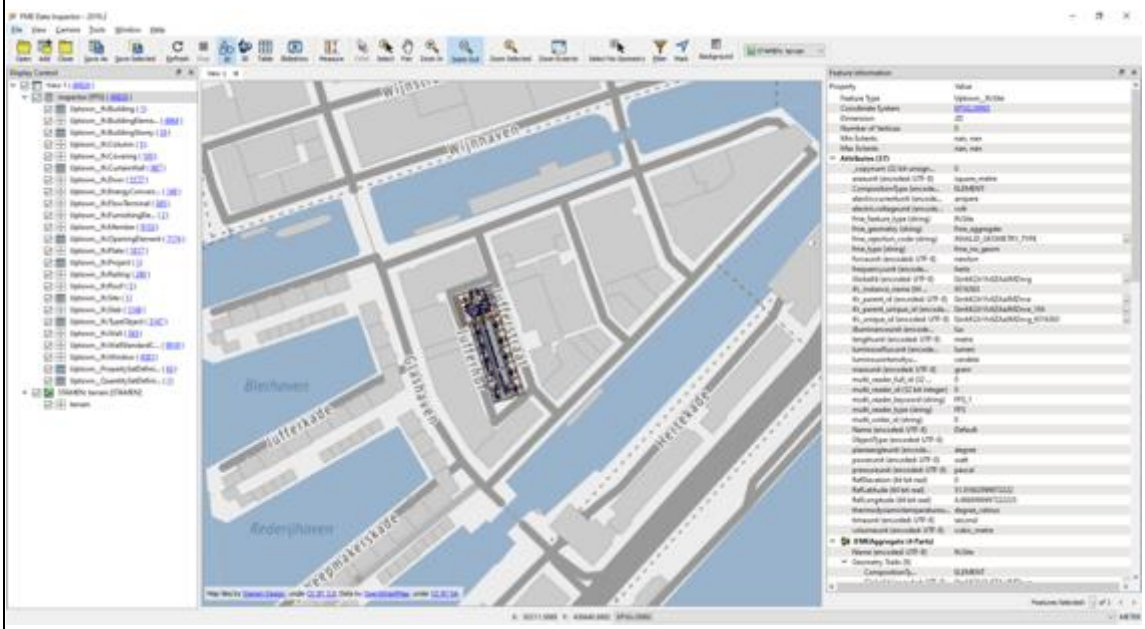


Fig 45. Uptown Element 4 IfcRailing: Feature Information – Attributes (page 3) using IFC with Data Views reader cached to FFS. Note the property sets are added to the attribute schema.

	30.2) short comments to the previous question (optional)	Note that in the screen shots below, comparison with GeoBIM website screenshots can be somewhat challenging since the properties, relationships and attributes are displayed differently. What FME calls 'Attributes' seem to correspond to a lot of the relationship or hierarchy information shown on the website (ids and classification). Also, for much of what GeoBIM calls 'attributes', with FME this information is stored as traits within the geometry aggregates (materials, property sets, appearances etc). The following screenshots simply page through all the attributes, geometries and traits available for the Elements in question using the Feature Information window in FME Data Inspector. Please contact the author if there are any questions on how to interpret these results. Note that free demo licenses of FME are available for educational and research purposes, so that is always an option for anyone who wishes to test this for themselves from https://www.safe.com/free-fme-licenses/
2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	31.2) short comments to the previous question (optional)	As mentioned above, it is possible to view in 3D using FME Data Inspector. In general, the machine used should have 16GB RAM and a dedicated video card. However, given the size of the Uptown.ifc, the model takes some time to load directly in Data Inspector and can encounter delays when zooming or changing display modes. Because of this we found better performance when using an FME workspace created in FME Workbench to convert the IFC to FME FFS file and then use Data Inspector to display that.
	32.1) Is it possible to view the model in 2D?	Yes
	32.2) short comments to the previous question (optional)	As mentioned above, it is possible to view in 3D using FME Data Inspector. In general, the machine used should have 16GB RAM and a dedicated video card. However, given the size of the Uptown.ifc, the model takes some time to load directly in Data Inspector and can encounter delays when zooming or changing display modes. Because of this we found better performance when using an FME workspace created in FME Workbench to convert the IFC to FME FFS file and then use Data Inspector to display that. 2D display works ok. Background map only visible in 2D. Also, we needed to flip to 2D mode to run the filter queries.
Querying	34.1) Is it possible to query the model and the attributes?	The answers are the same I gave during the test with Myran.ifc
	34.1.2) Attach screenshots	 Fig 1. Adjusted X,Y Offsets to improve georeferencing relative to Stamen background map (OSM).

		 Fig 2. Display of UpTown.ifc in Data Inspector using 2D view mode showing georeferencing relative to Stamen background map (IfcBuilding attributes).  Fig 3. Display of UpTown.ifc in Data Inspector using 2D view mode showing georeferencing relative to Stamen background map – zoomed out (IfcSite attributes).
	34.2) short comments to the previous question (optional)	Georeferening relative to background maps - this was adjusted for viewing purposes. OSM is like based on web mercator and thus not necessarily very accurate in terms of real world coordinates.

FME Desktop 2019.2 build 19800 - Windows 10 Home
Proprietary software
Extract/Transform/Load
Level of tester expertise: 3 - Expert user (you know very well the technical details and tricks)

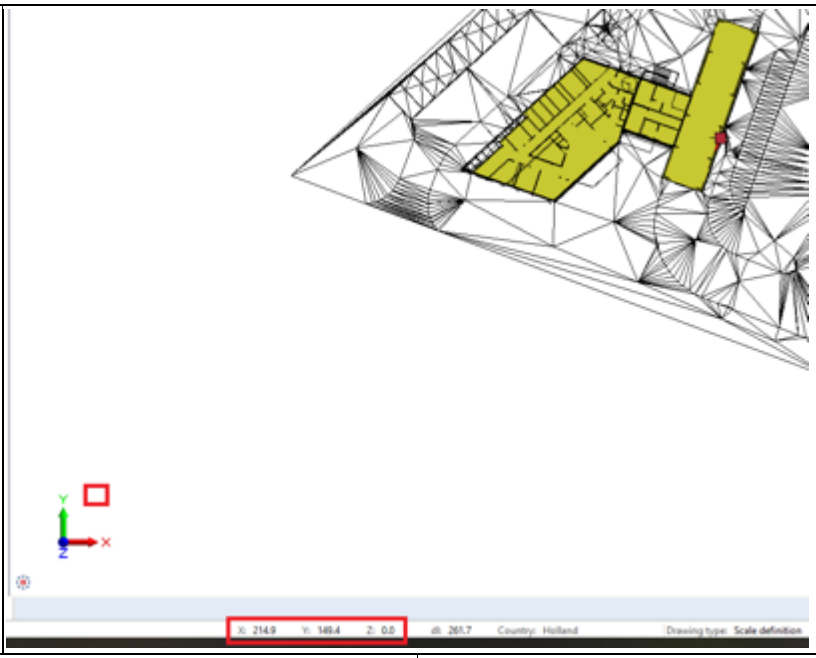
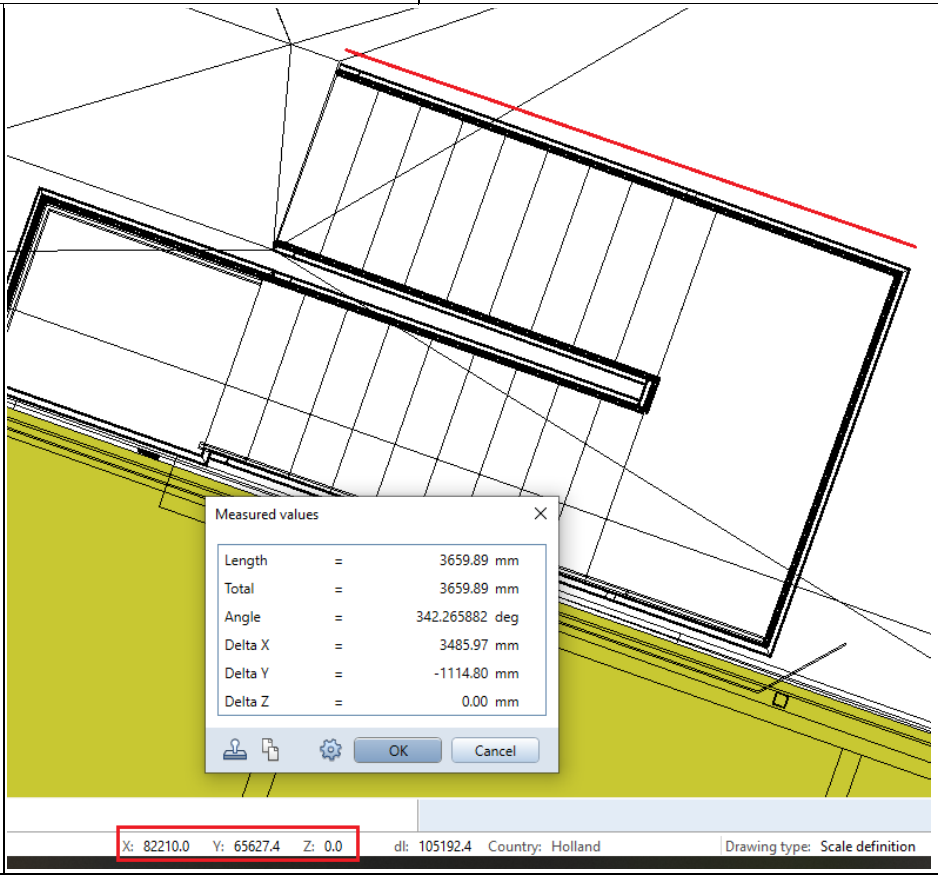
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	36) How long does it take for the data to be exported to IFC?	1-5 minutes
	36.1) Comments to the previous question (optional)	UpTown.ifc to UpTown_fme.ifc translation completed in 1 minute and 3 seconds. Translation completed without any errors. There were a number of warnings related to inappropriate geometry type. For example: "WARN |IFC: Unable to write a geometry of type 'IFMEArc' with representation identifier 'Body' WARN |IFC: Unable to write a geometry of type 'IFMELine' with representation identifier 'Body'" Most likely these feature types should be either mult-surface or solids not lines or arcs. FME could use transformers to detect and correct these problems. It may be that the geometry name = 'Bday' is incorrect for this feature type and this should be changed to something else that does allow for lines such as 'Annotation' or 'Footprint'. Full translation logs, FME workspaces and Uptown_fme.ifc export are available at https://3d.bk.tudelft.nl/projects/geobim-benchmark/linkedfiles/T1_FMEworkspaces.zip

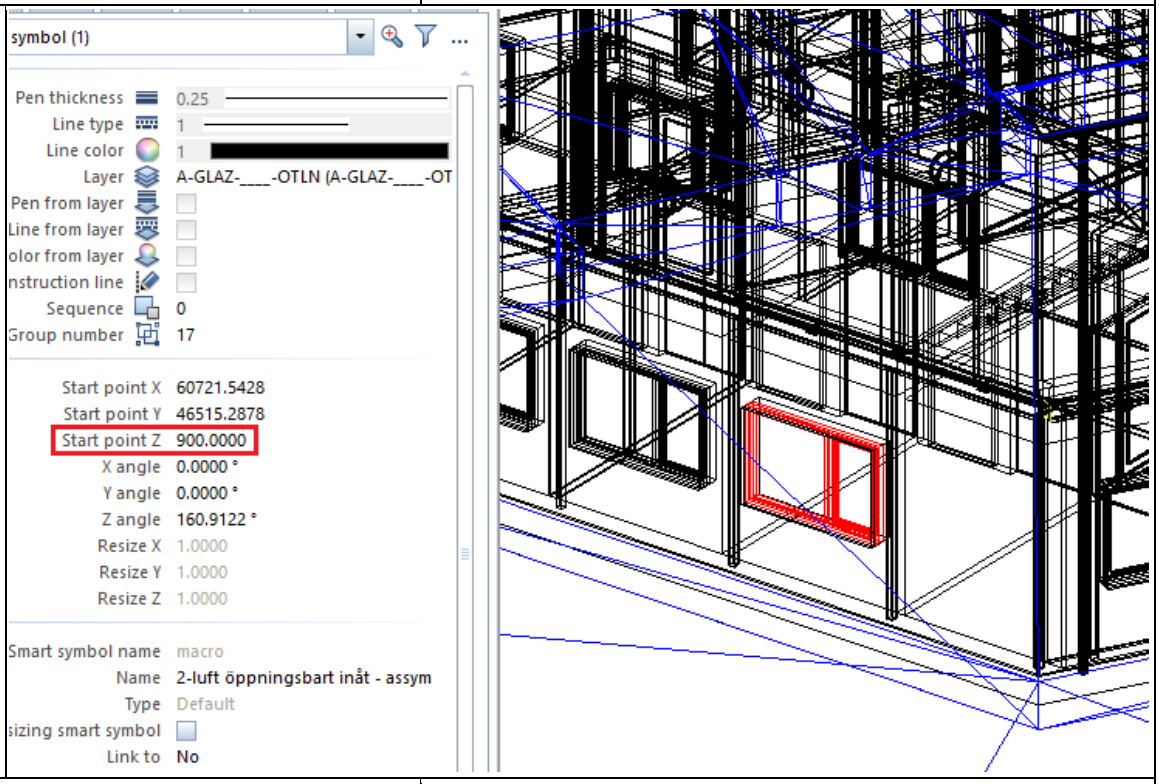
Allplan 2020 - Windows 10 Home
Proprietary software
BIM
Level of tester expertise: 1 - Very beginner user (it is nearly the first time you use it)

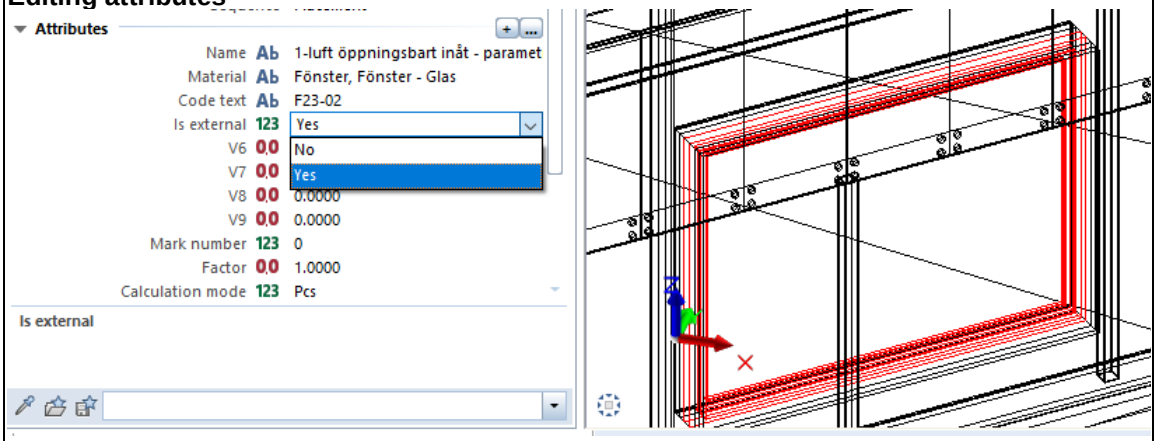
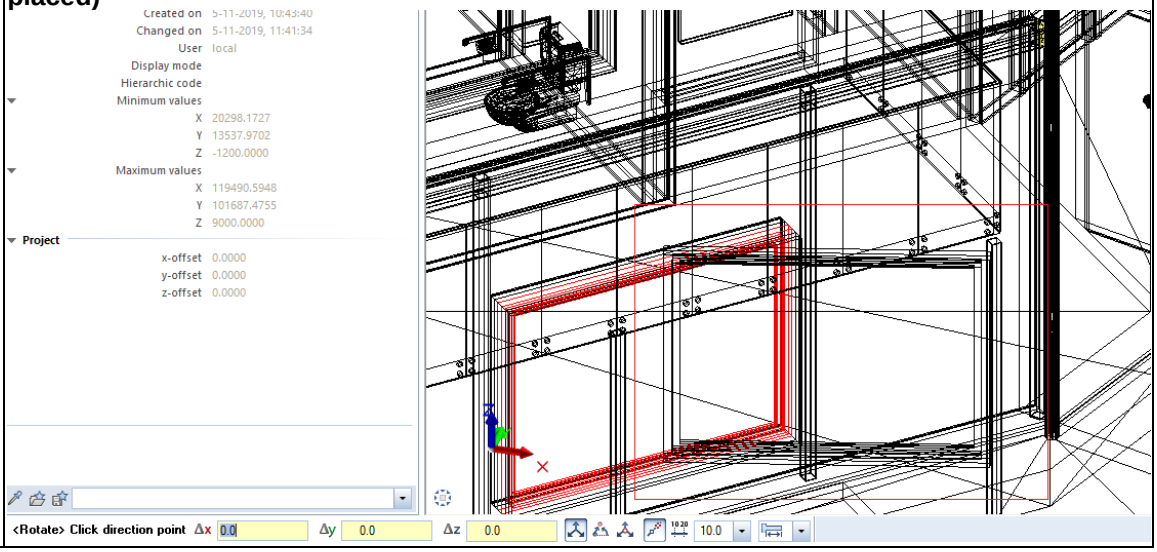
Allplan

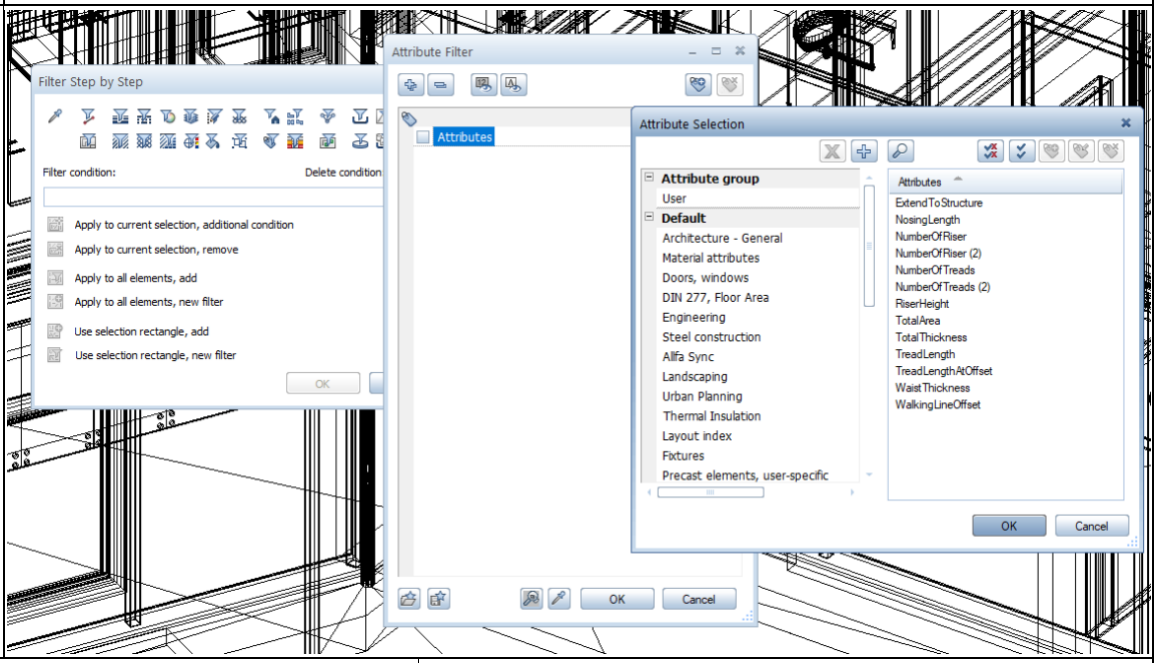
Software	Software Name [version]	**Allplan [2020]**		Software house		**/-**	
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	self-built desktop (2013)	Windows 10 Home 64-bit	Intel i5-4570 @ 3.20GHz	AMD Radeon HD 7800 Series	8 GB	120 GB	20 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	2014-05-07	buildingSMART International IFC Certification 2.0	certified in (date)	2013-04-16	buildingSMART International IFC Certification 2.0	

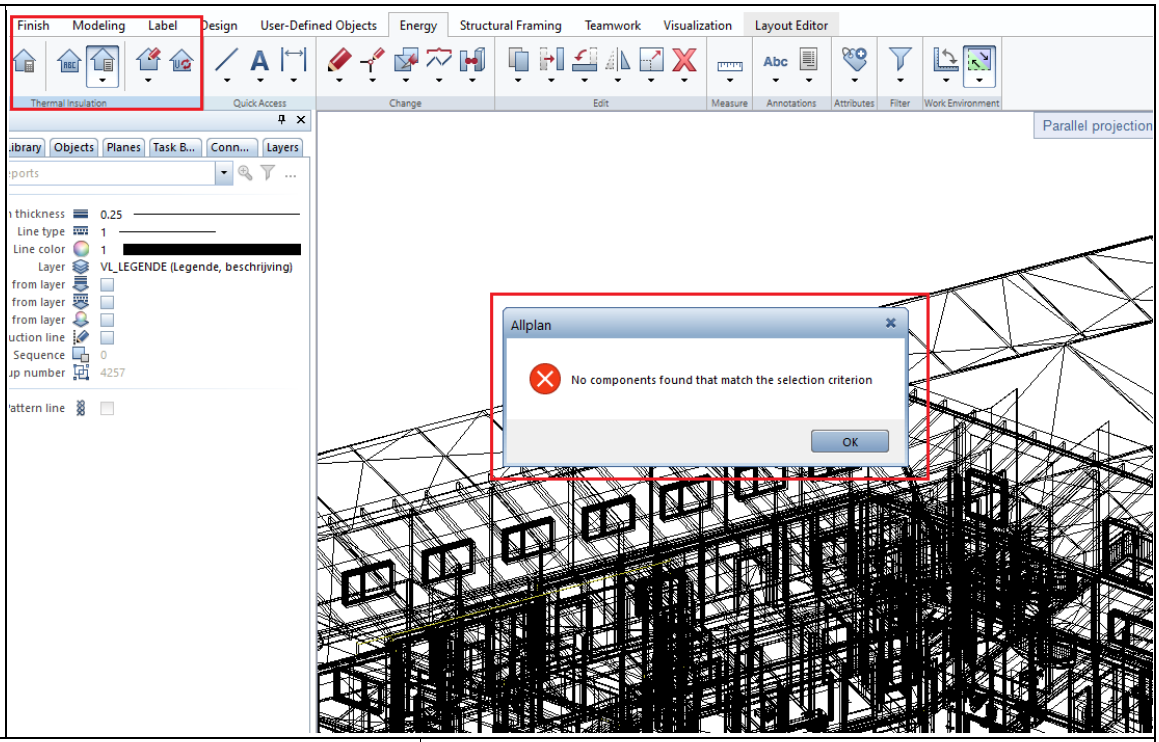
Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	less than a minute
	Please report on any errors the software gives when importing the file.	It ignored 14 objects, but does not state which ones these are.
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	2.1.1) Where is the origin of the model coordinate reference system as imported in the software?	(0, 0) (at the reference point)

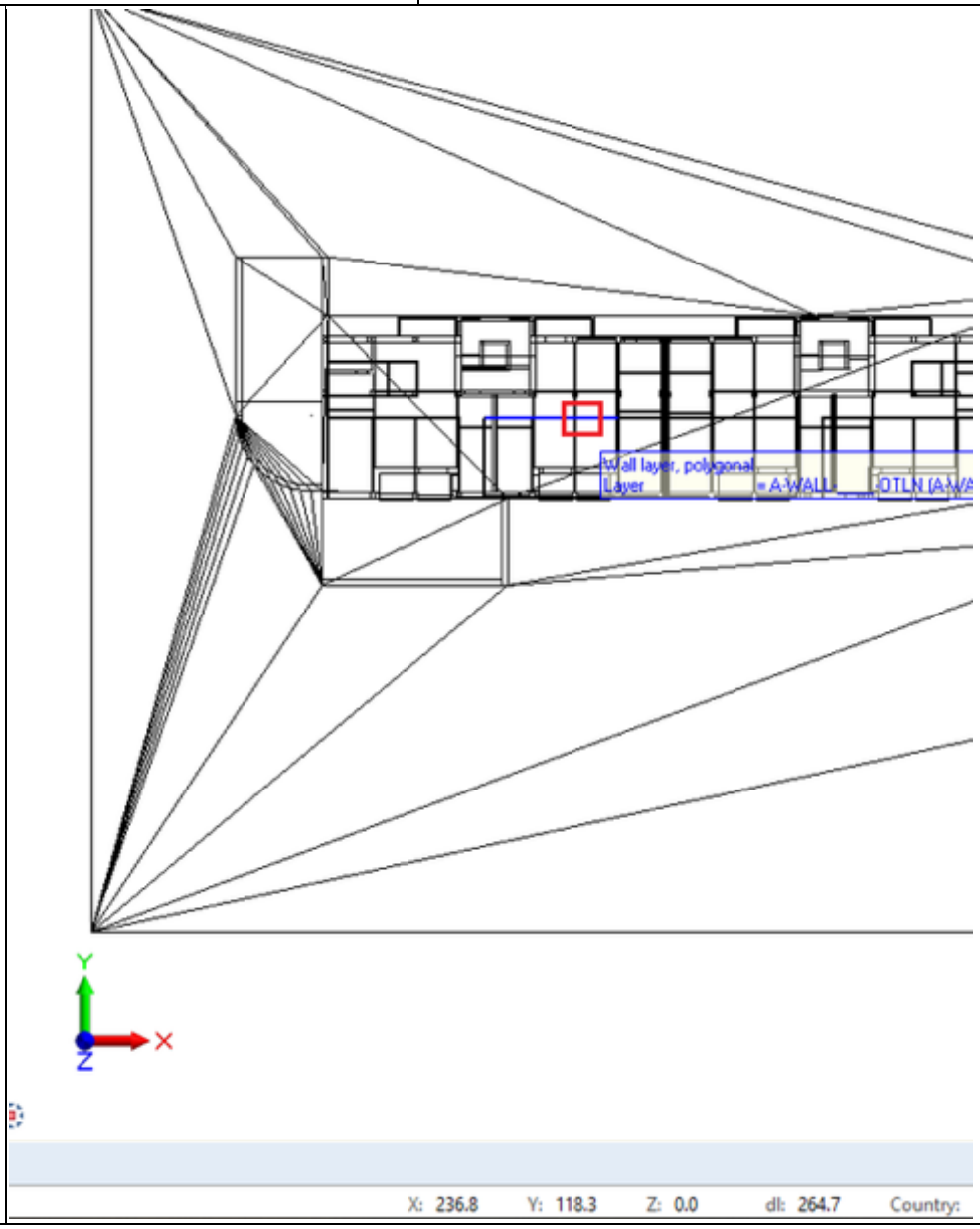
2.1.2) Attach screenshots	
2.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	It is a right-handed local coordinate system, and it uses milimetres as unit of measure.
2.1.4) Attach screenshots	

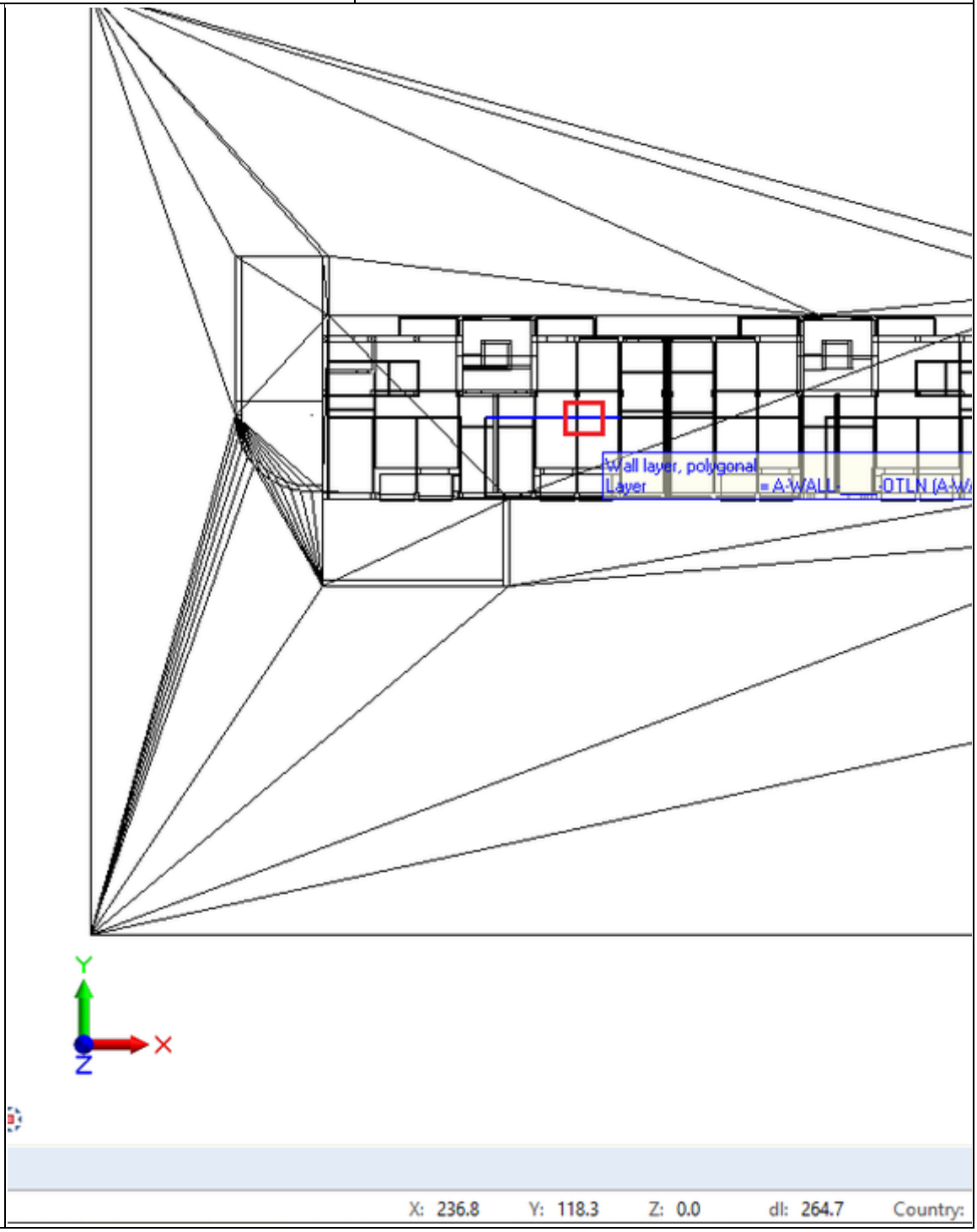
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	3.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0
	3.1.2) Attach screenshots	
	3.1.3) What is the height reference system?	Local, starting at 0
	3.1.4) Attach screenshots	See screenshot from 3.1.2
Orient	4.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	Partially
	6.2) short comments to the previous question (optional)	For some elements yes (for example element 2, the IfcRailing), others are "user defined architecture elements"
Hierarc-	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attribute s	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relatio nshi	9.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Geometry	10.1) Is geometry read correctly?	Yes
	10.2) short comments to the previous question (optional)	The geometry types can't be seen, but objects are not grouped nor broken.

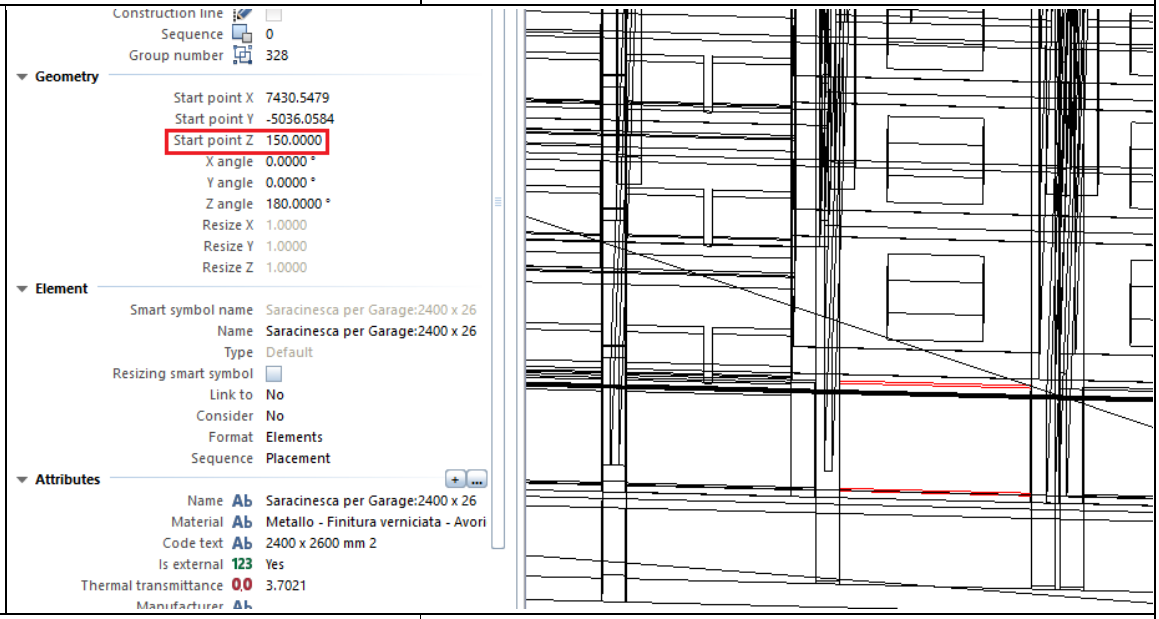
Normals	11.1) Did the normals change?	The software does not have the necessary tools for checking it
	11.2) short comments to the previous question (optional)	Can only see 3D wireframe, so no face colours to visually check.
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	12.2) short comments to the previous question (optional)	However, only a 3D wireframe.
	13.1) Is it possible to view the model in 2D?	Yes
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	The attributes can be edited, and the geometry can be modified as well (with the mouse - rotating, moving, resizing).
	14.1.2) Attach screenshots	**Editing attributes**  **Rotating object (within the red rectangle, you can see how the geometry would be placed)** 

Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	You can filter on (native) attributes/properties. Not on geometry or Ifc attributes however.
	15.1.2) Attach screenshots	
Analysis	16.1) Is it possible to analyse the objects and the model?	Yes, analysis about the modelled building performances (energy, noise, shadows...) are possible (type 2)
	16.1.1) What analysis are possible? Do you know if the results are reliable?	It's possible to do an analysis on thermal insulation. It however does not work on the dataset, nor are there clear instructions on how to do it.

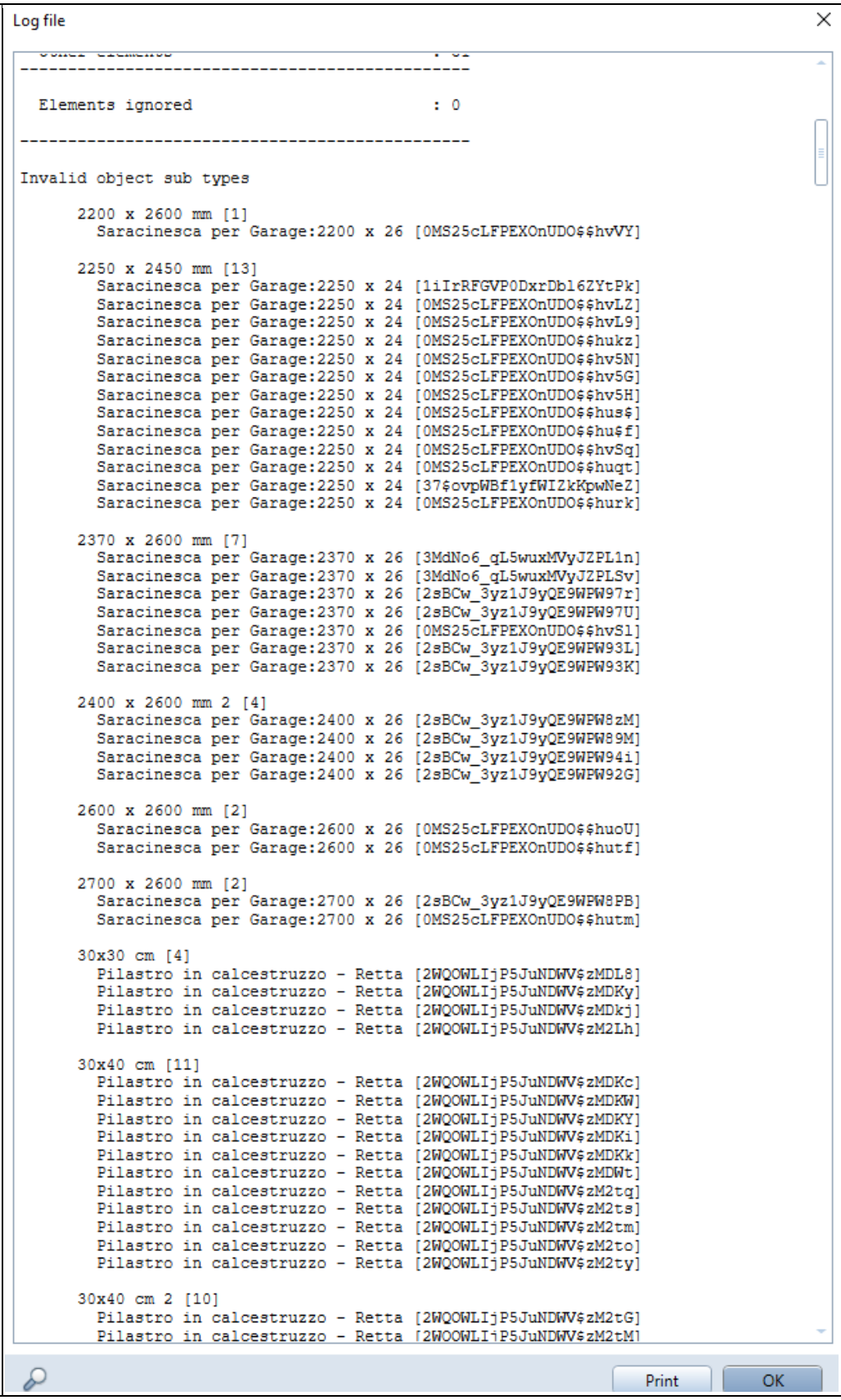
	16.1.2) Attach screenshots	
	16.1.3) Time required to perform the analysis about the model itself (type 1)	No analysis of type 1 are possible
	16.1.3) Time required to perform the analysis about the model performances (type2)	it crashes without completing the operation
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	No
	19) How long does it take for the data to be exported to IFC?	less than a minute
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate

	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
	38) Please report on any errors the software gives when importing the file.	440 elements have been ignored during the import.
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	40.1.1) Where is the origin of the model coordinate reference system as imported in the software?	(0, 0) (at the reference point)
	40.1.2) Attach screenshots	

	40.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	It is a right-handed local coordinate system, and it uses milimetres as unit of measure.
	40.1.4) Attach screenshots	

Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	41.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0
	41.1.2) Attach screenshots	
	41.1.3) What is the height reference system?	Local, presumably in cm
	41.1.4) Attach screenshots	See screenshot from 41.1.2
	41.2) short comments to the previous question (optional)	Many objects don't show any height attribute
Orientation	42.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	43.1) Does the model maintain its correct dimensions and proportions?	Yes
	Other	Other problems
	44.2) short comments to the previous question (optional)	Most elements couldn't be found, possibly due to the import error. Only element 4 was there, but it didn't properly show its Ifc type.
Hierarchy	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attributes	46.1) Are the attributes present in the IFC entities retained and consistent?	Yes
	46.2) short comments to the previous question (optional)	While most elements of the data description can not be found (probably due to the import errors), element 4 has the correct properties, and other elements seem to have retained them as well.
Relationships	47.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Geometry	48.1) Is geometry read correctly?	Yes
	48.2) short comments to the previous question (optional)	The geometry types can't be seen, but objects are not grouped nor broken.

Normals	49.1) Did the normals change?	The software does not have the necessary tools for checking it
	49.2) short comments to the previous question (optional)	Can only see 3D wireframe, so no face colours to visually check.
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	Yes
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	55) How long does it take for the data to be exported to IFC?	less than a minute

	55.2) Attach screenshots (optional)	

Allplan 2020 - Windows 10 Home

Proprietary software

BIM

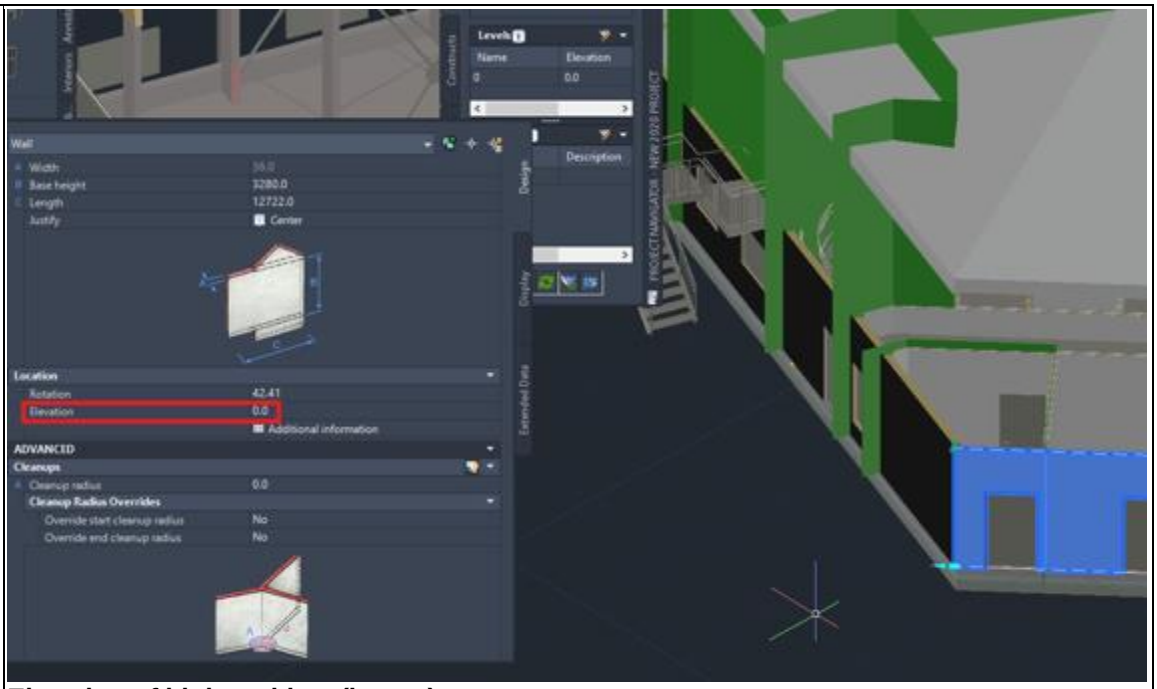
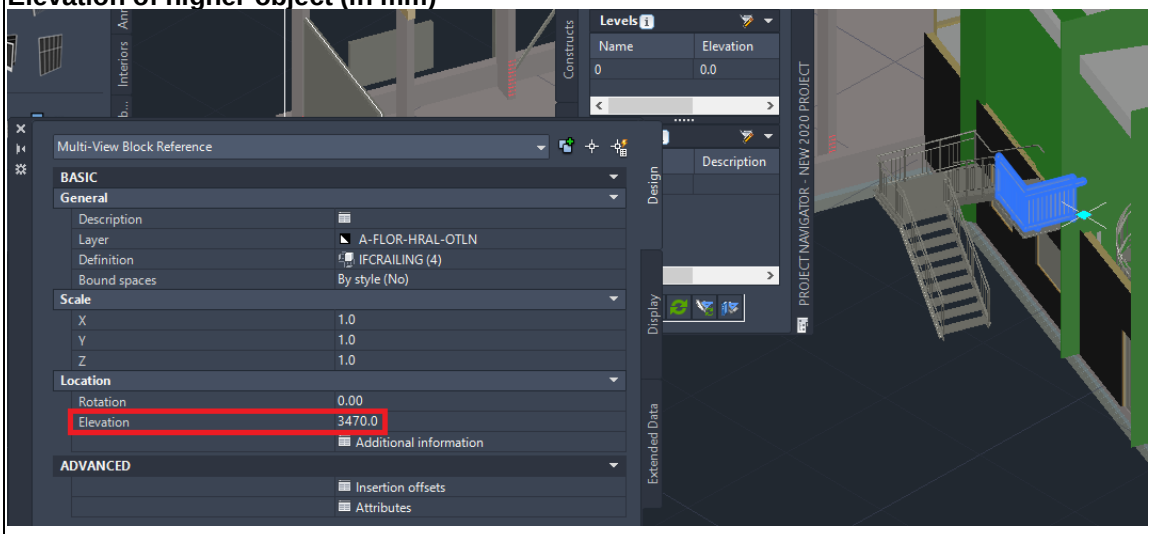
Level of tester expertise: 1 - Very beginner user (it is nearly the first time you use it)

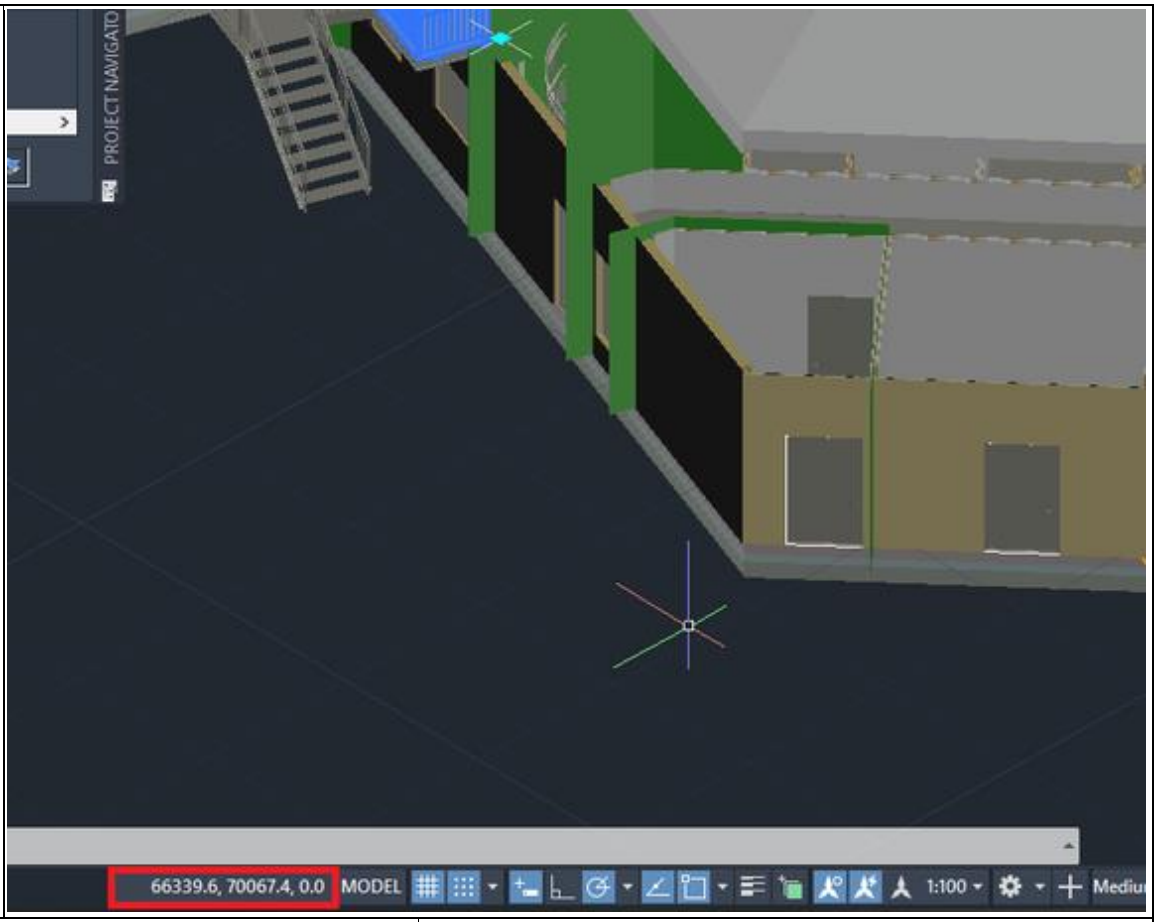
AutoCAD Architecture 2020 - Windows 10 Home
Proprietary software
CAD
Level of tester expertise: 1 - Very beginner user (it is nearly the first time you use it)

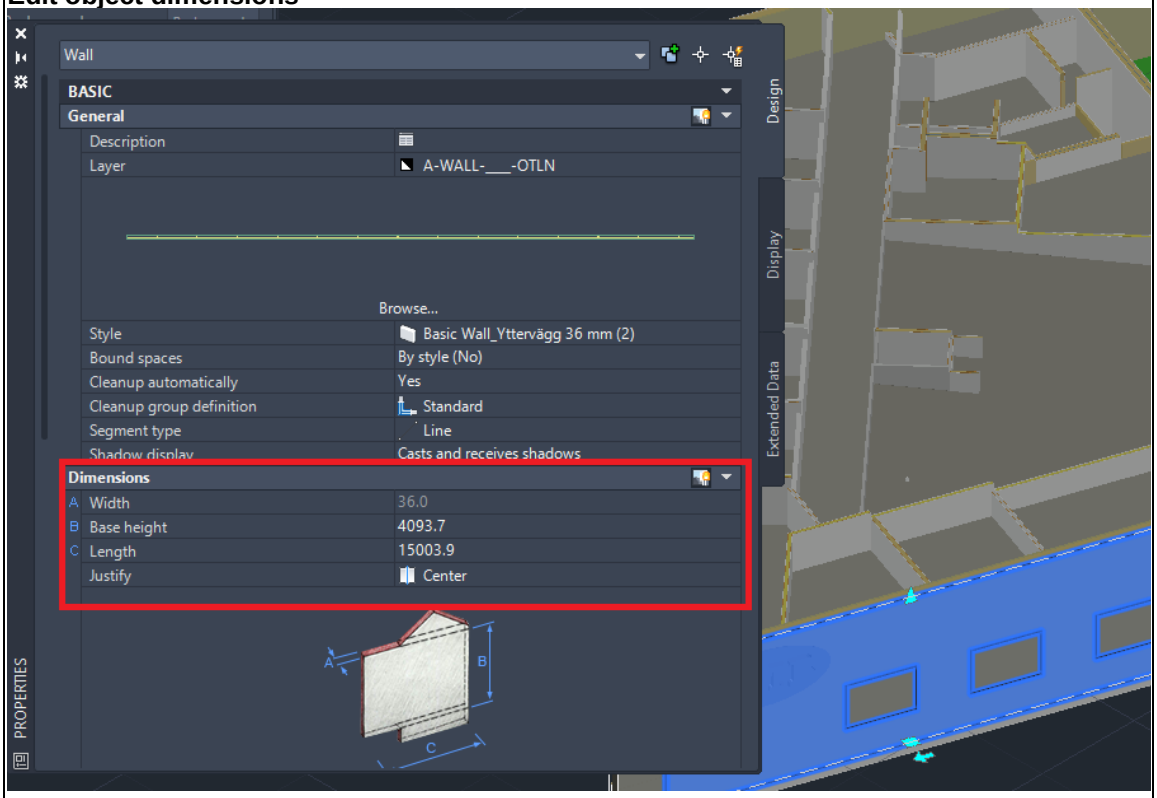
AutoCAD Architecture

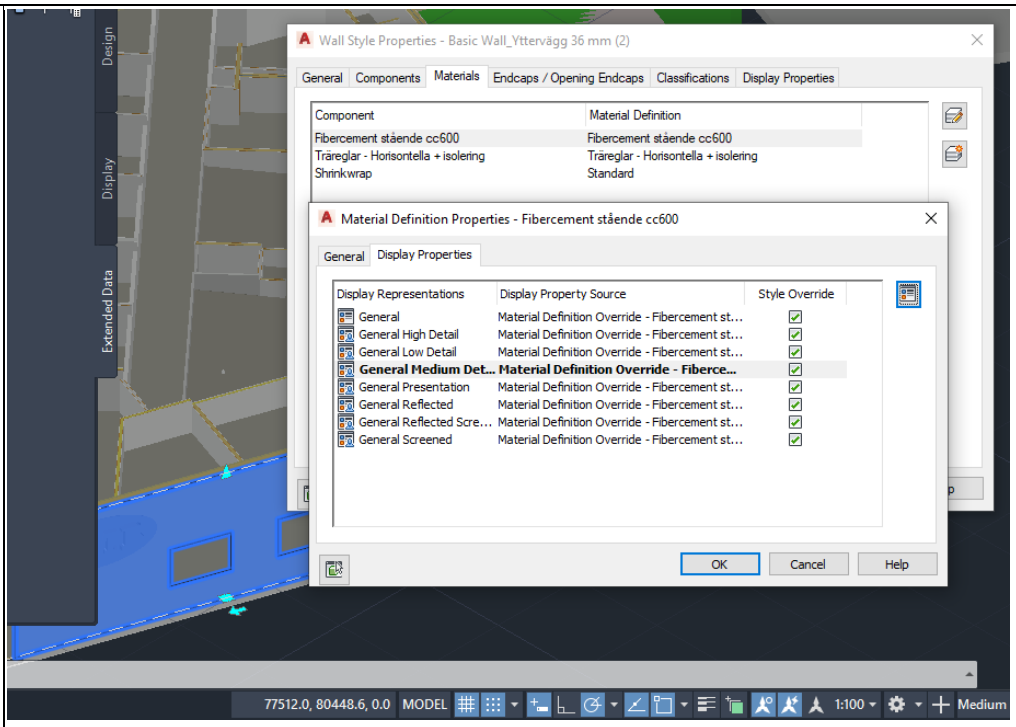
Software	Software Name [version]	**Architecture [2020]**		Software house		**AutoCAD**	
	Proprietary or open source software?			Kind of software			
	proprietary			CAD			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	self-built desktop (2013)	Windows 10 Home 64-bit	Intel i5-4570 @ 3.20GHz	AMD Radeon HD 7800 Series	8 GB	120 GB	20 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			certified in (date)	2015-02-24	buildingSMART International IFC Certification 2.0	

Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	less than a minute
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	3.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0
	3.1.2) Attach screenshots	**Elevation origin**

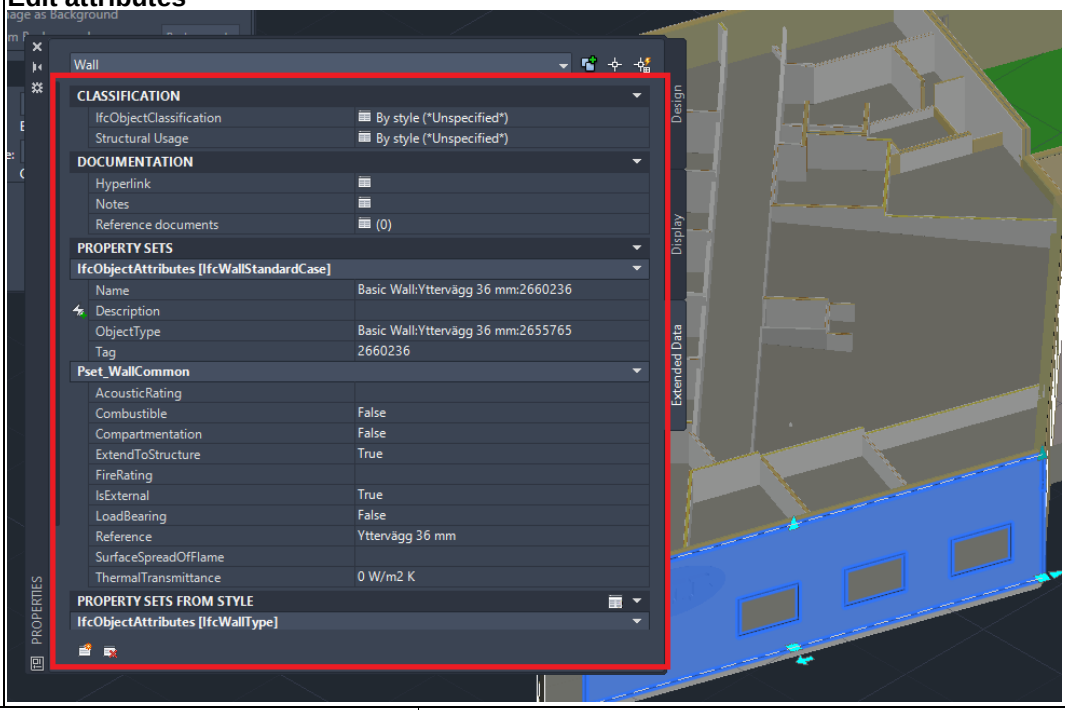
		 **Elevation of higher object (in mm)** 
	3.1.3) What is the height reference system?	Local

	3.1.4) Attach screenshots	
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
	4.2) short comments to the previous question (optional)	The angle is 48 degrees, similarly to to example on the data page.
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
	6.2) short comments to the previous question (optional)	Despite there not being any errors during the import, not all elements shown on the data page are present.
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
	8.2) short comments to the previous question (optional)	The attributes are included in "Extended Data" in the object popup.
Relationships	9.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Geometry	10.1) Is geometry read correctly?	The software does not have the necessary tools to determine this information

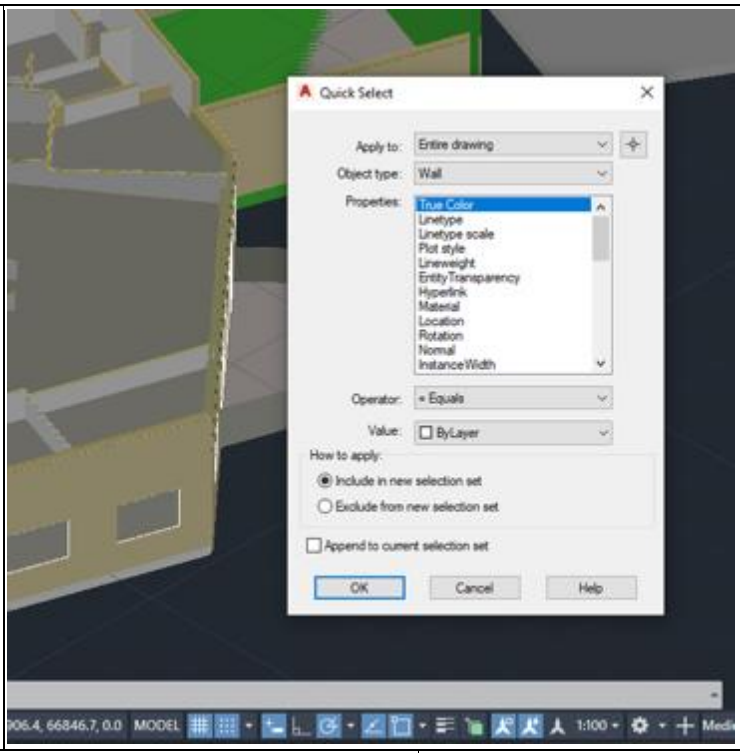
	10.2) short comments to the previous question (optional)	Objects are not grouped nor broken, but the geometry types can't be viewed.
Normal	11.1) Did the normals change?	The software does not have the necessary tools for checking it
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	12.2) short comments to the previous question (optional)	View -> under Appearance, click SW Isometric -> under Visual Styles, click for example Realistic
	13.1) Is it possible to view the model in 2D?	Yes
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	The attributes, geometry (both change dimensions and move), style (e.g. material). Georeferencing can NOT be changed.
	14.1.2) Attach screenshots	**Edit object dimensions**  **Edit style (material)**

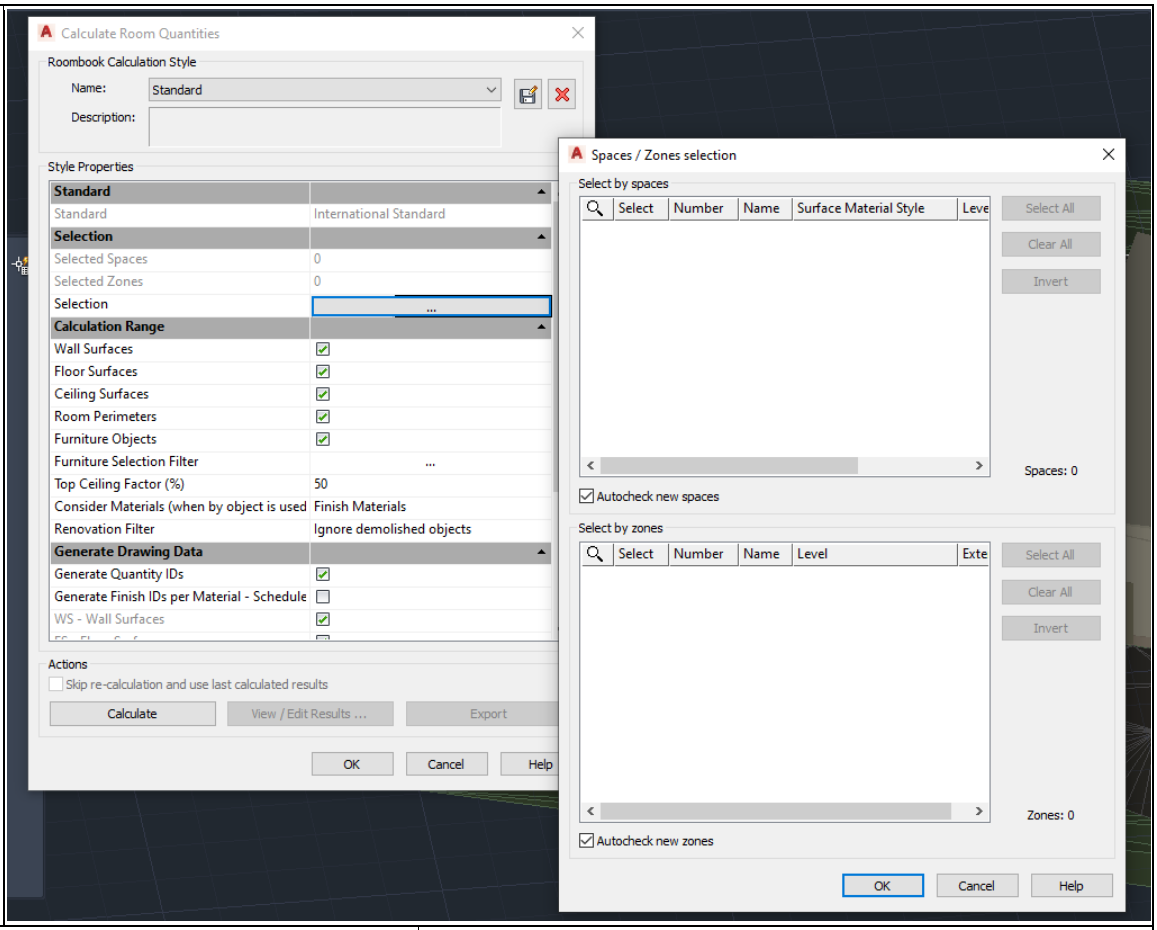


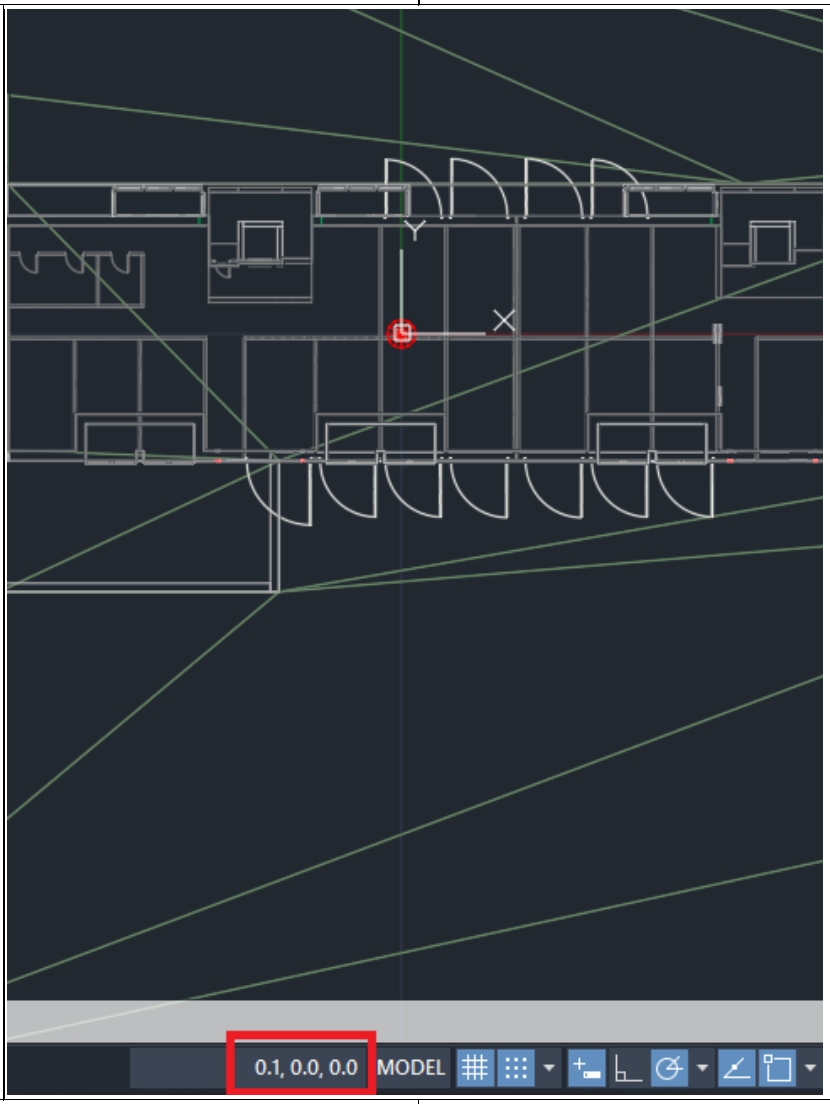
Edit attributes

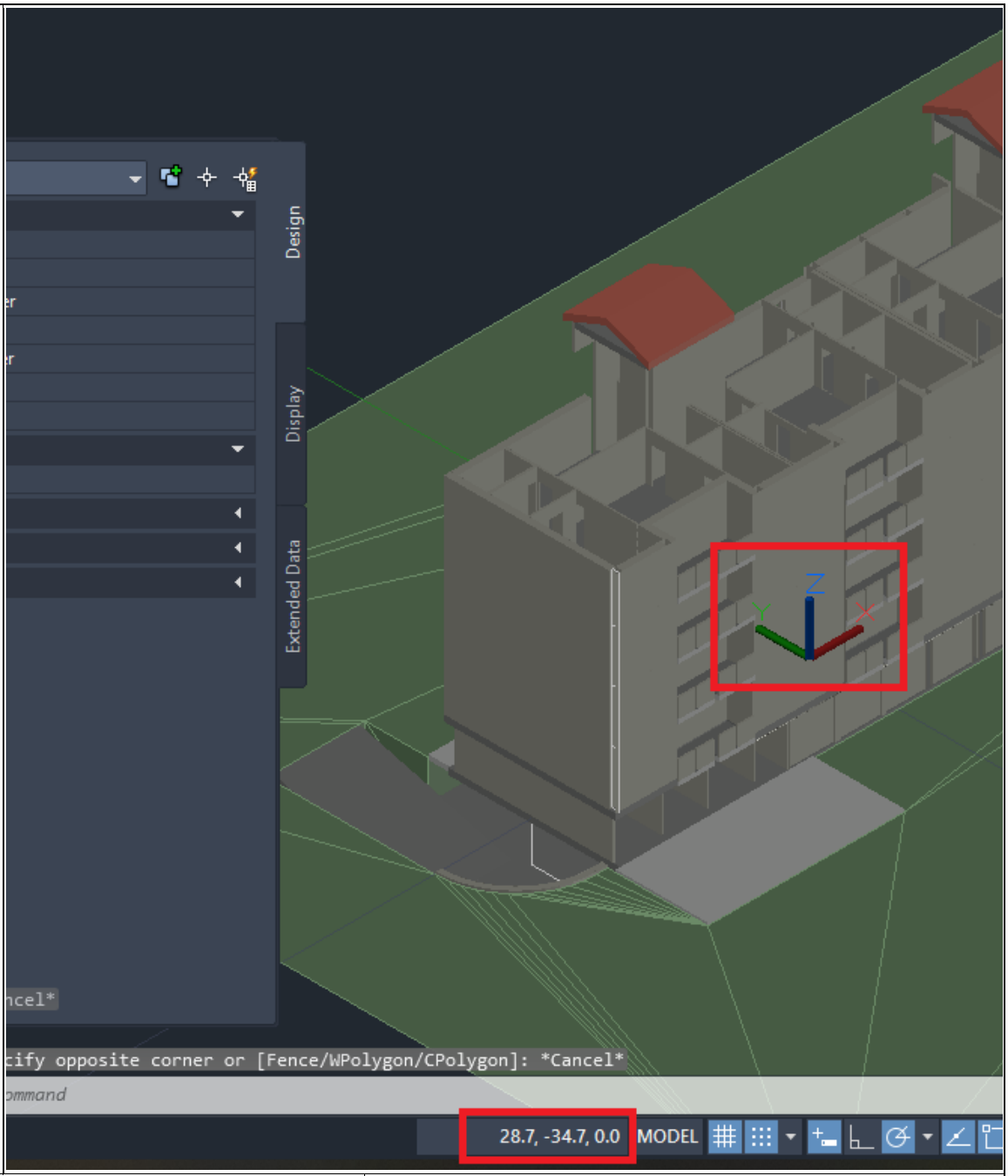


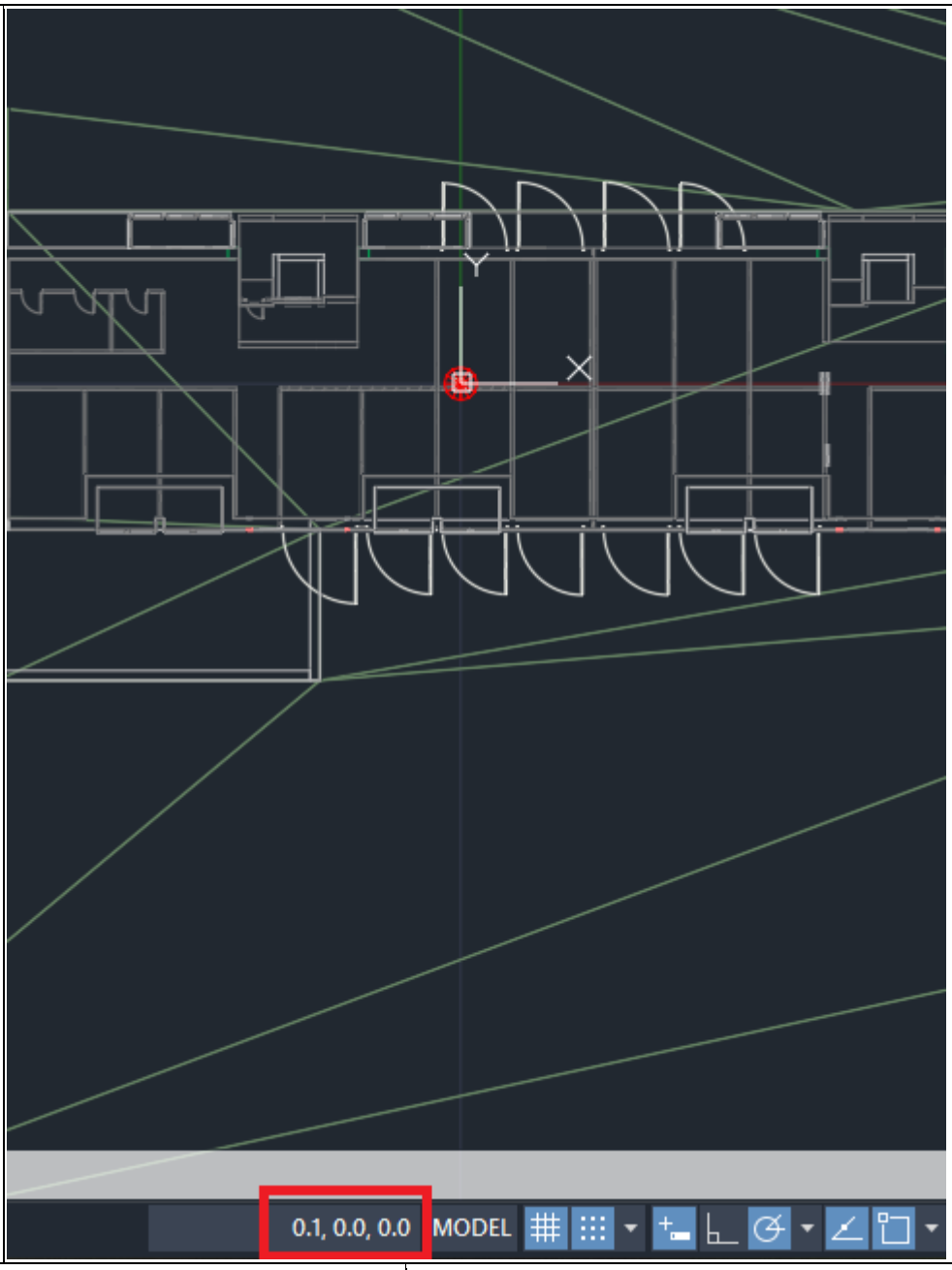
Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	You can do selection on properties that are native to the software (such as material, layer, style), but not specific IFC attributes. You can also query objects on geometries and locations.

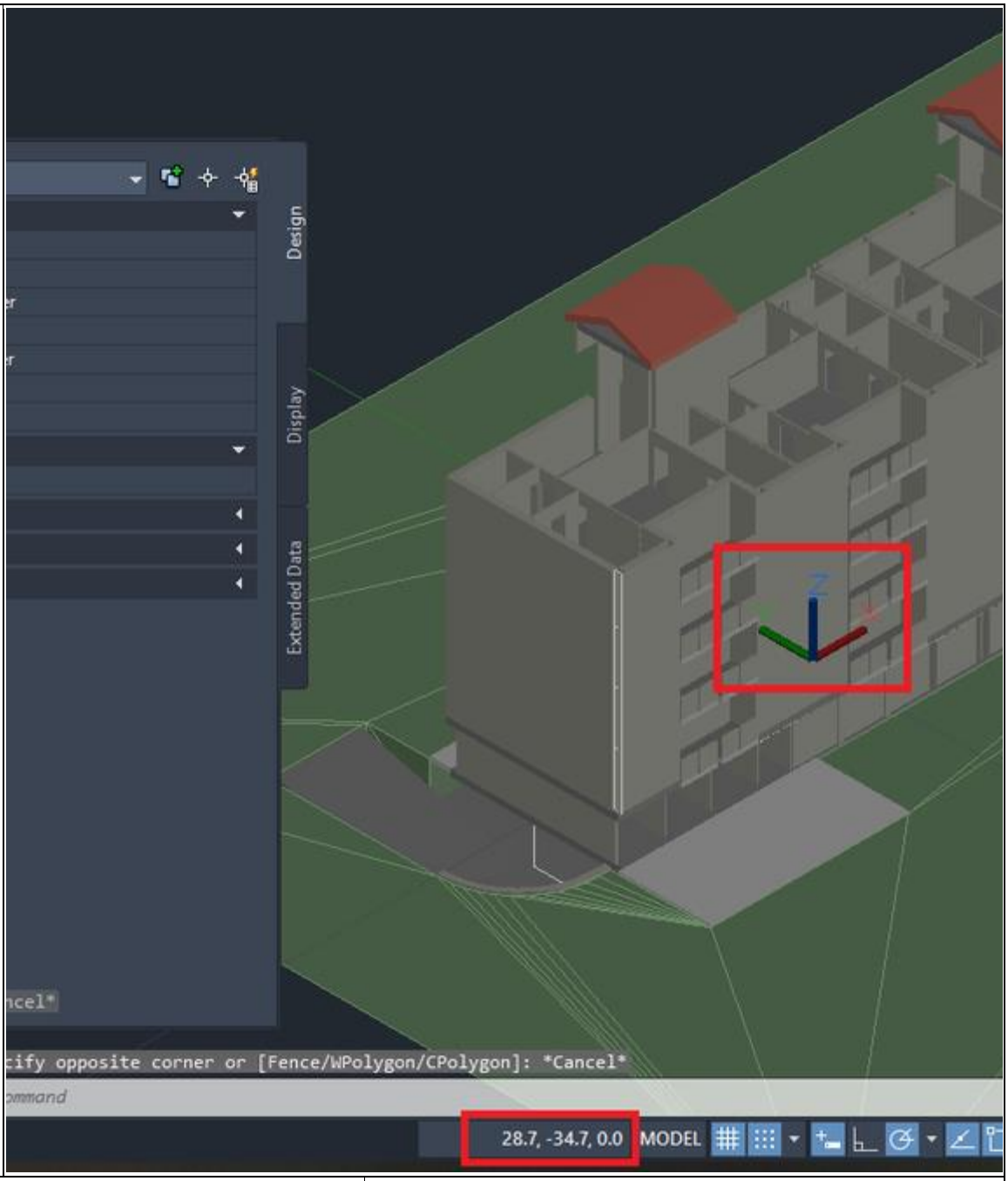
	15.1.2) Attach screenshots	
Analysis	16.1) Is it possible to analyse the objects and the model?	No
	16.1.1) What analysis are possible? Do you know if the results are reliable?	You should be able to do a Room Quantities analysis, however it can't be performed because there are no spaces/zones to be selected.

	16.1.2) Attach screenshots	
	16.1.3) Time required to perform the analysis about the model itself (type 1)	No analysis of type 1 are possible
	16.1.3) Time required to perform the analysis about the model performances (type2)	No analysis of type 2 are possible
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	No
	18.2) short comments to the previous question (optional)	It will automatically use the CoordinationView_V2.0 view definition.
	19) How long does it take for the data to be exported to IFC?	less than a minute
Test with UpTown.ifc		
Perform ance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation
Test with Savigliano.ifc		
Perform ance	How long does it take, approximately, to:Zoom into the model to see more detail	1-5 minutes

	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	40.1.1) Where is the origin of the model coordinate reference system as imported in the software?	(0, 0, 0)
	40.1.2) Attach screenshots	
	40.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	It is a local right-handed reference system with metres as unit of measure (however, you could also choose milimetres during import)

	40.1.4) Attach screenshots	
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	41.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0

	41.1.2) Attach screenshots	
	41.1.3) What is the height reference system?	Local

	41.1.4) Attach screenshots	
Orientation	42.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	43.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	44.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information

Attributes	46.1) Are the attributes present in the IFC entities retained and consistent?	Yes
	46.2) short comments to the previous question (optional)	Yes, they are present in "Extended Data" in the popup that shows when you click an object.
Relationships	47.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Geometry	48.1) Is geometry read correctly?	The software does not have the necessary tools to determine this information
	48.2) short comments to the previous question (optional)	Objects are not grouped nor broken, but the geometry types can not be seen.
Normals	49.1) Did the normals change?	The software does not have the necessary tools for checking it
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	Yes
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	55) How long does it take for the data to be exported to IFC?	1-5 minutes

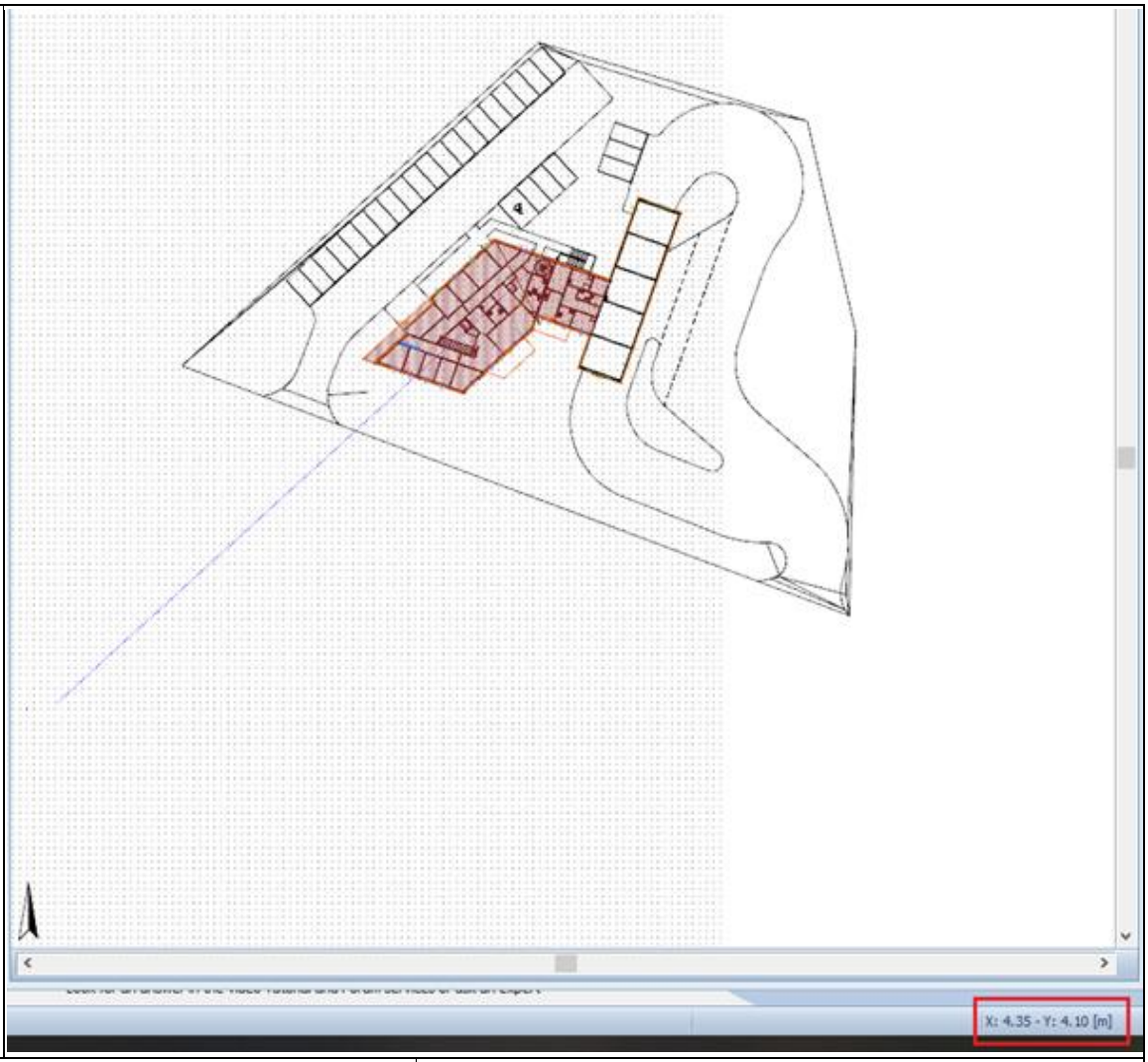
ACCA Edificius v.BIM ONE(d) - Windows 10 Home
Proprietary software
BIM
Level of tester expertise: 1 - Very beginner user (it is nearly the first time you use it)

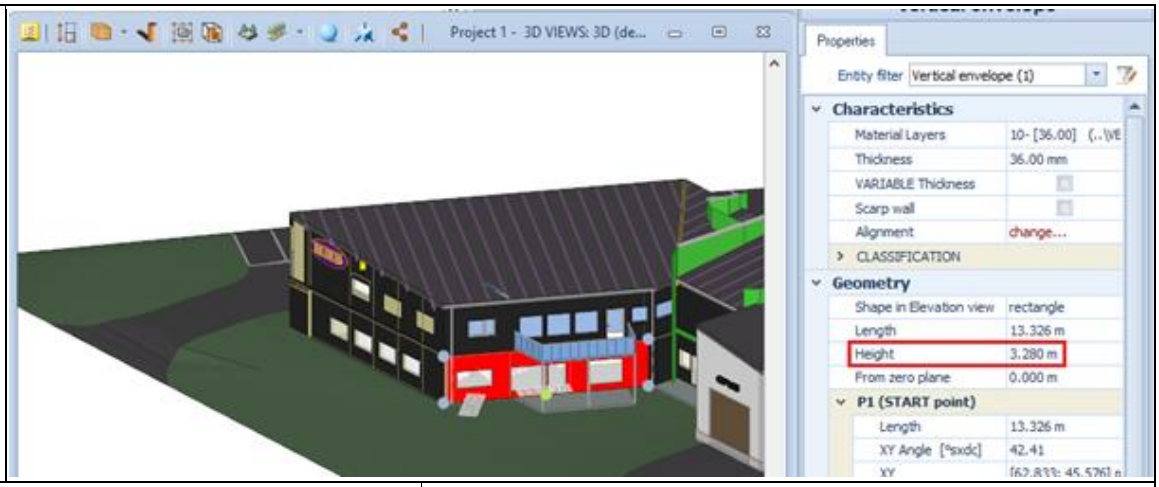
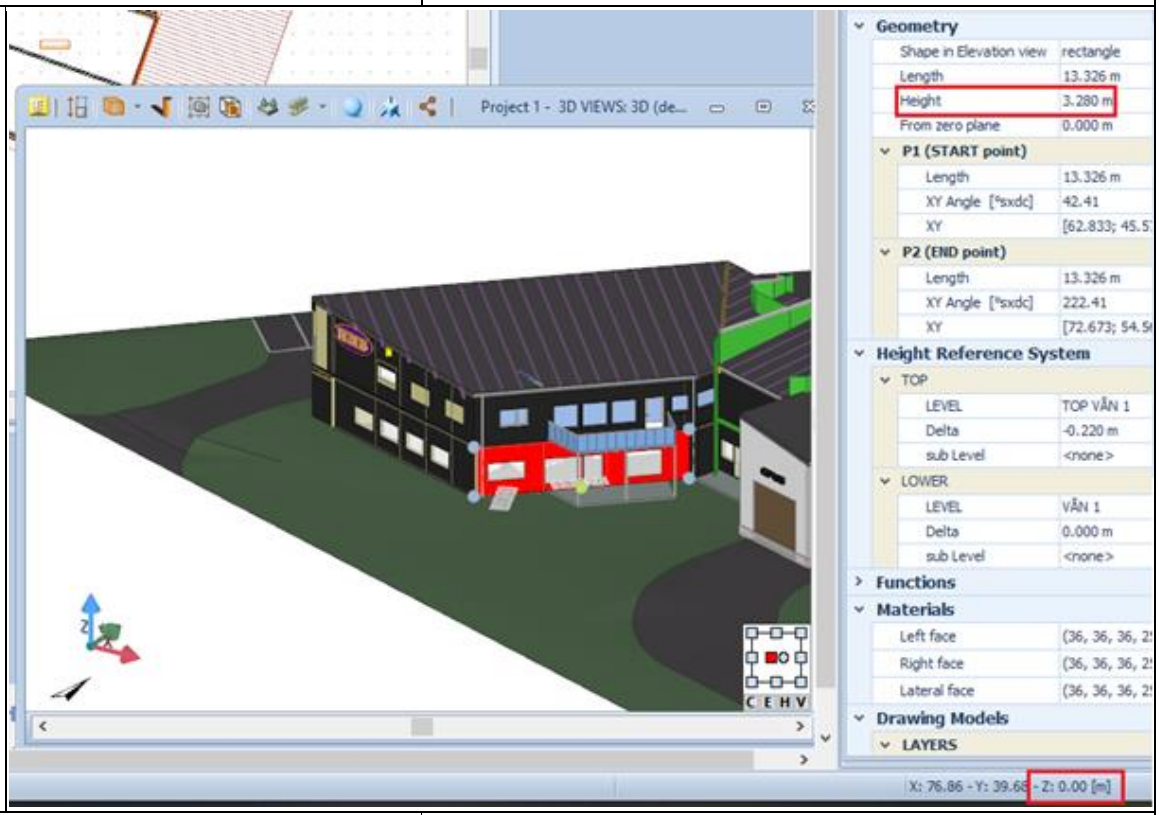
ACCA Edificius

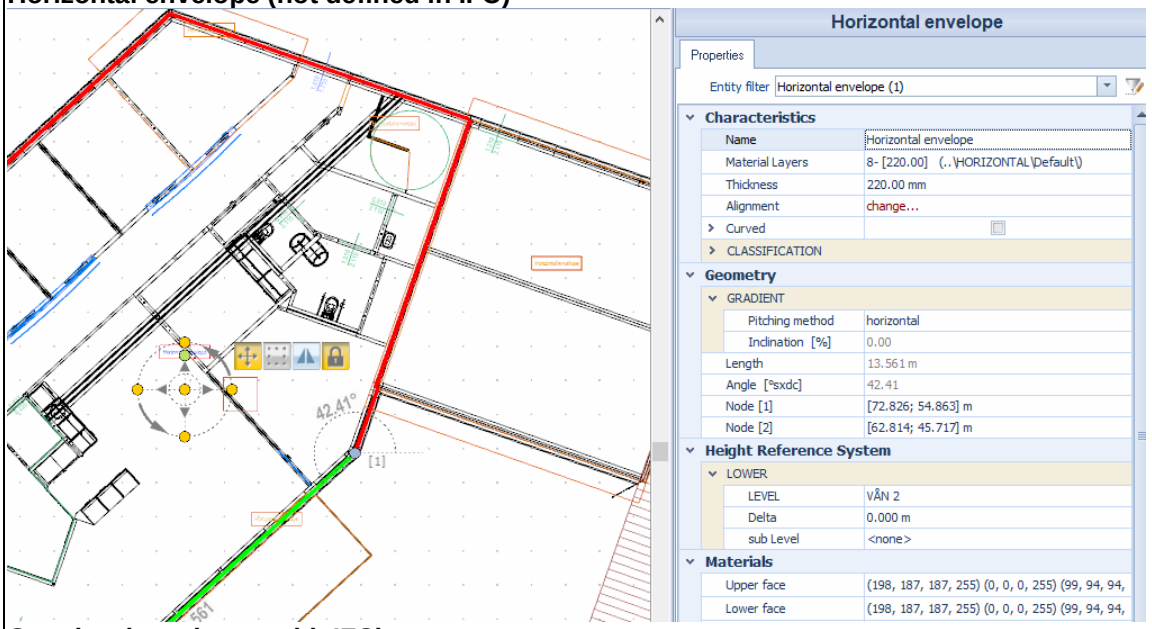
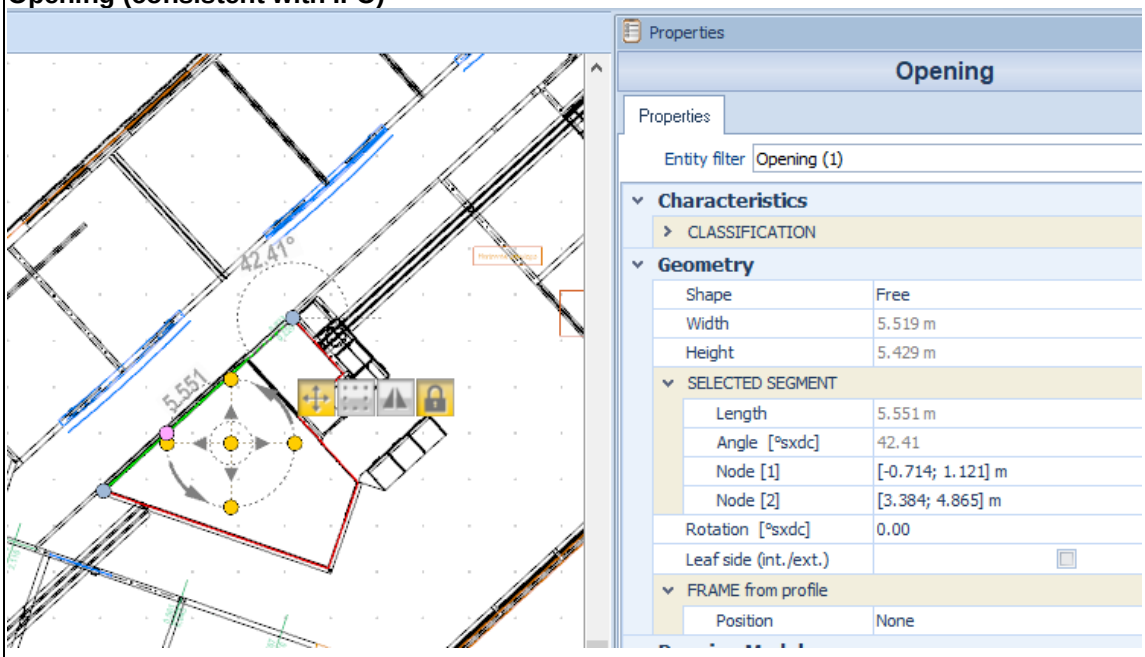
Software	Software Name [version]	**Edificius [v.BIM ONE(d)]**		Software house		**ACCA**	
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	self-built desktop (2013)	Windows 10 Home 64-bit	Intel i5-4570 @ 3.20GHz	AMD Radeon HD 7800 Series	8 GB	120	20
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	2017-05-31	buildingSMART International IFC Certification 2.0	certified in (date)	2016-03-11	buildingSMART International IFC Certification 2.0	

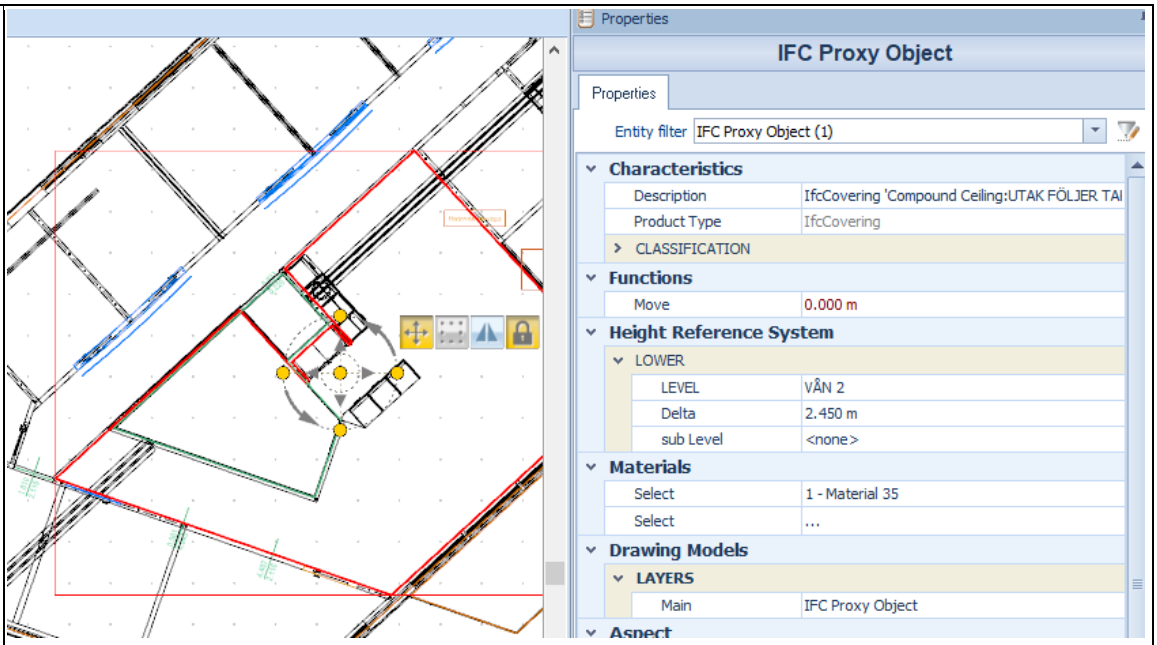
Test with Myran.ifc

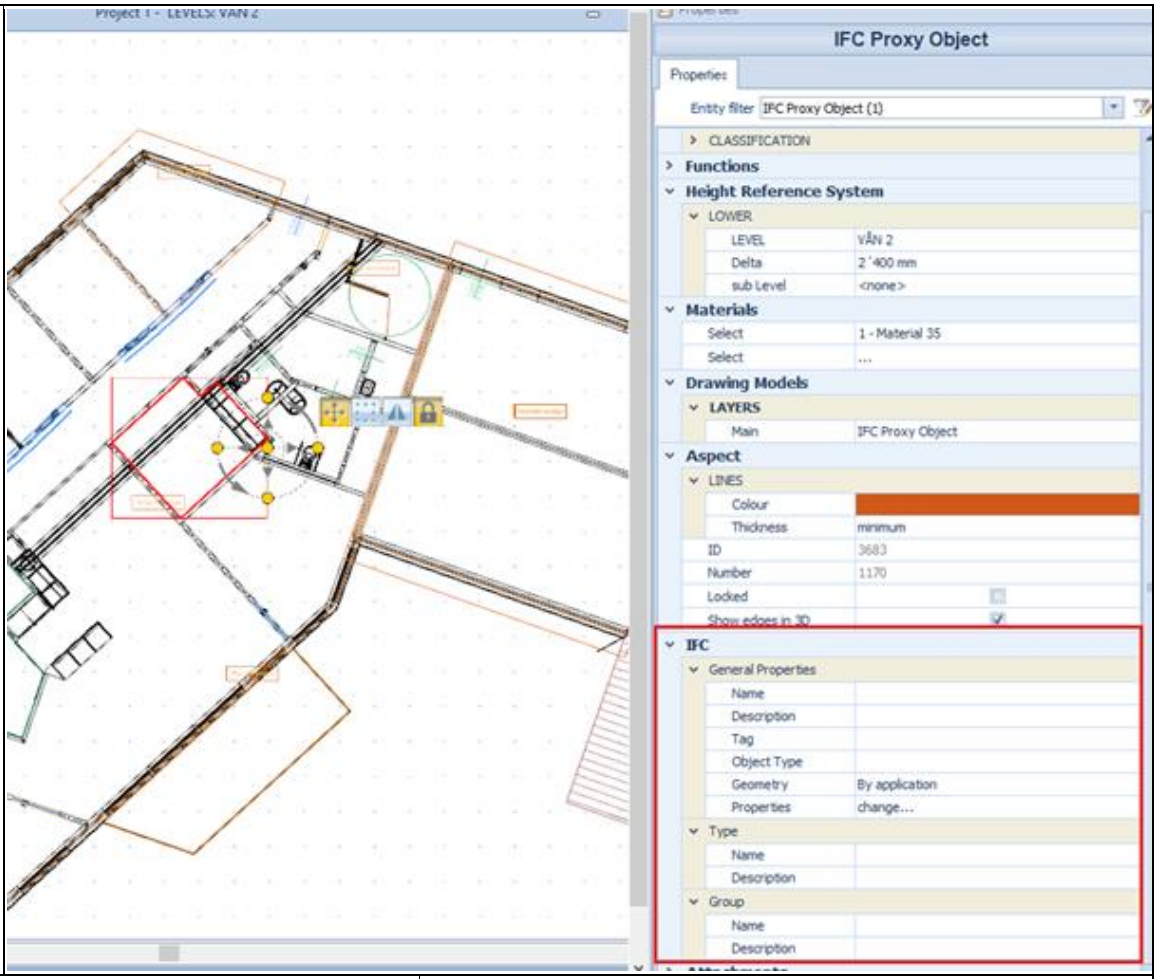
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	the software does not allow this
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
	Please report on any errors the software gives when importing the file.	It had the following kind of errors: incorrect element referencing, unexpected error while calculation Entity 2409 cross beam, a critical error has occurred in the structural model calculation.
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
Georeferenc	2.1.1) Where is the origin of the model coordinate reference system as imported in the software?	(0, 0)

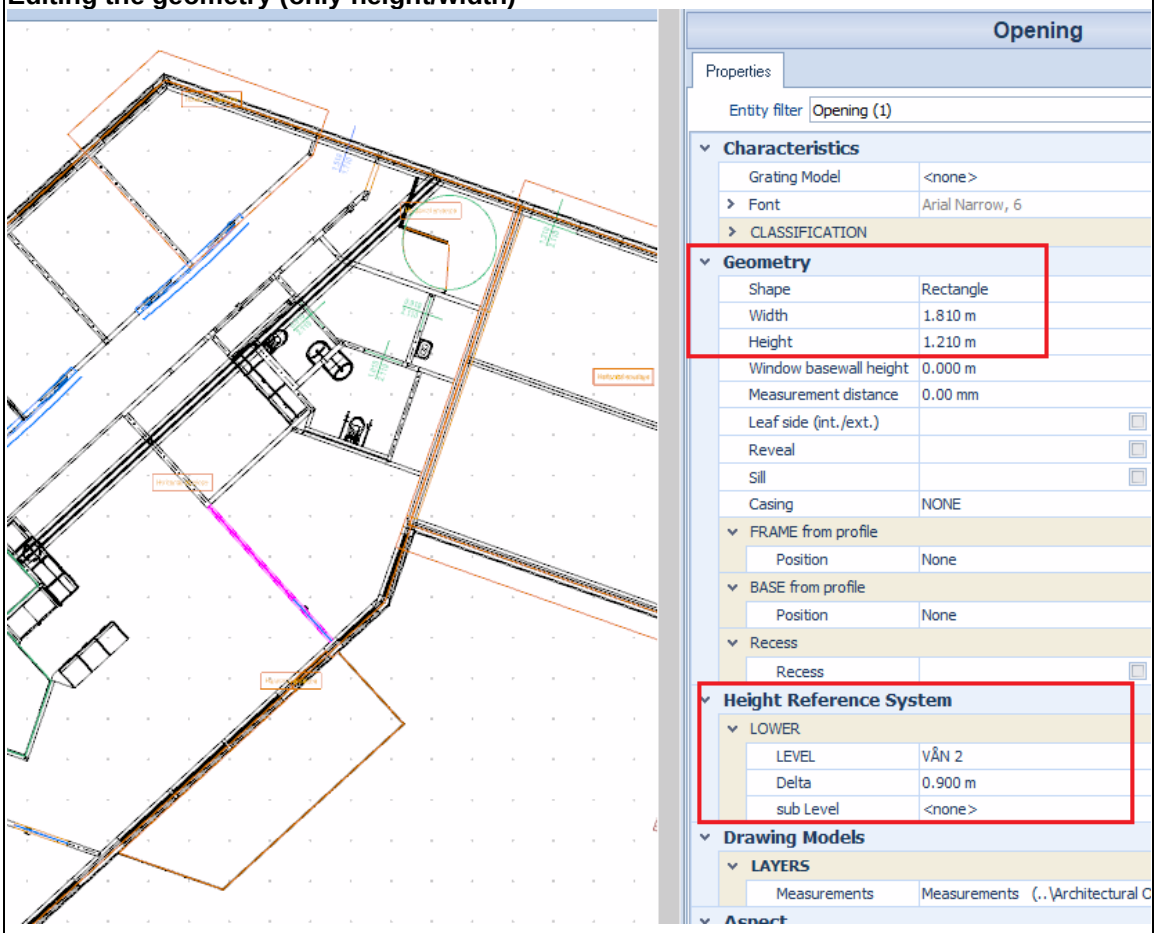
	2.1.2) Attach screenshots	
	2.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	It is a right-handed local coordinate system, with x and y representing metres.
	2.1.4) Attach screenshots	See 2.1.2
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	3.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0

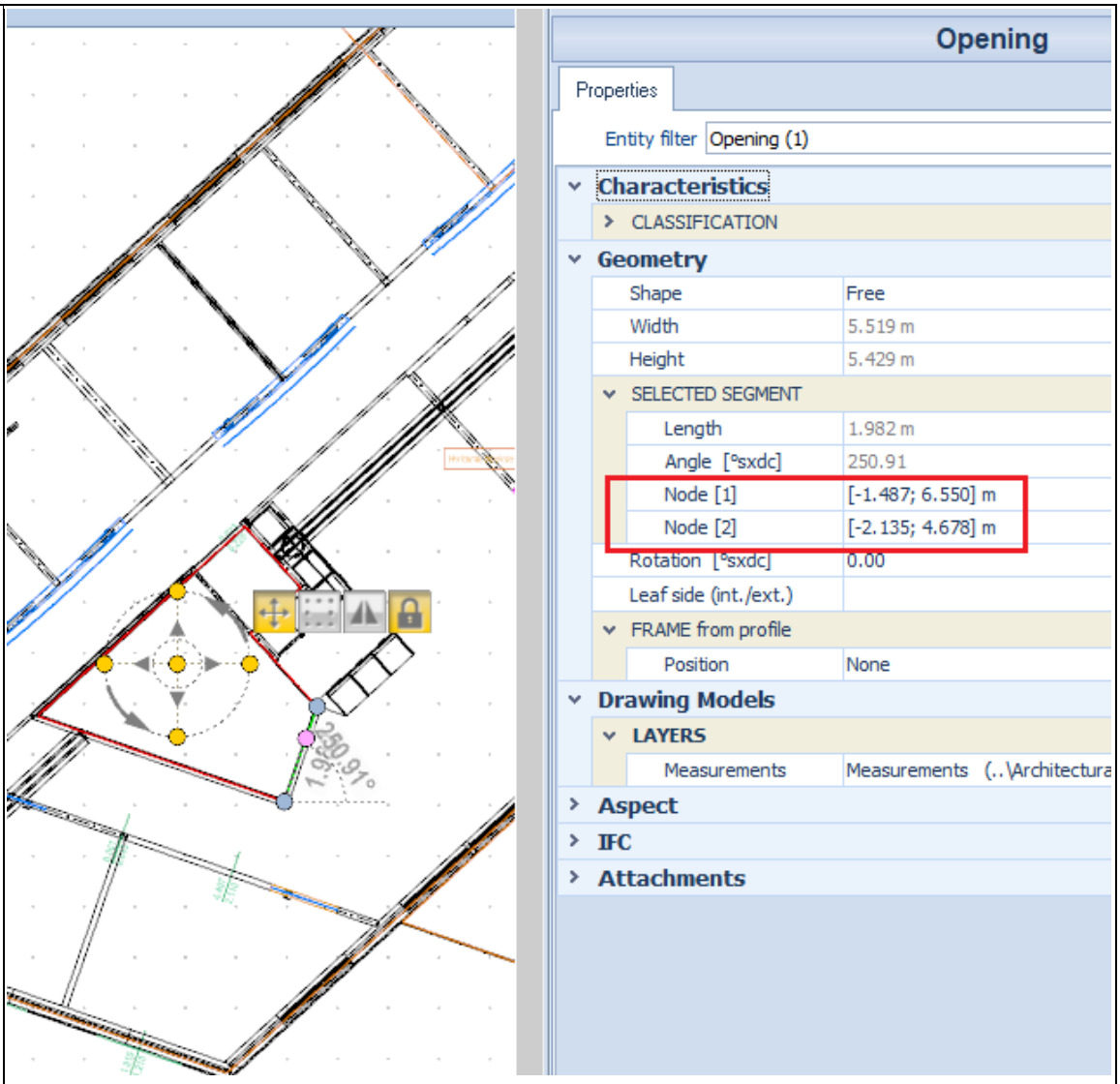
	3.1.2) Attach screenshots	
	3.1.3) What is the height reference system?	Local per level/floor, in meters
	3.1.4) Attach screenshots	
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
	4.2) short comments to the previous question (optional)	It is oriented with the north pointing upwards. When rotating the model, the north arrow moves as well.
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitio	6.1) Is the eventual translation consistent with the IFC definitions?	No

	6.1.1) What changes / inconsistencies / errors / other issues were noted?	For example opening, door, and curtain wall are detected by the software. IFCBeam and IFCCovering are loaded as an IFC Proxy Object. It also has vertical/horizontal envelopes which are actually not IFC classifications.
	6.1.2) Attach screenshots	**Horizontal envelope (not defined in IFC)**  **Opening (consistent with IFC)**  **IFC Proxy Object (partially consistent with IFC)**

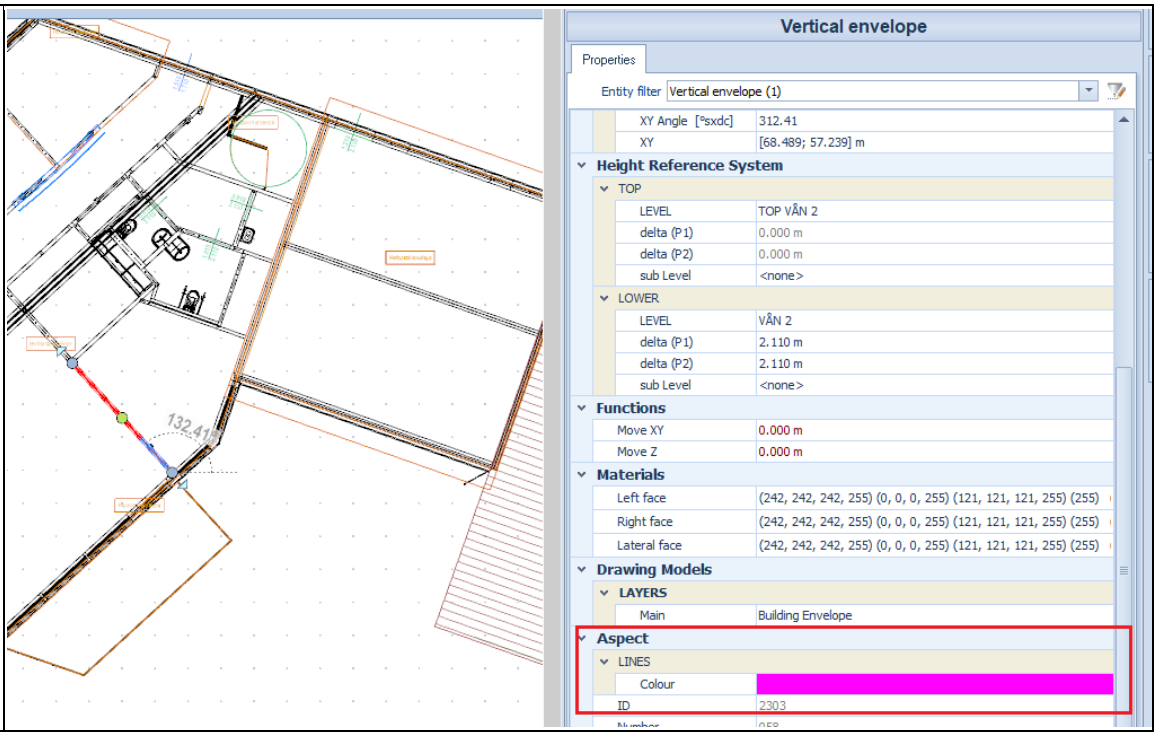
		
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
	7.2) short comments to the previous question (optional)	The hierarchical relationships are not shown at all.
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	No
	8.1.1) What changes / inconsistencies / errors / other issues were noted?	There is a box in the properties which should show the IFC attributes, but it is empty.

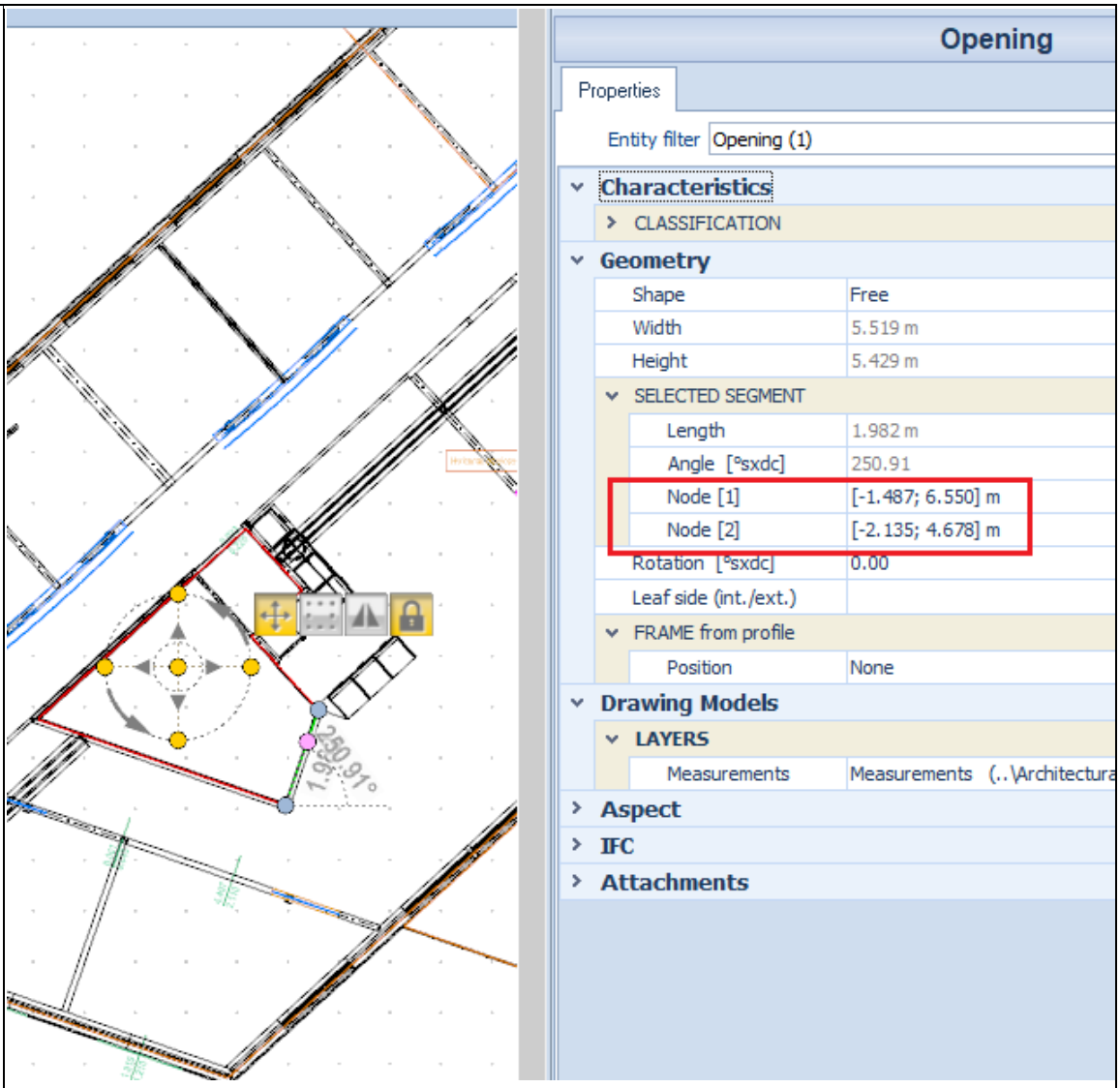
	8.1.2) Attach screenshots	
Relationships	9.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
	9.2) short comments to the previous question (optional)	It is not possible to see the relationships between the objects.
Geometry	10.1) Is geometry read correctly?	The software does not have the necessary tools to determine this information
	10.2) short comments to the previous question (optional)	It is not possible to see the types of geometry. However, objects are not grouped nor broken.
Normal	11.1) Did the normals change?	The software does not have the necessary tools for checking it
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	12.2) short comments to the previous question (optional)	Yes, it's possible. You can also select to show only specific floors or object types.
	13.1) Is it possible to view the model in 2D?	Yes
	13.2) short comments to the previous question (optional)	Yes, it's possible, you can view the different levels/floors separately.
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes

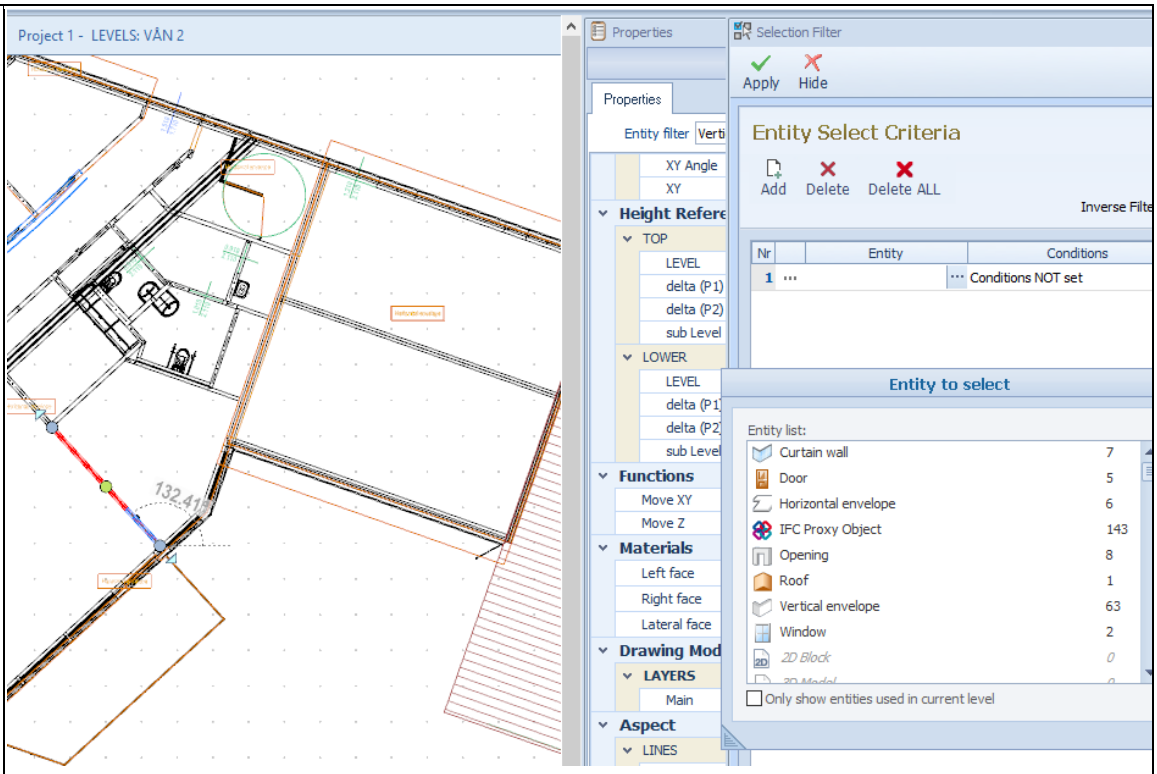
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	You can edit the geometry - by changing the (local) coordinates of nodes of objects or by changing the height/width. In the first case, you could also move a geometry. This is inconsistent for different objects, even if they are of the same type. The height can also be changed. Attributes can be altered freely as well. The colours can be changed in the 2D view. It is not possible to change the object type however.
	14.1.2) Attach screenshots	**Editing the geometry (only height/width)**  **Editing the geometry (by changing the actual coordinates of nodes)**



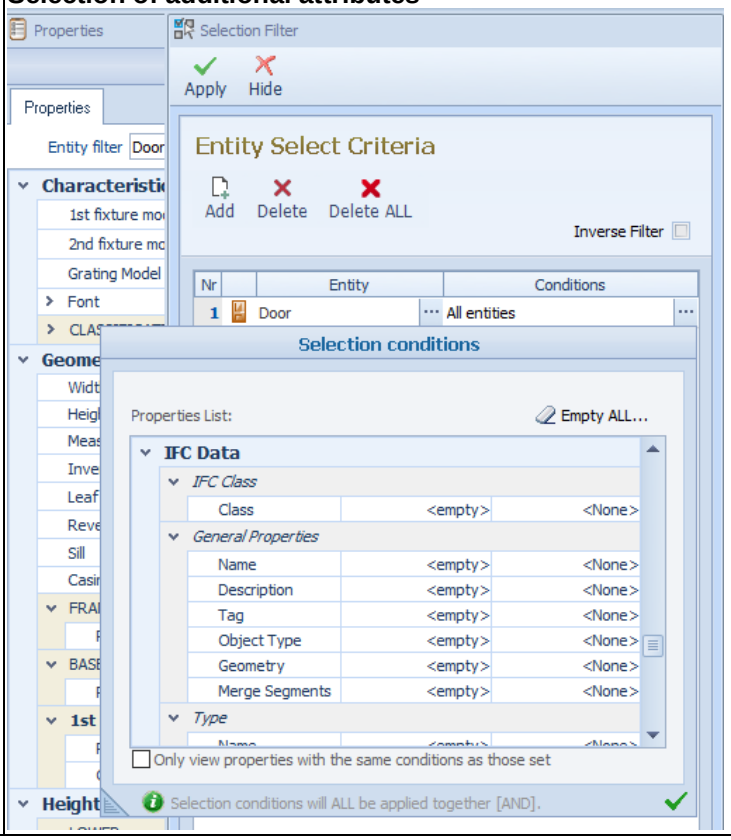
Editing the colour


Vertical envelope
Properties
Entity filter
Vertical envelope (1)
XY Angle [°sxdc]
312.41
XY
[68.489; 57.239] m
Height Reference System
TOP
LEVEL
TOP VÂN 2
delta (P1)
0.000 m
delta (P2)
0.000 m
sub Level
<none>
LOWER
LEVEL
VÂN 2
delta (P1)
2.110 m
delta (P2)
2.110 m
sub Level
<none>
Functions
Move XY
0.000 m
Move Z
0.000 m
Materials
Left face
(242, 242, 242, 255) (0, 0, 0, 255) (121, 121, 121, 255) (255)
Right face
(242, 242, 242, 255) (0, 0, 0, 255) (121, 121, 121, 255) (255)
Lateral face
(242, 242, 242, 255) (0, 0, 0, 255) (121, 121, 121, 255) (255)
Drawing Models
LAYERS
Main
Building Envelope
Aspect
LINES
Colour
ID
2303
132.41

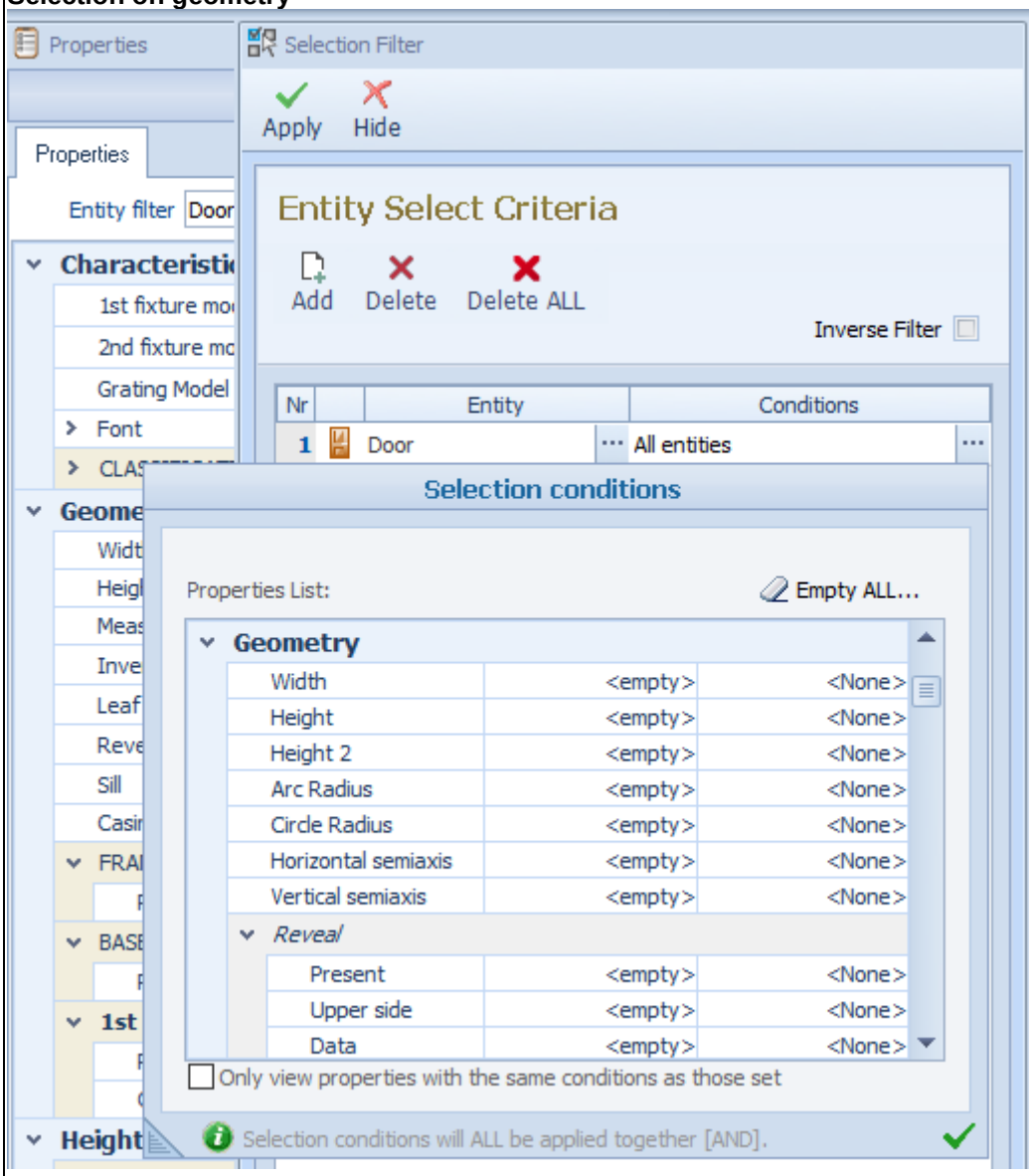
<table>
<tr><td rowspan="4">Querying</td><td colspan="2">15.1) Is it possible to query the model and the attributes?</td><td>Yes</td></tr>
<tr><td>15.1.1) What kinds of query are possible?</td><td colspan="2">Yes, it is possible the query by object type. Additionally, you can then choose to query the specified object(s) based on their (IFC) attributes, geometry, material, and BOQ (bill of quantities).
You can also specify that only objects of the current level (floor) should be selected.</td></tr>
<tr><td>15.1.2) Attach screenshots</td><td colspan="2">Selection of object type</td></tr>
<tr><td colspan="4"> 
</td></tr>
</table>



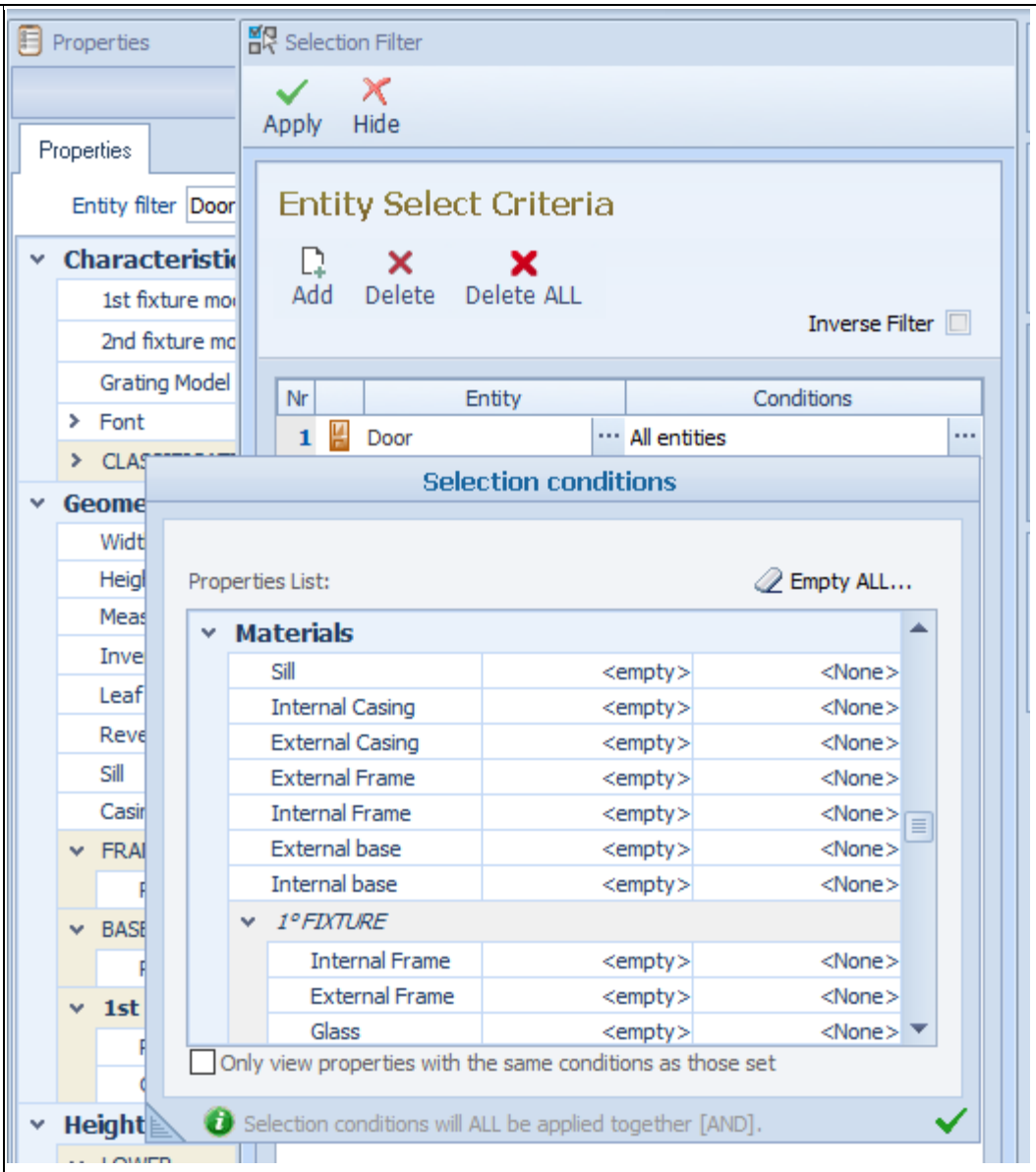
Selection of additional attributes



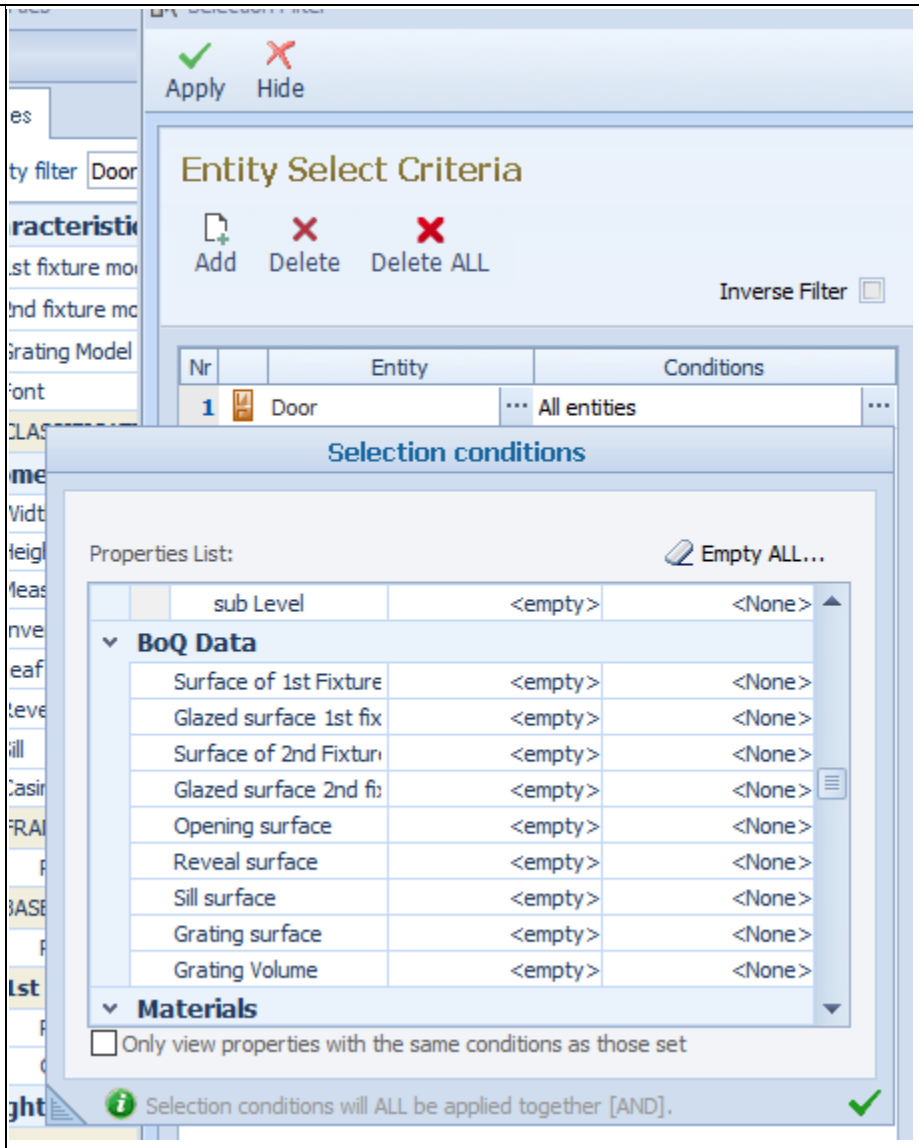
Selection on geometry



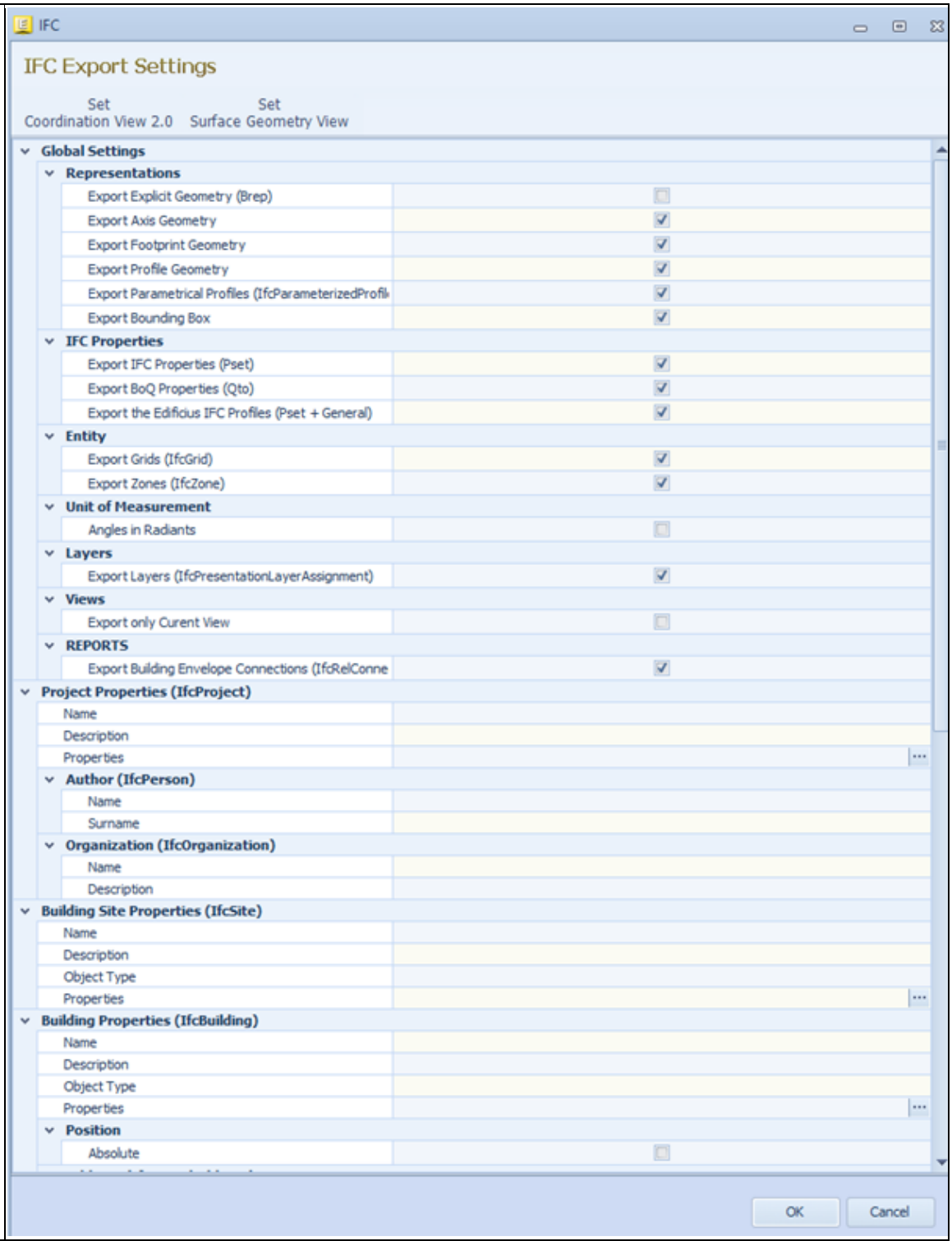
Selection on material

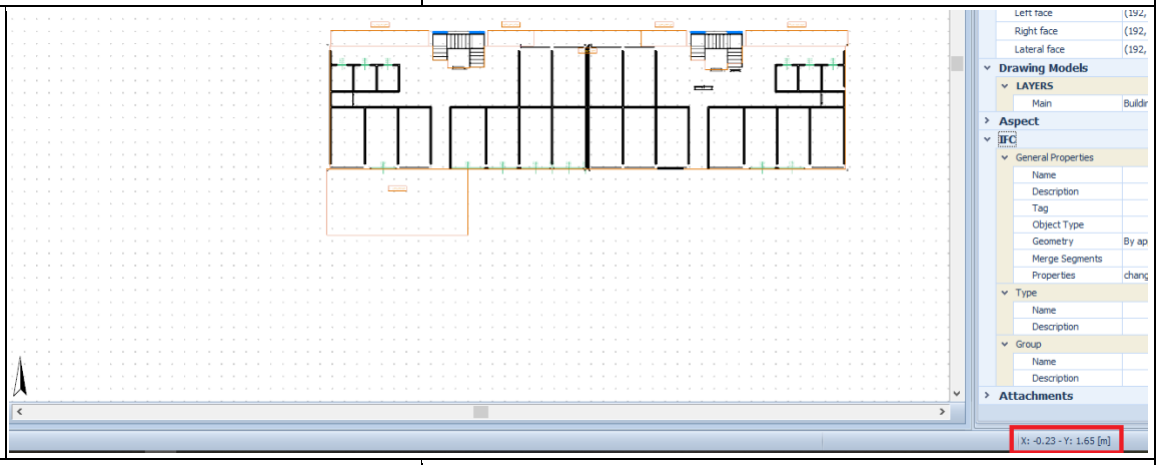


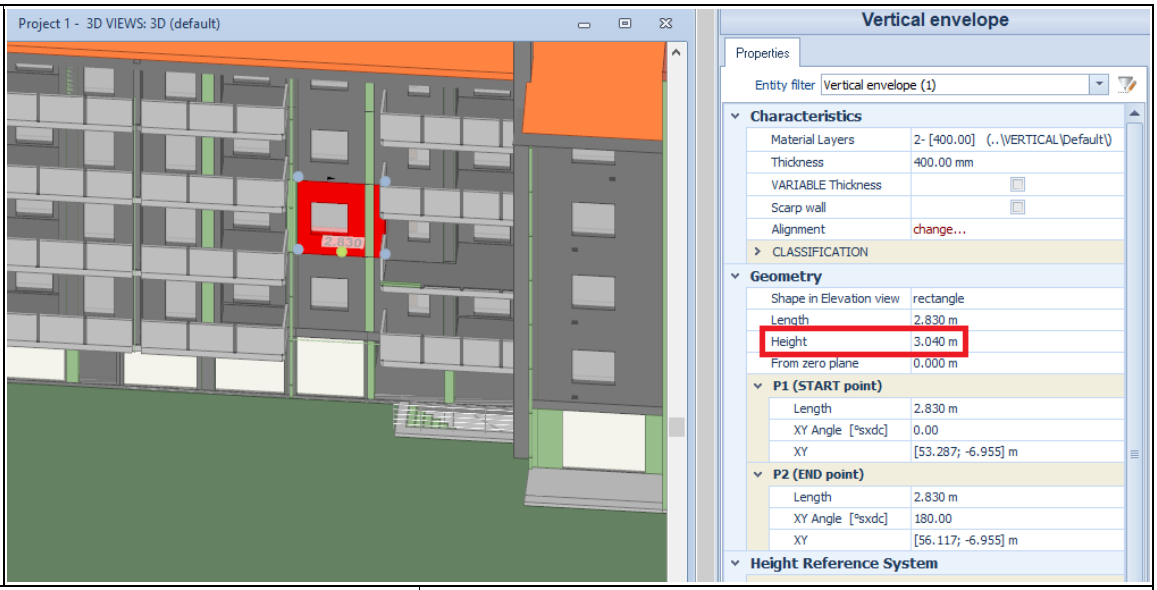
Selection on BOQ (bill of quantities)

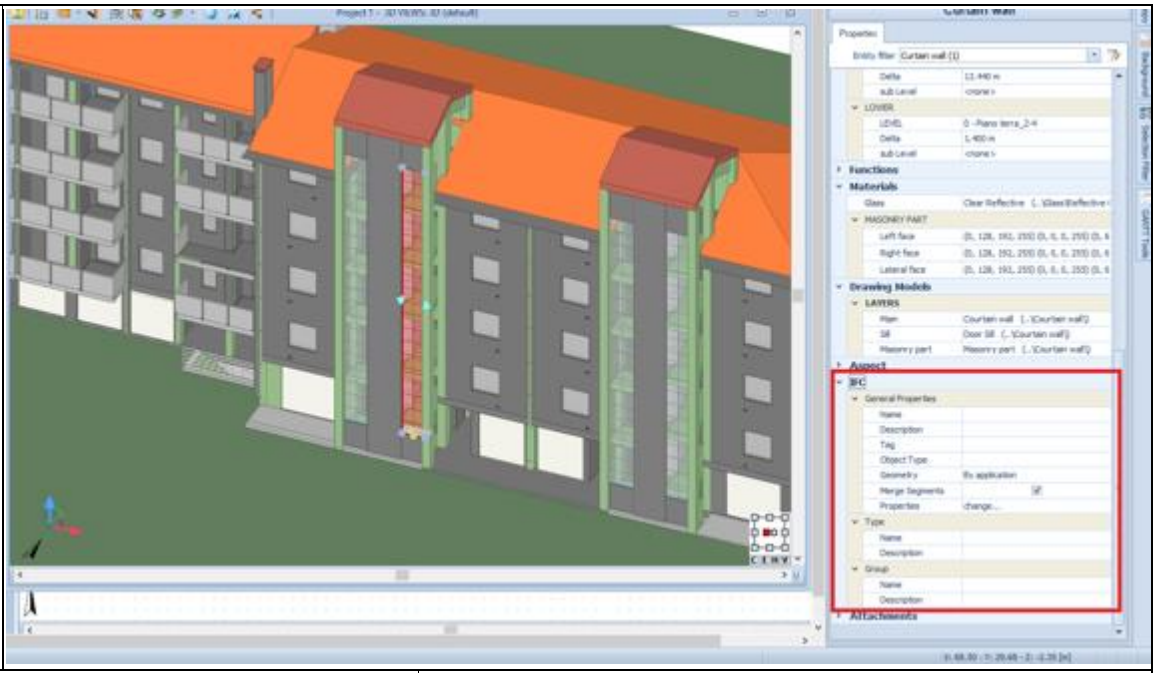
		
Analysis	16.1) Is it possible to analyse the objects and the model?	No
	16.1.1) What analysis are possible? Do you know if the results are reliable?	(no analysis possible)
	16.1.3) Time required to perform the analysis about the model itself (type 1)	No analysis of type 1 are possible
	16.1.3) Time required to perform the analysis about the model performances (type2)	No analysis of type 2 are possible
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	17.2) short comments to the previous question (optional)	It can only export IFC2x3.

	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	Yes
	18.1.1) Which ones are available?	You can choose Coordination View 2.0 or Surface Geometry View.
	18.1.2) Is it possible to add a customised MVD to be used for exporting IFC?	Yes
	18.1.2.1) What kind of customisation is possible?	For example, you can choose whether or not the axis geometry, footprint geometry, profile geometry, parametrical profiles, or bounding box are exported to the output file.

	18.1.2.2) Attach screenshots and files	
	19) How long does it take for the data to be exported to IFC?	less than a minute
Test with Savigliano.ifc		

Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
	38) Please report on any errors the software gives when importing the file.	None
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
Georeferencing	40.1.1) Where is the origin of the model coordinate reference system as imported in the software?	(0,0)
	40.1.2) Attach screenshots	
	40.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	It is a right-handed local coordinate system, with x and y representing metres.
	40.1.4) Attach screenshots	See 40.1.2
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	41.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0

	41.1.2) Attach screenshots	
	41.1.3) What is the height reference system?	Local per level/floor, in meters.
	41.1.4) Attach screenshots	See 41.1.2
Orientation	42.1) Is the model oriented correctly with respect to the true North?	Yes
	42.2) short comments to the previous question (optional)	It is oriented with the north pointing upwards. When rotating the model, the north arrow moves as well.
Proportions	43.1) Does the model maintain its correct dimensions and proportions?	Yes
	Other	Partially
	44.2) short comments to the previous question (optional)	For example opening, door, and curtain wall are detected by the software. Some are loaded as a general IFC Proxy Object. It also has vertical/horizontal envelopes which are actually not IFC classifications.
Hierarchy	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attributes	46.1) Are the attributes present in the IFC entities retained and consistent?	No
	46.1.1) What changes / inconsistencies / errors / other issues were noted?	There is a box in the properties which should show the IFC attributes, but it is empty.

	46.1.2) Attach screenshots	
Relationships	47.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
	47.2) short comments to the previous question (optional)	The relationships are not shown at least.
Geometry	48.1) Is geometry read correctly?	The software does not have the necessary tools to determine this information
	48.2) short comments to the previous question (optional)	2 It is not possible to see the types of geometry. However, it seems like objects are not grouped nor broken.
2D/3D	49.1) Did the normals change?	The software does not have the necessary tools for checking it
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	Yes
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	55) How long does it take for the data to be exported to IFC?	less than a minute

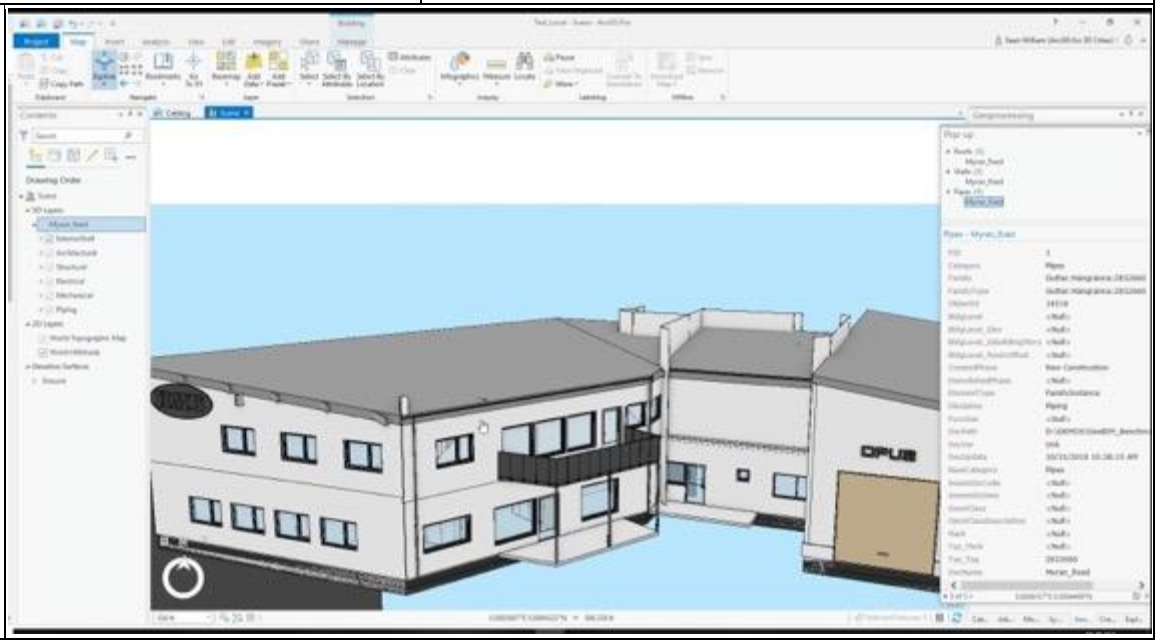
ESRI, Pro and ArcGIS 10.X, Revit, Safe FME [ArcGIS Pro 2.4, ArcGIS 10.7, FME 2019.1, Revit 2018 - 2020] - Windows 10 Home
Proprietary software
BIM
Level of tester expertise: 3 - Expert user (you know very well the technical details and tricks)

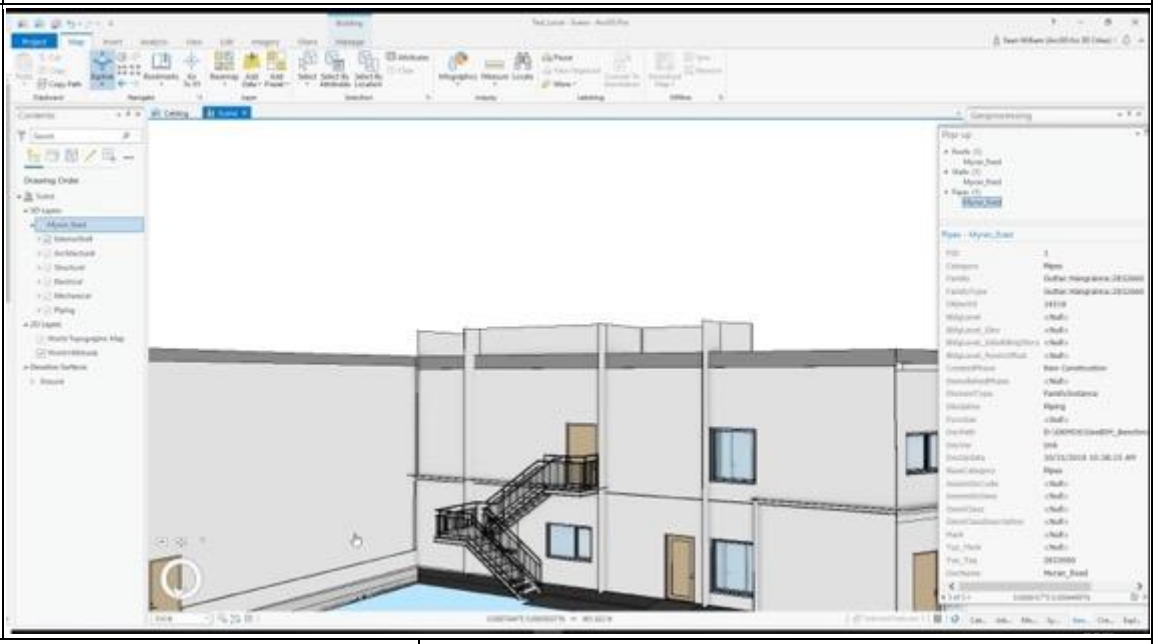
ESRI, Pro and ArcGIS 10.X, Revit, Safe FME

Software	Software Name [version]	**ESRI, Pro and ArcGIS 10.X, Revit, Safe FME [ArcGIS Pro 2.4, ArcGIS 10.7, FME 2019.1, Revit 2018 - 2020]**		Software house		**ESRI, Autodesk, Safe Software**	
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Dell Precision M7720 2017	Windows 10	Intel i7	Nvidia P5000	64GB RAM	1TB	450GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certification in progress		N/A	not certified			

Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	5-20 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	less than a minute
	How long does it take, approximately, to:Pan the model	less than a minute
	How long does it take, approximately, to:Rotate the model	less than a minute
	How long does it take, approximately, to:Query an object	less than a minute
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	less than a minute
	Please report on any errors the software gives when importing the file.	IFC opening elements not imported and needed to be discarded
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
	2.2) short comments to the previous question (optional)	N/A
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
	3.2) short comments to the previous question (optional)	When imported XYZ reference coordinates are taken into account with the models location.
Orientation	4.1.1) How is the model oriented, with respect to the reference direction?	
	4.2) short comments to the previous question (optional)	Initially not but fixed
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
	5.2) short comments to the previous question (optional)	All dimensions were maintained

ESRI, Pro and ArcGIS 10.X, Revit, Safe FME [ArcGIS Pro 2.4, ArcGIS 10.7, FME 2019.1, Revit 2018 - 2020] - Windows 10 Home
Proprietary software
BIM
Level of tester expertise: 3 - Expert user (you know very well the technical details and tricks)

IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
	6.2) short comments to the previous question (optional)	N/A
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
	7.2) short comments to the previous question (optional)	N/A
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
	8.2) short comments to the previous question (optional)	All transferred over
Relationships	9.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Geometry	10.1) Is geometry read correctly?	Yes
	10.2) short comments to the previous question (optional)	geometry imported correctly into Revit and structure defined by FME into ArcGIS fGDB
	11.2) short comments to the previous question (optional)	some
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	12.2) short comments to the previous question (optional)	ArcGIS Pro visualises in 3D either in local coordinates or Global. Revit permits 3D views, FME Data Inspector allows for 3D Views.
	13.1) Is it possible to view the model in 2D?	Yes
	13.2) short comments to the previous question (optional)	ArcGIS Pro, Revit and FME permit 2D viewing of models
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	Geometry editing as well as transformation and georeferencing are possible along with changing attributes.
	14.1.2) Attach screenshots	

	14.2) short comments to the previous question (optional)	N/A
Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	Select by attribute and direct query
	15.1.2) Attach screenshots	
	15.2) short comments to the previous question (optional)	N/A
Analysis	16.1) Is it possible to analyse the objects and the model?	No
	16.1.1) What analysis are possible? Do you know if the results are reliable?	N/A
	16.1.3) Time required to perform the analysis about the model itself (type 1)	No analysis of type 1 are possible
	16.1.3) Time required to perform the analysis about the model performances (type2)	No analysis of type 2 are possible

CSTB eveBIM 2.10.0 - Windows 10 Home
Proprietary software
BIM
Level of tester expertise: 4 - Developer of the tested software

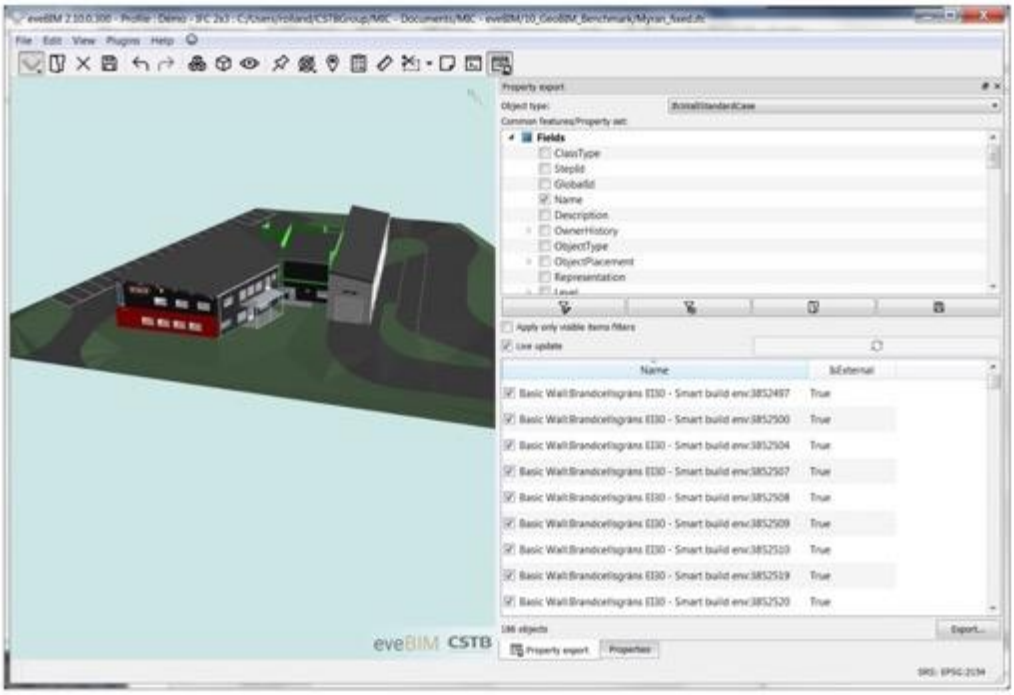
eveBIM

Software	Software Name [version]	**eveBIM [2.10.0]**		Software house		**CSTB**	
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	DELL Precision 5510 - 2018	Windows 7 Professionnel - 64 bit	Intel(R) Xeon(R) CPU E3-1505M v5	Nvidia Quadro M1000M	16,0 Go	953 Go	278 Go
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			

Test with Myran.ifc

Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
	Please report on any errors the software gives when importing the file.	No error
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
	2.2) short comments to the previous question (optional)	In eveBIM you can choose how you geolocalise your files. eveBIM can load multi-files (ifc, cityGML, shape) with different coordinate system. In france BIM manager don't use the latitude and longitude information to geolocalise their files but use the local placement as base point. So in eveBIM we let the possibility to manage the geolocalisation as you want: 1) either using latitude, longitude and elevation given in the ifcSite, 2) either using the localPlacement of the IfcSite as base point (in this case you have to set the default coordinate system, 3) either in advance parameters configure for each loaded file exactly what you want (which coordinate system, use latitude/longitude or not, use true north,...)
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
	3.2) short comments to the previous question (optional)	If we pick a point on the terrain, the elevation of the ground is around ~148 mm
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
	4.2) short comments to the previous question (optional)	eveBIM use the information of the true north given in the IfcProject. As I said before, in advance configuration, we can choose to ignore this information. In the 3D view, there is a compass that show you the north

Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
	5.2) short comments to the previous question (optional)	There is no distorsion or scale. eveBIM preserve unit (in mm). we see this when we do measures or calculate surfaces.
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
	6.2) short comments to the previous question (optional)	I'm not sure to understand the question. In the properties view, we have a mode without traduction, and an other whith translation (thus IfcWall is indicated as Wall or 'Mur' in france). eveBIM is multi langage (english and french)
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
	7.2) short comments to the previous question (optional)	In eveBIM, the 'Model view' window, show you the spatial hierarchy (IfcProject > IfcSite > IfcBuidling > IfcBuildingStorey > ...). eveBIM can also present groupe hierarchy (objects classified under the IfcGroup)
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
	8.2) short comments to the previous question (optional)	When we click on an element, the properties are displayed. it's quite similar to the way the properties are presented in the file description on GeoBIM / data / Myran Ifc Model.
Relationships	9.1) Are the relationships between the objects retained?	Yes
	9.2) short comments to the previous question (optional)	The different relationsships are displayed in the proprety view. We can see IfcRelAssociatesMaterial, IfcRelFillsElement, IfcRelContainedInSpatialStructure, IfcRelAggregates depending on the objetcs we select
Geometry	10.1) Is geometry read correctly?	Yes
	10.2) short comments to the previous question (optional)	The model is displayed in the same way than the images displayed in geoBIM/data. The geometry of the IfcSite is a surface.
Normals	11.1) Did the normals change?	Yes
	11.2) short comments to the previous question (optional)	Yes for the windows. I think in the model, there is a problem of normal for some element (geometry of the site, under the building). In eveBIM, we have an option name 'backface culling (by press 'b' touch) which allows to control the reversed normals
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	No
	14.2) short comments to the previous question (optional)	We can edit some attributes (change name, description, tag, predefined type and pset). We can modify or add property set.
Query	15.1) Is it possible to query the model and the attributes?	Yes

	15.1.1) What kinds of query are possible?	Selection by attributes: From a type of element (IfcWall, IfcBuildingStorey, IfcSpace, ...) select the elements that have a certain value of attribute (examples of rule: select all the IfcWall with the surface > 20 m² or select all the external walls). The operators for rules are =, !=, <, >, <=, >=, contains, not contains.
	15.1.2) Attach screenshots	 *Figure 1 General view : 3D View and Property export pluggin*

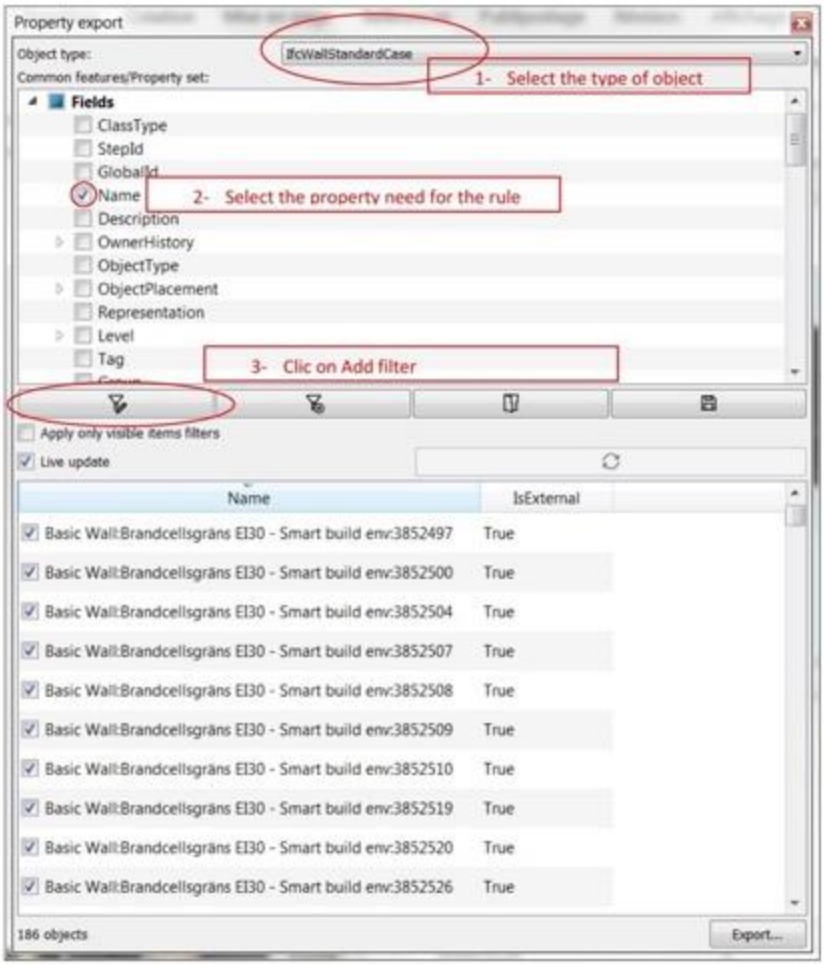
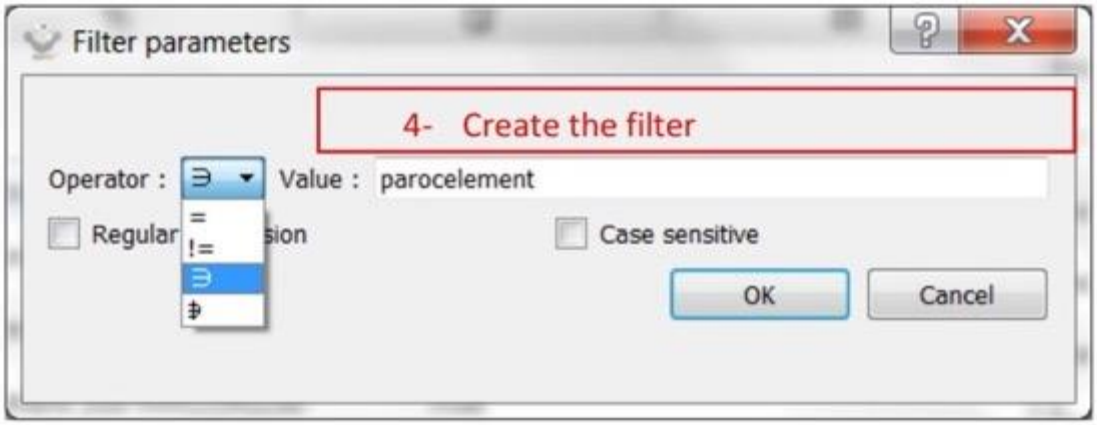


Figure 2 How to create a filter (Part 1)

		 *Figure 3 How to create a filter (Part 2)*

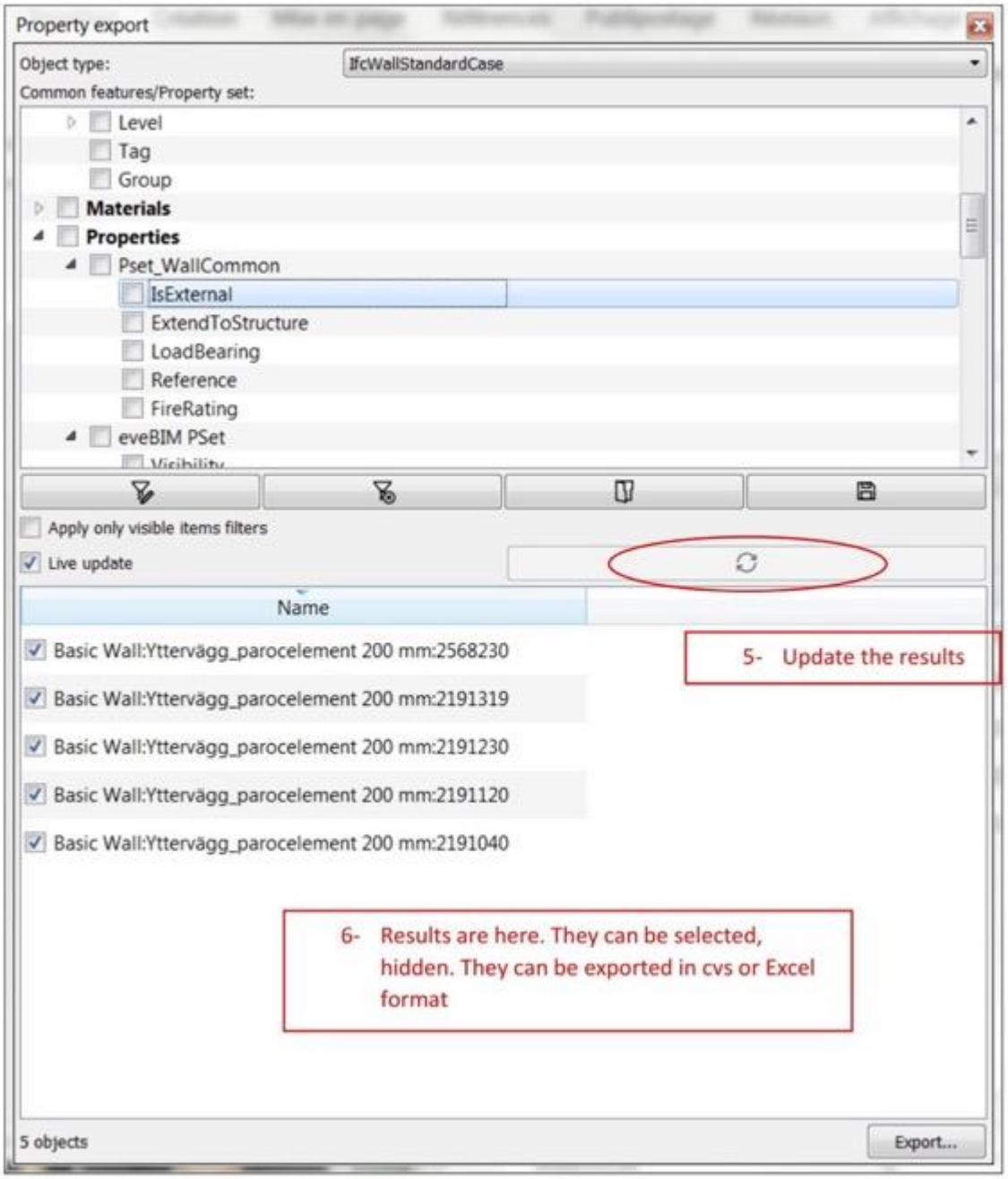
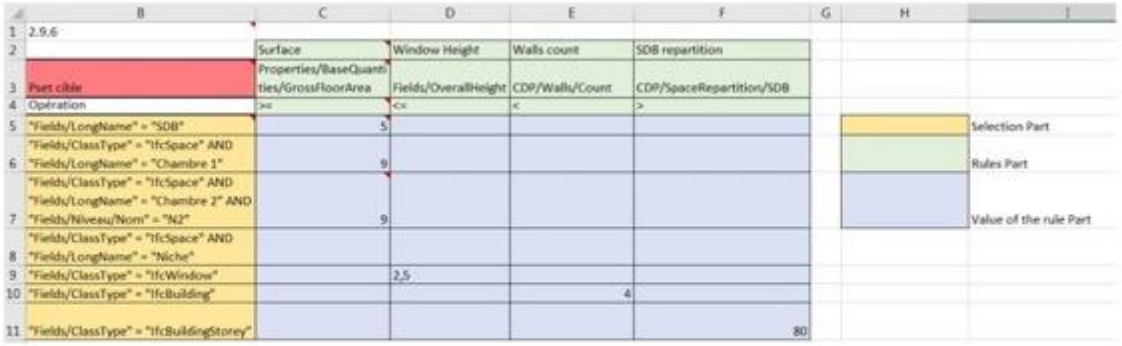
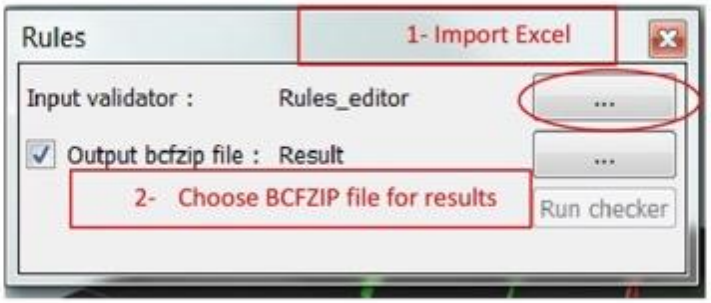
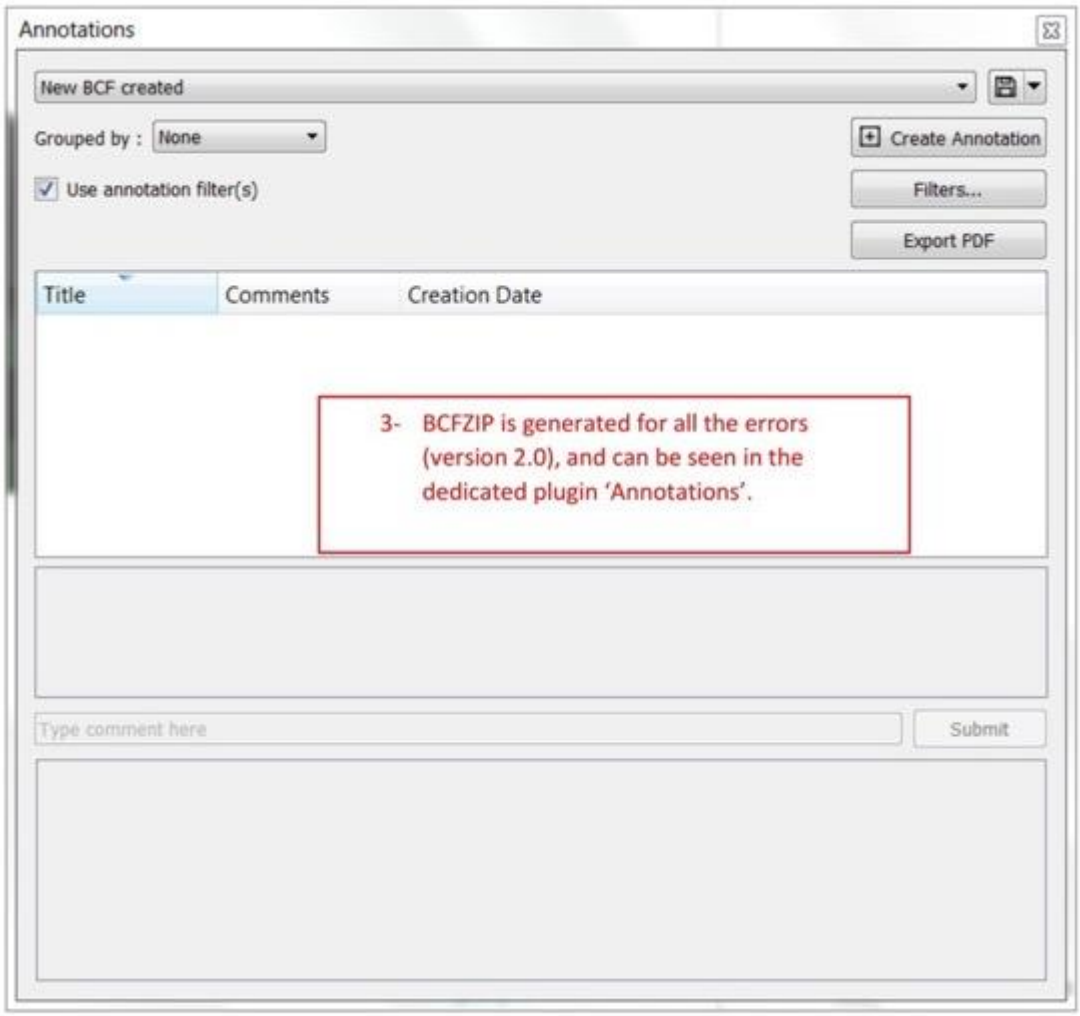


Figure 4 How to create a filter (Part 3)

Other	Only semantics validity
16.1.1) What analysis are possible? Do you know if the results are reliable?	eveBIm can check that an IFC model has required attributes and properties (and check that values of the properties are inferior, superior, different, equal to, or that the property exists, ...). In eveBIM, we can simulate the date and hour of the day. Then we can see the difference of color on the faces.

	16.1.2) Attach screenshots	 *Figure 1 Excel where rules are defined*  *Figure 2 eveBIM: Checker*

		 *Figure 3 Results In BCF Plugin*
	16.1.3) Time required to perform the analysis about the model itself (type 1)	less than a minute
	16.1.3) Time required to perform the analysis about the model performances (type2)	No analysis of type 2 are possible
	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate

	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	it's almost immediate
Proportions	24.1) Does the model maintain its correct dimensions and proportions?	Yes
	24.2) short comments to the previous question (optional)	Ok no error
IFC definitio	25.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
	26.2) short comments to the previous question (optional)	Exactly the same
Attributes	27.1) Are the attributes present in the IFC entities retained and consistent?	Yes
	27.2) short comments to the previous question (optional)	All the attributes can be read
Relationships	28.1) Are the relationships between the objects retained?	Yes
	28.2) short comments to the previous question (optional)	\- We find IfcRelAssignsToGroup, IfcRelContainedInSpatialStructure, ...tructure
Geo	29.1) Is geometry read correctly?	Yes
Normals	30.1) Did the normals change?	Yes
	30.2) short comments to the previous question (optional)	For geometry (surface) we can see the direction of normal
2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	31.2) short comments to the previous question (optional)	Everything is ok
	32.1) Is it possible to view the model in 2D?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it's almost immediate
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
	38) Please report on any errors the software gives when importing the file.	Some geometries can't be generated. Error message is: "Warn - IFCProduct (#565376): error IfcRepresentationItem (#564617) Error - this representation Item IfcAdvancedBRep (#564922) is not implemented... TODO
	39) Attach screenshots regarding the eventually reported errors.	
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes

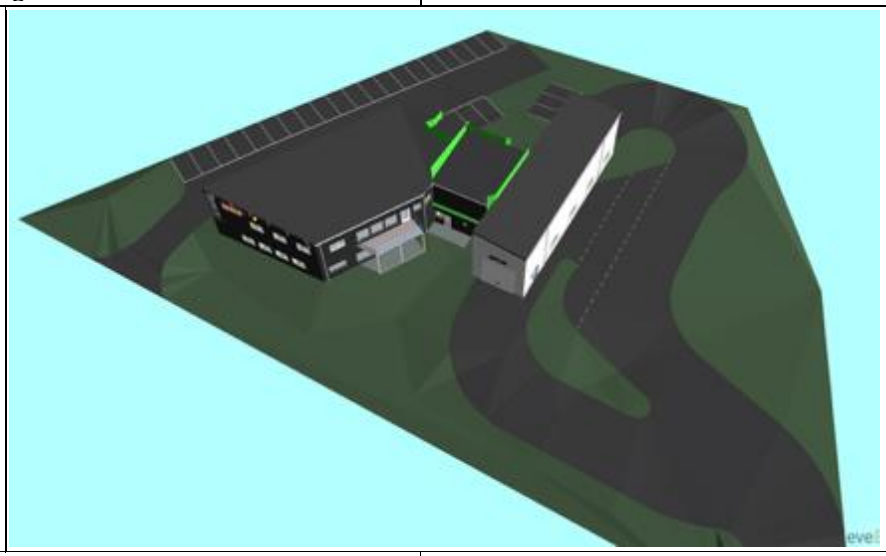
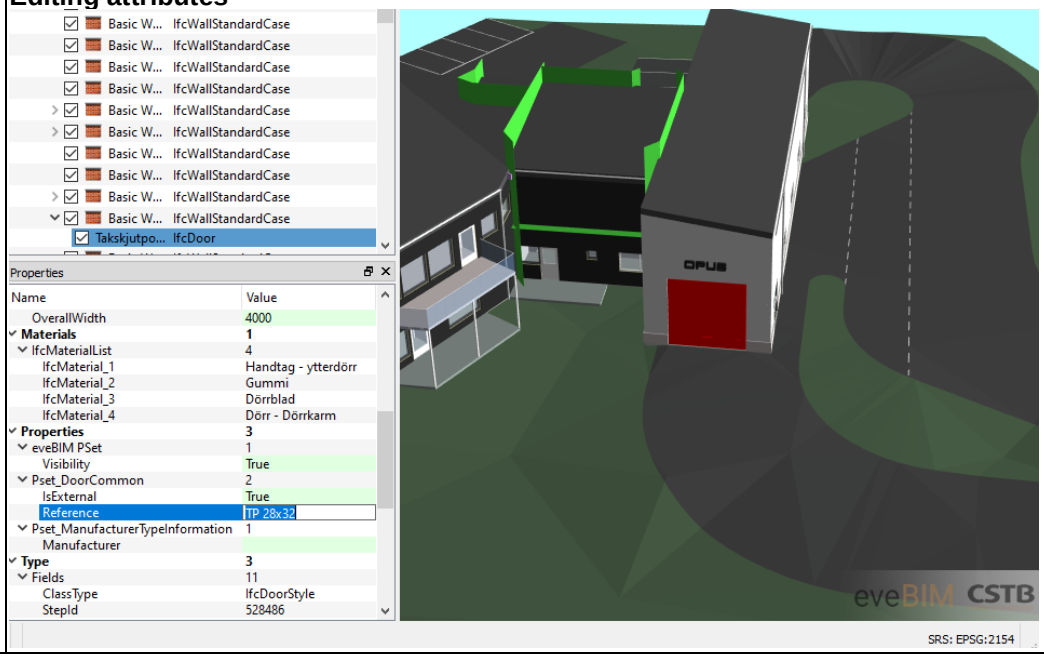
Orientation	42.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	43.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	44.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy Hierarchies	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
	45.2) short comments to the previous question (optional)	everything is ok
Attributes	46.1) Are the attributes present in the IFC entities retained and consistent?	Yes
	46.2) short comments to the previous question (optional)	same answer as other files: ok
Relat	47.1) Are the relationships between the objects retained?	Yes
Geometry	48.1) Is geometry read correctly?	No
	48.1.1) What changes / inconsistencies / errors / other issues were noted?	The IfcAdvancedBrep is not implemented so the geometry is not shown
	48.1.2) Attach screenshots	ERROR - this Representation Item IfcAdvancedBrep (#565115) is not implemented ... TODO :-) ERROR - OsgBuildVisitor failed to generate IfcAdvancedBrep WARN - IfcProduct (#565376) : error in IfcRepresentationItem (#565115) ERROR - this Representation Item IfcAdvancedBrep (#565368) is not implemented ... TODO :-) ERROR - OsgBuildVisitor failed to generate IfcAdvancedBrep WARN - IfcProduct (#565376) : error in IfcRepresentationItem (#565368) WARN - IfcProduct (#565376) : failed to generate "Body" representation!!! ERROR - this Representation Item IfcAdvancedBrep (#377175) is not implemented ... TODO :-) ERROR - OsgBuildVisitor failed to generate IfcAdvancedBrep WARN - IfcProduct (#377642) : error in IfcRepresentationItem (#377175) ERROR - this Representation Item IfcAdvancedBrep (#377634) is not implemented ... TODO :-) ERROR - OsgBuildVisitor failed to generate IfcAdvancedBrep WARN - IfcProduct (#377642) : error in IfcRepresentationItem (#377634) WARN - IfcProduct (#377642) : failed to generate "Body" representation!!!
Normals	49.1) Did the normals change?	Yes
	49.2) short comments to the previous question (optional)	Same as previous IFC files
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	50.2) short comments to the previous question (optional)	with missing elements
	51.1) Is it possible to view the model in 2D?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2

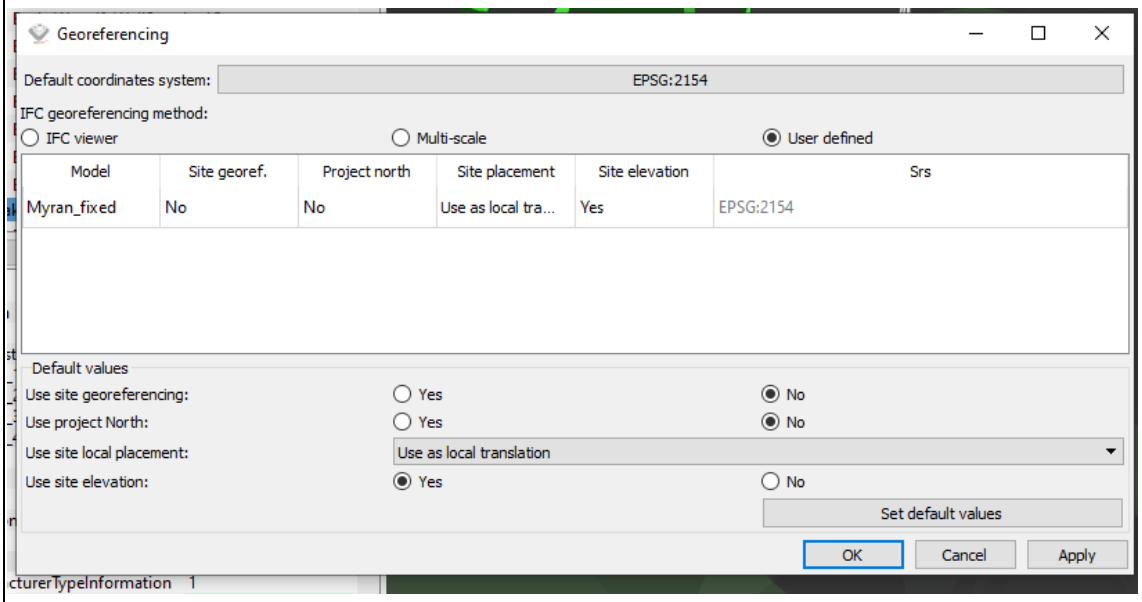
CSTB eveBIM Beta 2.4.2.201- Windows 10 Home
Proprietary software
BIM
Level of tester expertise: 1 - Very beginner user (it is nearly the first time you use it)

eveBIM Viewer

Software	Software Name [version]	**eveBIM Viewer [Beta 2.4.2.201]**		Software house		**CSTB**	
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	self-built desktop (2013)	Windows 10 Home 64-bit	Intel i5-4570 @ 3.20GHz	AMD Radeon HD 7800 Series	8 GB	120 GB	20 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			

Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
	2.2) short comments to the previous question (optional)	By default, it would load the model with a local coordinate system. You can however change the settings to have it use the model's coordinate system.
Orientation	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
Proportions	4.1) Is the model oriented correctly with respect to the true North?	Yes
IFC definitions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
Hierarchy	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Attributes	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Relationships	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relat	9.1) Are the relationships between the objects retained?	Yes

	9.2) short comments to the previous question (optional)	IfcRelContainedInSpatialStructure is there at least
Geometry	10.1) Is geometry read correctly?	Yes
Normals	11.1) Did the normals change?	No
	11.1.2) Attach screenshots	
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	No
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	You can edit some attributes (name, description, tag, CompositionType, reference, visibility). You can change the coordinate system (to local or user defined). The geometry can't be edited.
	14.1.2) Attach screenshots	

		Editing georeferencing 
Qu	15.1) Is it possible to query the model and the attributes?	No
Analysis	16.1) Is it possible to analyse the objects and the model?	No
	16.1.3) Time required to perform the analysis about the model itself (type 1)	No analysis of type 1 are possible
	16.1.3) Time required to perform the analysis about the model performances (type2)	No analysis of type 2 are possible
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	No
	19) How long does it take for the data to be exported to IFC?	less than a minute
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	5-20 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	less than a minute
	How long does it take, approximately, to:Pan the model	less than a minute
	How long does it take, approximately, to:Rotate the model	less than a minute
	How long does it take, approximately, to:Query an object	less than a minute
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	less than a minute
Pro port.	24.1) Does the model maintain its correct dimensions and proportions?	Yes

IFC definitions	25.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attributes	27.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relat	28.1) Are the relationships between the objects retained?	Yes
Geo	29.1) Is geometry read correctly?	Yes
Normals	30.1) Did the normals change?	No
	30.1.2) Attach screenshots	
2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	32.1) Is it possible to view the model in 2D?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC

	36) How long does it take for the data to be exported to IFC?	20 minutes-1 hour
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
	39) Attach screenshots regarding the eventually reported errors.	
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
Orientation	42.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	43.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitio	44.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attributes	46.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relat	47.1) Are the relationships between the objects retained?	Yes
Geo	48.1) Is geometry read correctly?	Yes
Norm	49.1) Did the normals change?	No

	49.1.2) Attach screenshots	
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	55) How long does it take for the data to be exported to IFC?	less than a minute

Datacomp Sp. z o.o. BIM Visison 2.20.3 - Windows 10 Home
Open source
3D viewer
Level of tester expertise: 1 - Very beginner user (it is nearly the first time you use it)

BIM Visison 2.20.3

Software	Software Name [version]	**BIM Visison [2.20.3]**		Software house		**Datacomp Sp. z o.o.**	
	Proprietary or open source software?			Kind of software			
	open source			3D viewer			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	HP ZBook 15 G3, 2018	Windows 10 Enterprise, 64-bit	Intel ® Core™ i7-6820HQ CPU	NVIDIA Quatro M1000M	32	474	217
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			

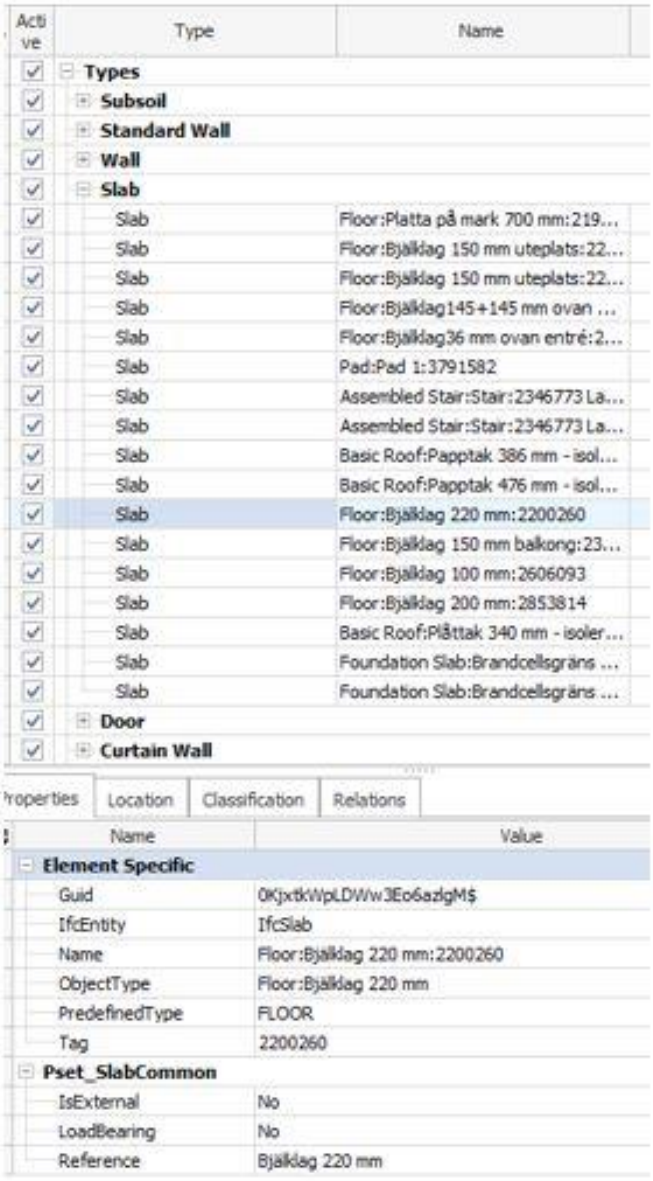
Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it's almost immediate
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitio	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relationships	9.1) Are the relationships between the objects retained?	Yes
	9.2) short comments to the previous question (optional)	Some relations might be missing
N G	10.1) Is geometry read correctly?	Yes

Datacomp Sp. z o.o. BIM Visison 2.20.3 - Windows 10 Home

Open source

3D viewer

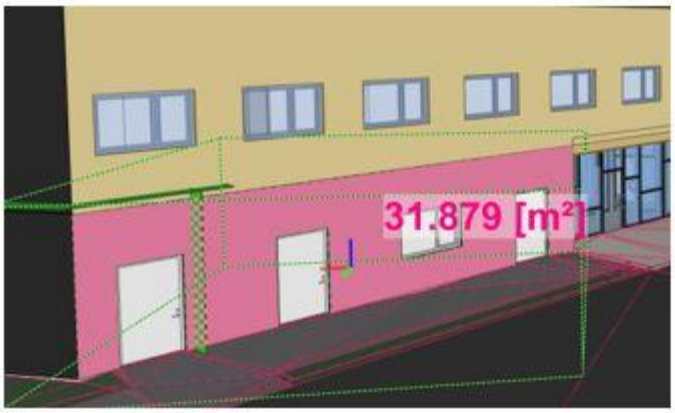
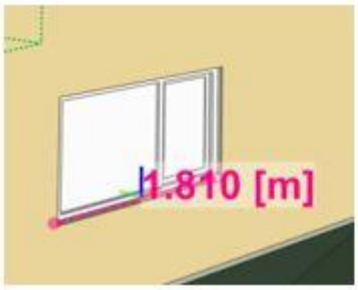
Level of tester expertise: 1 - Very beginner user (it is nearly the first time you use it)

No	11.1) Did the normals change?	Yes
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	Yes
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	No
	14.2) short comments to the previous question (optional)	At least, I cannot find such possibilities
Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	There are general pre-defined ways to view the information, listed by structure, by types, by groups (system, zones or other) and by layers. For all these properties, location, classification and relations can be shown at the object level
	15.1.2) Attach screenshots	*List by types*: 

Datacomp Sp. z o.o. BIM Visison 2.20.3 - Windows 10 Home

Open source
3D viewer
Level of tester expertise: 1 - Very beginner user (it is nearly the first time you use it)

Analysis	16.1) Is it possible to analyse the objects and the model?	Yes, analysis about the modelled building performances (energy, noise, shadows...) are possible (type 2)
	16.1.1) What analysis are possible? Do you know if the results are reliable?	Volume, area, edge, weight, counting and coordinates can be measured. Do not know it they are reliable

	16.1.2) Attach screenshots	*Volume:* *Area:*  *Edge:*  *Steel weight:*

	16.1.3) Time required to perform the analysis about the model itself (type 1)		No analysis of type 1 are possible
	16.1.3) Time required to perform the analysis about the model performances (type2)		it's almost immediate
	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:		The software cannot export, therefore skip the phase 2
Test with UpTown.ifc			
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model		5-20 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail		it's almost immediate
	How long does it take, approximately, to:Pan the model		it's almost immediate
	How long does it take, approximately, to:Rotate the model		it's almost immediate
	How long does it take, approximately, to:Query an object		it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship		it's almost immediate
Pro port.	24.1) Does the model maintain its correct dimensions and proportions?		Yes
Hier arch.	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?		Yes
Attri bute s	27.1) Are the attributes present in the IFC entities retained and consistent?		Yes
R el at	28.1) Are the relationships between the objects retained?		Yes
G e o	29.1) Is geometry read correctly?		Yes
N o r	30.1) Did the normals change?		Yes
2D/3 D	31.1) Is it possible to view the model in 3D?		Yes
	32.1) Is it possible to view the model in 2D?		Yes
Editi ng	33.1) Is it possible to edit the model (attributes, geometry, other)?		No
Querying	34.1) Is it possible to query the model and the attributes?		The answers are the same I gave during the test with Myran.ifc
	34.1.1) What kinds of query are possible?	There are general pre-defined ways to view the information, listed by structure, by types, by groups (system, zones or other) and by layers. For all these properties, location, classification and relations can be shown on the object level	

	34.1.2) Attach screenshots	*List by classification:* Classifications Active / Type / Name Classifications Uniformat 20 21.0 — ALGEMEEN 21.10 — ALGEMEEN Wall — Basic Wall:21_WA_KLA_storax_r... Standard Wall — Basic Wall:21_WA_KLA_storax_r... Standard Wall — Basic Wall:21_WA_KLA_storax_r... 21.12 — SPOUWWANDEN 21.16.10 — BOEIBOORD, HOUT Standard Wall — Basic Wall:21_KLA_Houten lijst:1... Standard Wall — Basic Wall:21_KLA_Houten lijst:2... Standard Wall — Basic Wall:21_KLA_Houten lijst:2... Standard Wall — Basic Wall:21_KLA_Houten lijst:2... Standard Wall — Basic Wall:21_KLA_Houten lijst:2... Standard Wall — Basic Wall:21_KLA_Houten lijst:2... Standard Wall — Basic Wall:21_KLA_Houten lijst:3... Standard Wall — Basic Wall:21_KLA_Houten lijst:3... Standard Wall — Basic Wall:21_KLA_Houten lijst:3... Standard Wall — Basic Wall:21_KLA_Houten lijst:3... Standard Wall — Basic Wall:21_KLA_Houten lijst:3... Standard Wall — Basic Wall:21_KLA_Houten lijst:3... Standard Wall — Basic Wall:21_KLA_Houten lijst:3... Standard Wall — Basic Wall:21_KLA_Houten lijst:3...
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export, therefore skip the phase 2
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it's almost immediate
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
	39) Attach screenshots regarding the eventually reported errors.	
Georefer	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes

Orientation	42.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	43.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	44.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	46.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relat	47.1) Are the relationships between the objects retained?	Yes
Geo	48.1) Is geometry read correctly?	Yes
Normals	49.1) Did the normals change?	Yes
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	Yes
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export, therefore skip the phase 2

FreeCAD Current 0.19_pre development build 0.19.17352_x64_LP_11.11_PY2QT4-WinVS2013 - Windows 10 Home

Open source

CAD

Level of tester expertise: 2 - Current user

FreeCAD

Software	Software Name [version]	**FreeCAD [Current 0.19_pre development build 0.19.17352_x64_LP_11.11_PY2 QT4-WinVS2013]**		Software house		**does not apply**	
	Proprietary or open source software?			Kind of software			
	open source			CAD			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Dell Precision 3630	Windows 10 Education	Intel Core i5-8500 3.00 GHz	Intel UHD Graphics 630	16	237 (System drive)	167 (System drive)
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			

Test with Myran.ifc

Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	5-20 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
	Please report on any errors the software gives when importing the file.	I have set the log to debug level. Thus it is very verbose. There seem to be 3 types of error messages, that may pertain to similar causes, but in different places in the import process: Invalid base object, invalid shape, ... has an invalid shape.
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
	2.2) short comments to the previous question (optional)	Checked min and max X and Y values for the terrain and part of the building compared to website image. Looks reasonable with reference point at 0,0 (not the whole model). For example, terrain.X ranges from 22320 to 119491.
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
	3.2) short comments to the previous question (optional)	Checked min and max z values of terrain and roof. Terrain goes from -1200 to 200, roof up to 6860. There is no information about the vertical location of the reference point on the website. But apparently the model is not moved to zero, but the reference point is at z=0.
Orient	Other	The model is oriented correctly with respect to the reference system.

FreeCAD Current 0.19_pre development build 0.19.17352_x64_LP_11.11_PY2QT4-WinVS2013 - Windows 10 Home

Open source

CAD

Level of tester expertise: 2 - Current user

	4.2) short comments to the previous question (optional)	True north (somewhere in NNE in the ref system) is not relevant at all for this. There is a (brand new) function in FreeCAD (and most other CAD systems) to rotate the view such that true north points to display top, but usually architecture plans are not displayed nor printed like this. Also, this would not change the model orientation.
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
	5.2) short comments to the previous question (optional)	It is hard to compare with the suggestions, because it is not clear where exactly measurements where taken. E.g. the diagonal measure could be different on different heights and the vertical measurement in section B is trough a sloped roof, again depending on exact position of measurement..
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
	6.2) short comments to the previous question (optional)	Checked all mappings through FreeCAD's Python console. IfcOpeningElement was not imported due to default import settings.
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
	7.2) short comments to the previous question (optional)	I am not sure about the question and the meaning of "hierarchical relationships". From the pictures and the mentioning of subclasses it looks like you are talking about the inheritance tree defined for the IFC? Usually, native BIM applications do not need to implement the IFC type tree including all abstract types. Also, implementation details are usually not visible to the user (unless we have an Open Source application). So a more reasonable question would relate to the spatial hierarchy, that is Project/Site/Building/Storey (but then the "hierarchy" part of the data section would need to be updated). With regard to this, FreeCAD behaves properly. I also checked that all inherited attributes are considered and preserved during import.
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
	8.2) short comments to the previous question (optional)	All properties from properties (under "attributes" in detailled data screenshots) are retained. With regard to attributes defined directly for the entity type (including inherited attributes) - these can be configured. From default configuration, most are retained, but ObjectType is missing from the configuration file for example.
Relationships	9.1) Are the relationships between the objects retained?	Yes
	9.2) short comments to the previous question (optional)	Spatial aggregation and containment is properly retained (although in debug mode, aggregations with more than 10 objects are skipped). Type objects (IfcRelDefinedByType) seem not to be considered. IfcRelConnectsPathElements (connection between walls) is ignored. IfcRelVoidsElement/IfcRelFillsElement could not be checked because due to import settings, openings where not imported as objects in their own right.
Geometry	10.1) Is geometry read correctly?	Yes
	10.2) short comments to the previous question (optional)	It is difficult to deliver a precise evaluation without concrete examples of geometry types that should result in s olids and others that should result in surfaces. Wether a solid is a proper solid can be determined from the IFC geometry type in many cases, but not in all. For instance in this model the site geometry is an IfcFaceBasedSurfaceModel with IfcConnectedFaceSet. This can be either a closed or open shell. A different way to distinguish solids from surfaces may be the actual geometry but this may be contrary to the geometry representation type (which would mean that the file does not conform to the standard). It seem that these cases do exist in the IFC file at hand.
No	11.1) Did the normals change?	No

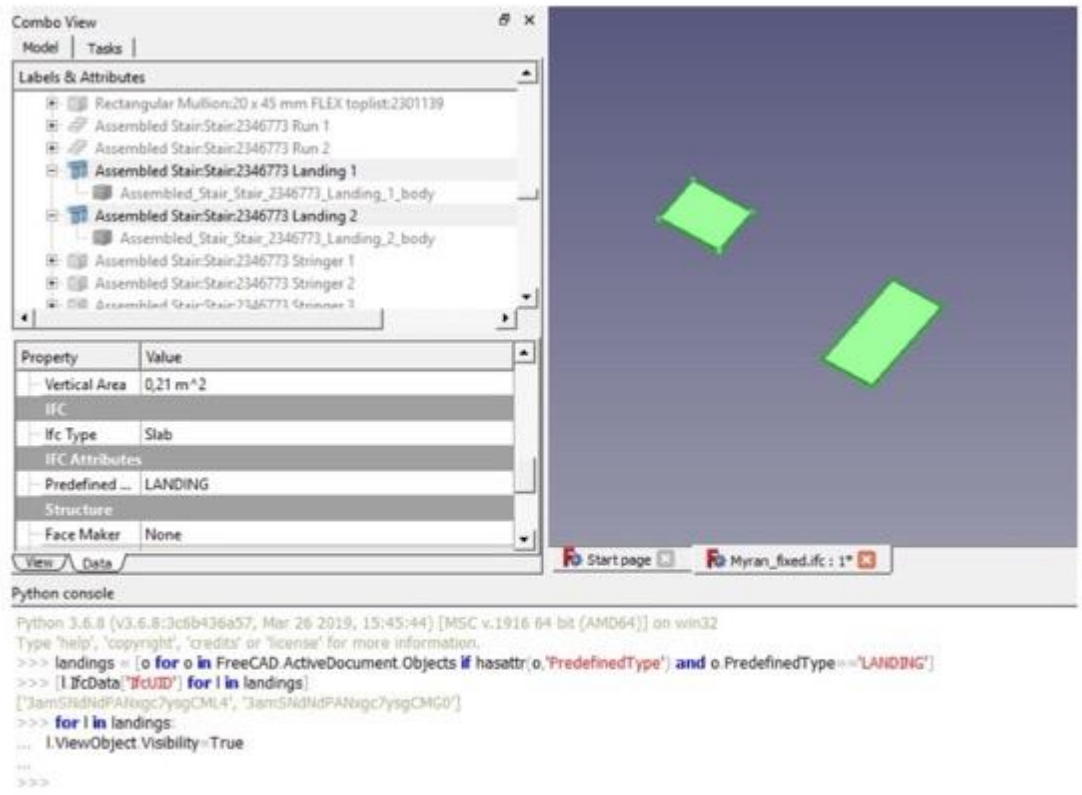
FreeCAD Current 0.19_pre development build 0.19.17352_x64_LP_11.11_PY2QT4-WinVS2013 - Windows 10 Home

Open source

CAD

Level of tester expertise: 2 - Current user

	11.1.1) What changes / inconsistencies / errors / other issues were noted?	No changes. Is the typeform flow correct? Should I really answer this question if the normals did *not* change?
	11.2) short comments to the previous question (optional)	Visual check by setting all rendering materials to one-sided via Python script. No changes observed.
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	12.2) short comments to the previous question (optional)	3D view is very nice and responsive. Only changes of visibility for all objects at once take a bit longer.
	13.1) Is it possible to view the model in 2D?	Yes
	13.2) short comments to the previous question (optional)	Projection works just fine. There are also several ways create 2D technical drawings, but I did not extensively evaluate these.
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	Full CAD functionality available, including attributes, both through GUI and scripting interface. With regard to IFC, also validity of enumeratin values is checked.
Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	* simple search by (partial) name (screenshot A) * search via Python console - arbitrary complex conditions (screenshot B) * select with pointing device in model tree or 3D view * transfer pointing device selection to console (screenshot C)

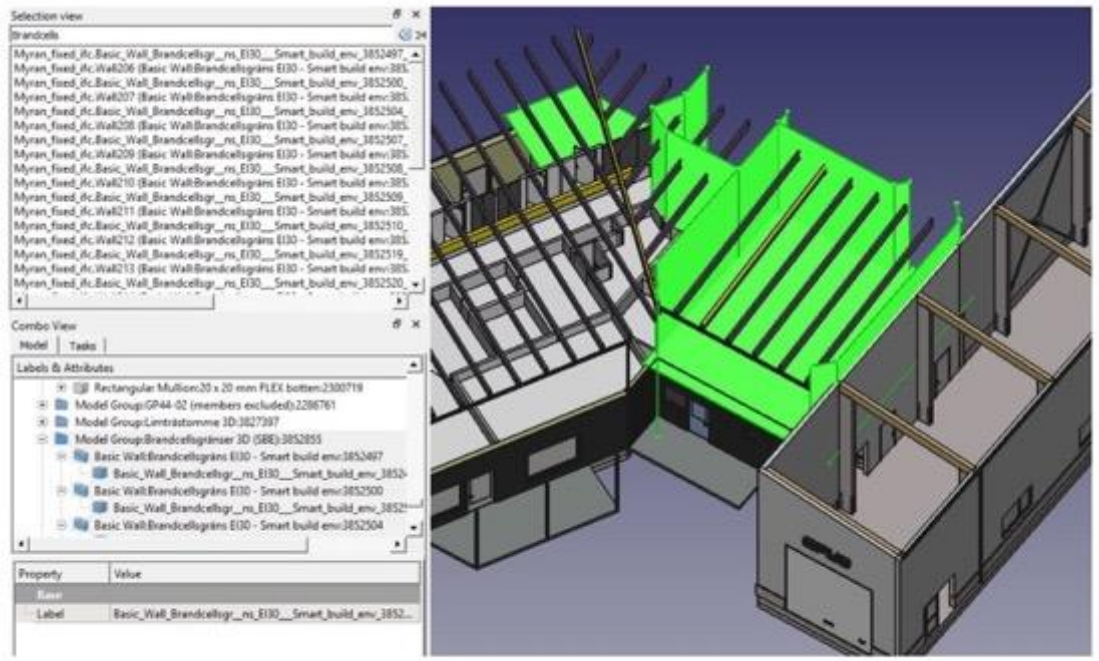
	15.1.2) Attach screenshots	 Figure 2: Screenshot B, Search with script

FreeCAD Current 0.19_pre development build 0.19.17352_x64_LP_11.11_PY2QT4-WinVS2013 - Windows 10 Home

Open source

CAD

Level of tester expertise: 2 - Current user

		 Figure 1: Screenshot A, Simple search

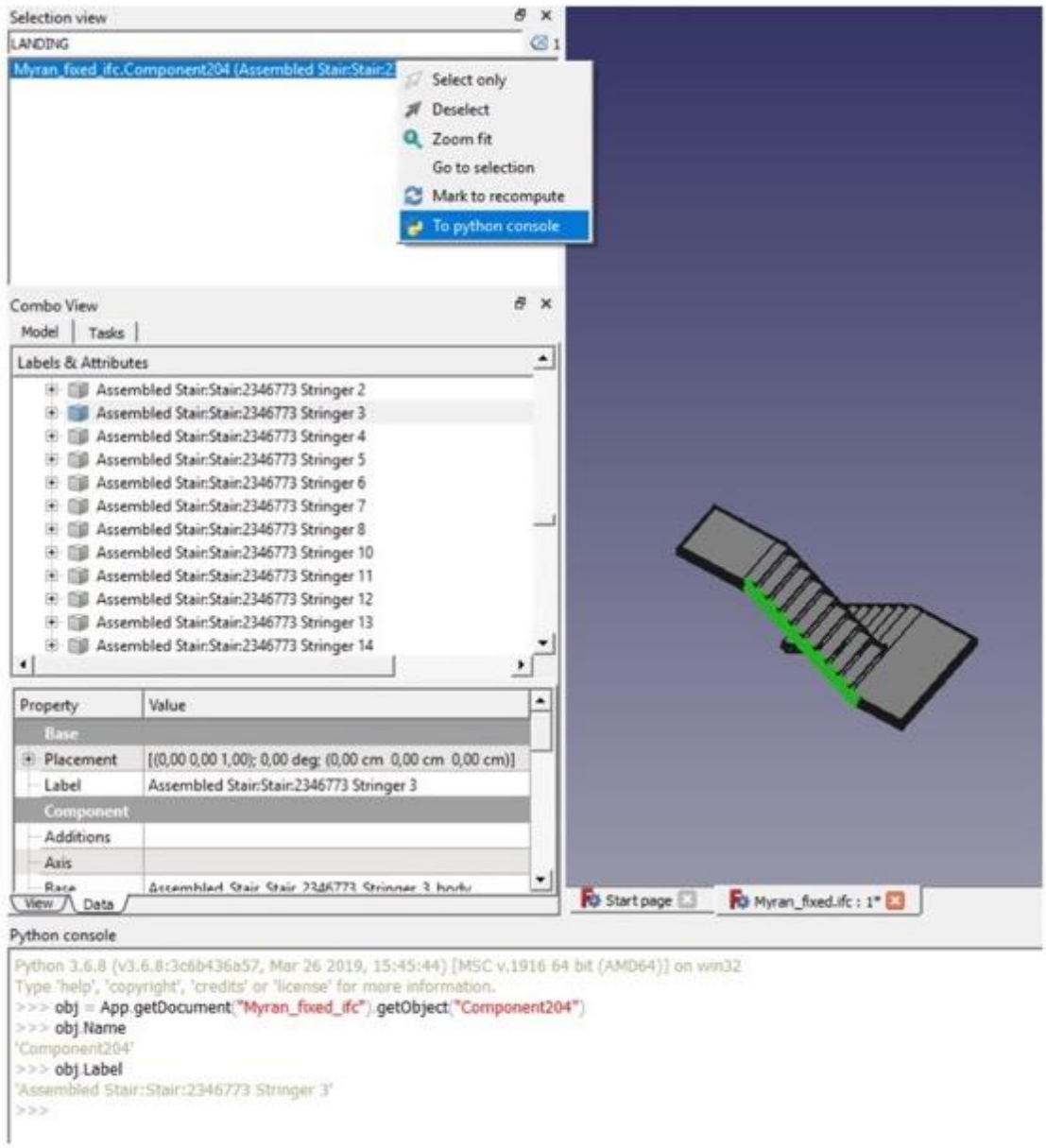


Figure 3: Screenshot C, Point and send to console

	15.2) short comments to the previous question (optional)	It would be nice to be able to add more than one file as screenshot.
Anal ysis	16.1) Is it possible to analyse the objects and the model?	Yes, both analysis about the model and its performances are possible (type 1 and 2)

	16.1.1) What analysis are possible? Do you know if the results are reliable?	Just a few possibilities (not exhaustive): * Validity of geometry (not closed solids etc.) * IFC preflight (standard conformance) * FEM analysis * Solar diagram * CFD simulation * ... more possible due to extensibility with workbenches and open source code I trust the geometry validation quite well since it is based on a mature and open source CAD kernel (OpenCascade). Maturity means it is used, tested, improved for a long time, open source code means people can verify and check what it really does under the hood. Most analysis tools integrate other external (open source) tools, e.g. pysolar for solar analysis or OpenFoam for CFD and are as reliably as these.

16.1.2) Attach screenshots

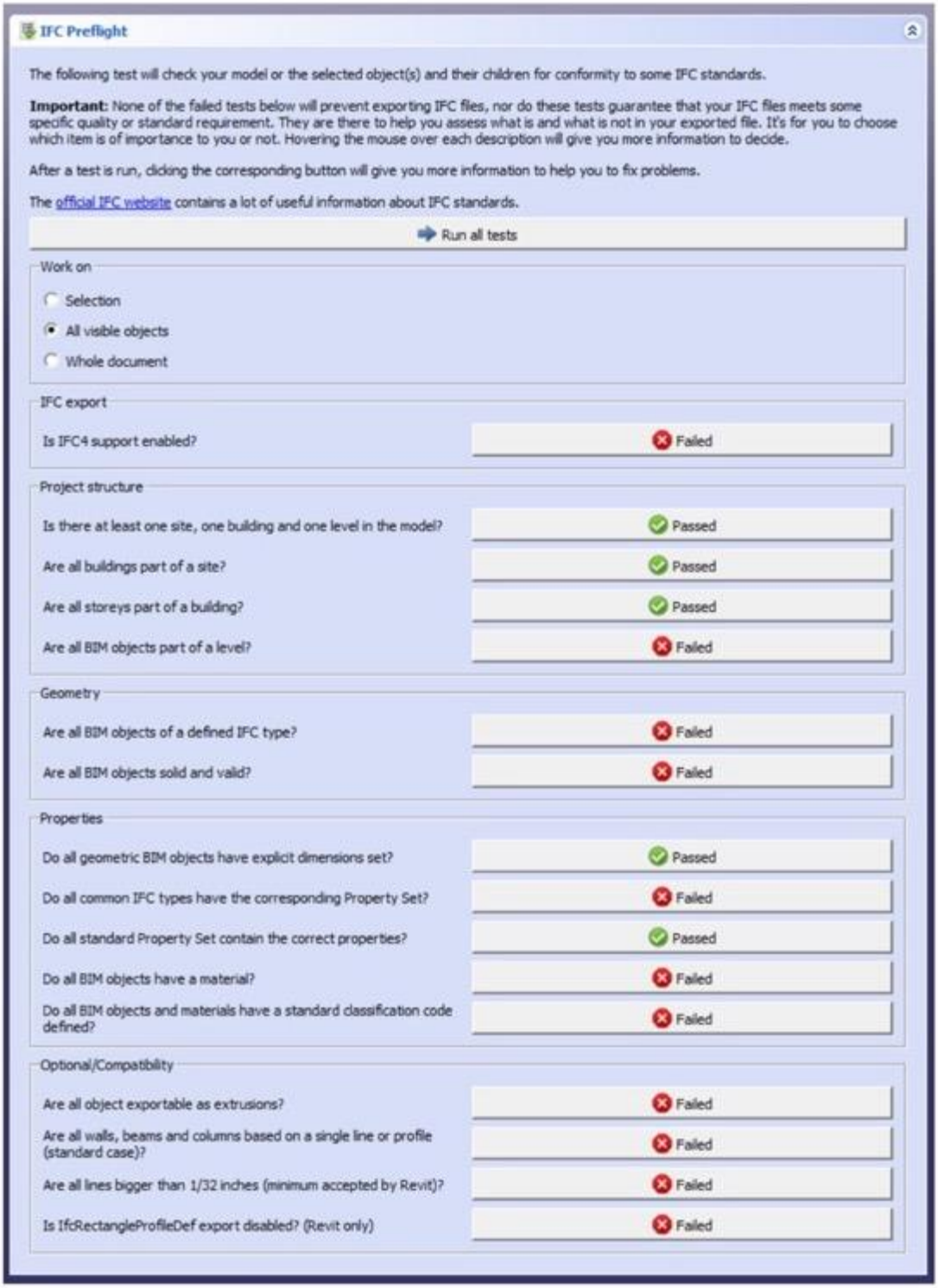


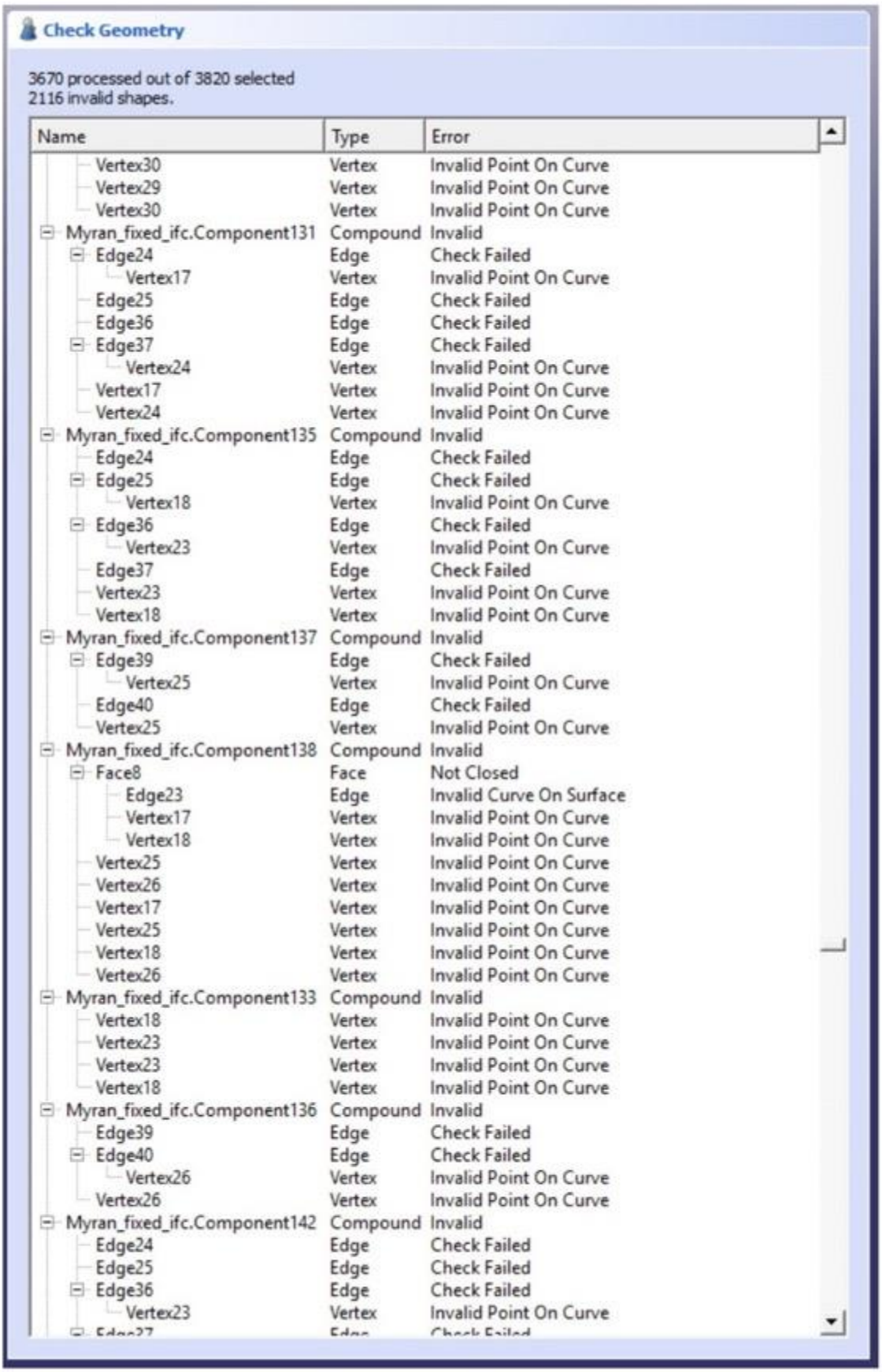
Figure 1: Screenshot, IFC preflight results

FreeCAD Current 0.19_pre development build 0.19.17352_x64_LP_11.11_PY2QT4-WinVS2013 - Windows 10 Home

Open source

CAD

Level of tester expertise: 2 - Current user

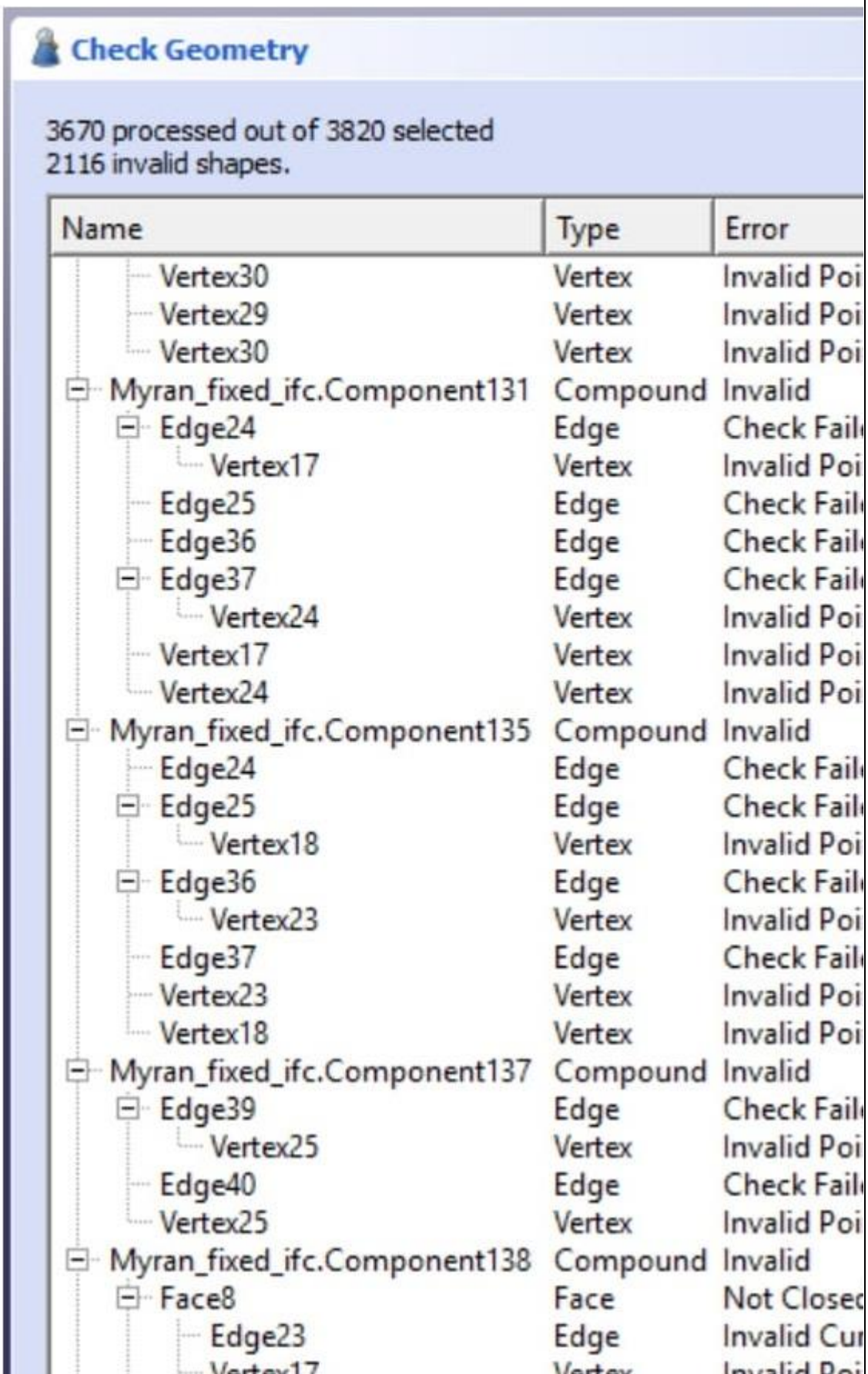


FreeCAD Current 0.19_pre development build 0.19.17352_x64_LP_11.11_PY2QT4-WinVS2013 - Windows 10 Home

Open source

CAD

Level of tester expertise: 2 - Current user

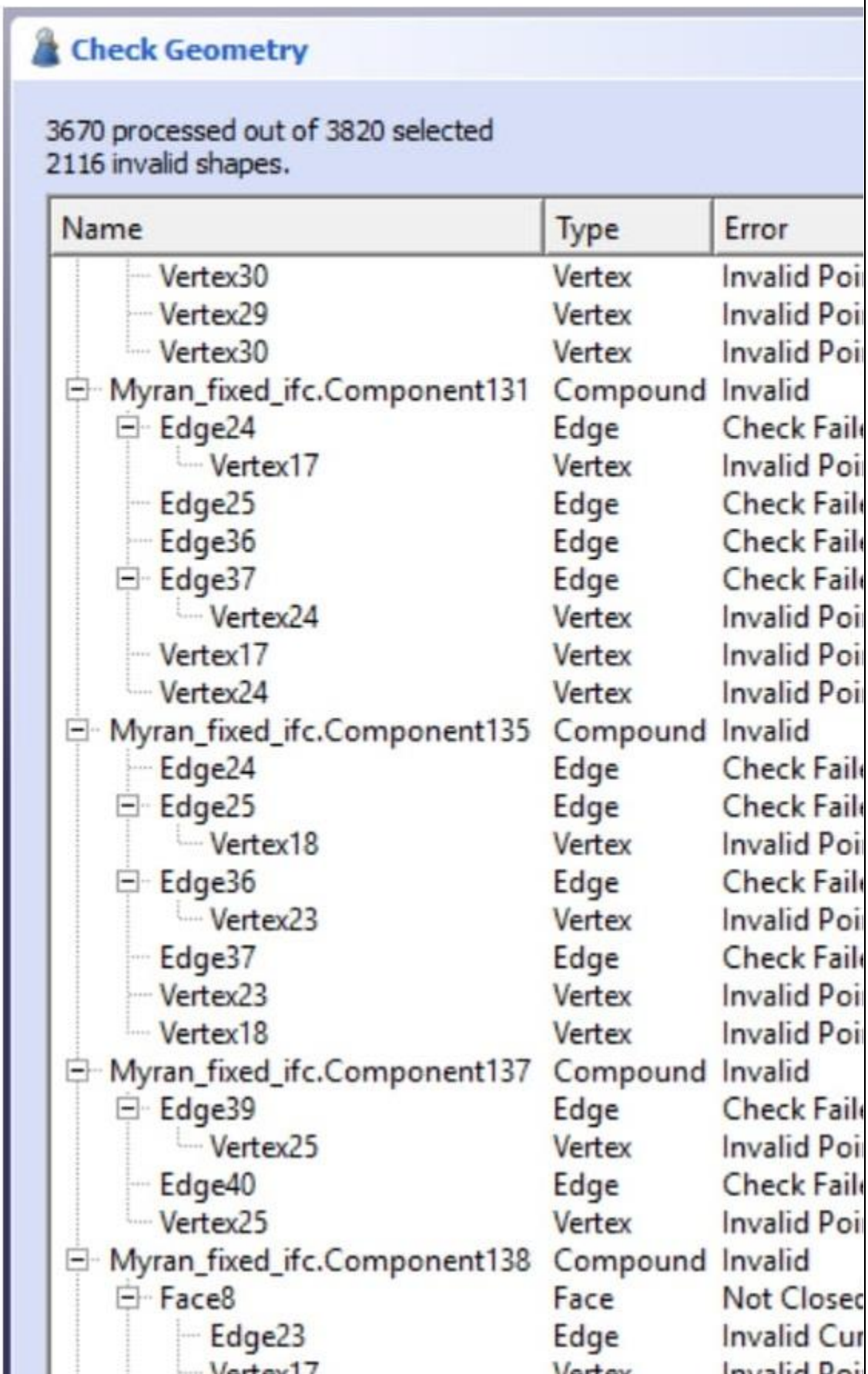


FreeCAD Current 0.19_pre development build 0.19.17352_x64_LP_11.11_PY2QT4-WinVS2013 - Windows 10 Home

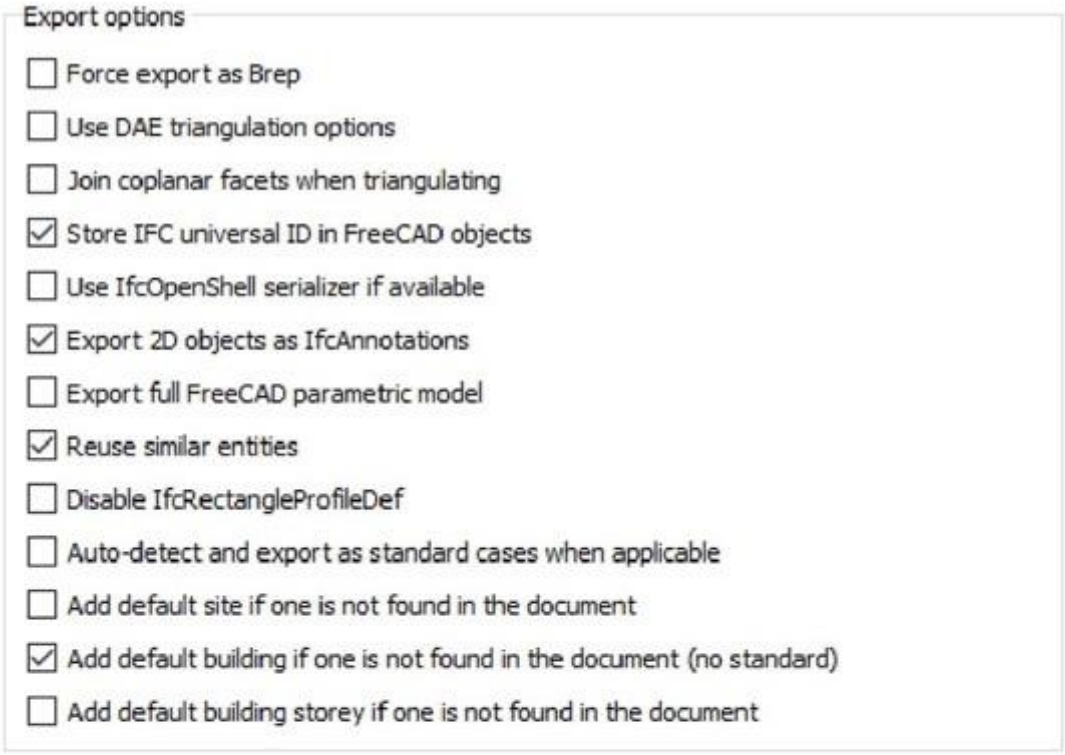
Open source

CAD

Level of tester expertise: 2 - Current user



	16.1.3) Time required to perform the analysis about the model itself (type 1)		1-5 minutes
	16.1.3) Time required to perform the analysis about the model performances (type2)		No analysis of type 2 are possible
	16.2) short comments to the previous question (optional)		Type 2 analysis: I did not install additional libraries and workbenches due to a matter of time, so could not try these.
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:		The software has also export abilities to IFC
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?		Yes
	17.1.1) Can you add a short description of the steps involved in the pre-processing?	The default settings yielded an error regarding colors (to be checked in later versions and reported for fixing if necessary). By changing the settings to use the IFCOpenShell serializer, the error did not appear. No checks for further consistency have been conducted, because it is not clear what "consistency" would mean in this context.	

17.1.2) Attach screenshots and files	
	Figure 1: Default IFC export options
	When using default options (Figure 1), then an error related to colors is raised.
	`Traceback (most recent call last):`
	`  File "<string>", line 211, in <module>`
	`  File "D:\sw\FreeCAD_0.19.17352_x64_LP_11.11_PY2QT4-WinVS2013\Mod\Arch\importIFC.py", line 1678, in export`
	`    representation,placement,shapetype = getRepresentation(ifcfile,context,obj,forcebrep=(brepflag or FORCE_BREP),colors=colors)`
	`  File "D:\sw\FreeCAD_0.19.17352_x64_LP_11.11_PY2QT4-WinVS2013\Mod\Arch\importIFC.py", line 3413, in getRepresentation`
	`    key = rgbt[i]`
	`<type 'exceptions.IndexError'>: list index out of range`
	Inspecting the source it could be found that this piece of code is not carried out when IFCOpenShell serializer is used, so enabled this option and found that the error did not appear. Will be verified in later FreeCAD versions, reported and/or fixed.

18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	No
18.2) short comments to the previous question (optional)	Some of the export options are related to MVD choices, e.g. to use BREP over CSG.
19) How long does it take for the data to be exported to IFC?	less than a minute

Test with Savigliano.ifc

FreeCAD Current 0.19_pre development build 0.19.17352_x64_LP_11.11_PY2QT4-WinVS2013 - Windows 10 Home

Open source

CAD

Level of tester expertise: 2 - Current user

Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	The software was not able to import it, even without crushing

FreeCAD 0.18 - Windows 10 Enterprise
Open source
CAD
1 - Very beginner user (it is nearly the first time you use it)

FreeCAD

Software	Software Name [version]	**FreeCAD [0.18]**		Software house		**https://www.freecadweb.org/**	
	Proprietary or open source software?			Kind of software			
	open source			CAD			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Dell Precision M2800	Windows 10 Enterprise 2016 LTSB	Intel Core i7-4710MQ 2.50 GHz	Intel HD Graphics 4600	8	120	77
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			
Test with Myran.ifc							
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model			it crashes without completing the operation			
Test with UpTown.ifc							
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model			it crashes without completing the operation			
Test with Savigliano.ifc							
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model			it crashes without completing the operation			
	38) Please report on any errors the software gives when importing the file.			Apparently IFC4 is not supported and fails silently resulting in an empty model.			

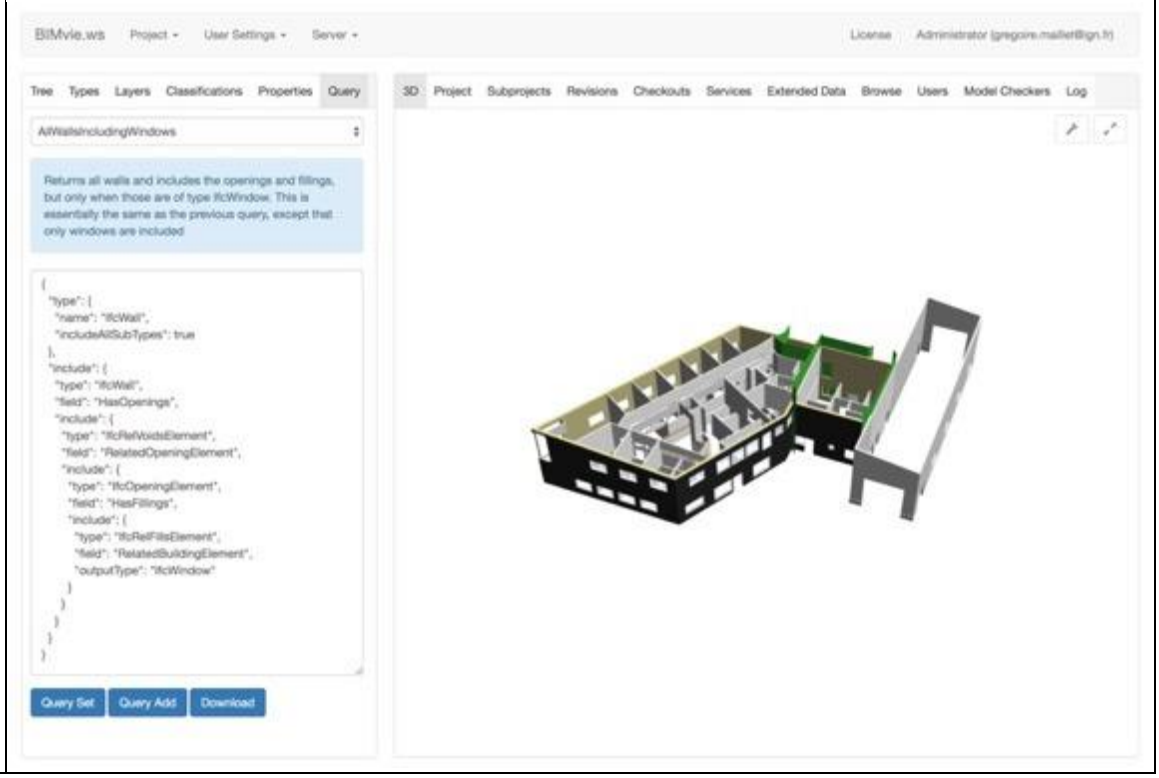
BimServer 1.5.138 – macOS 10.13.6
Open source
BIM
Level of tester expertise: 2 - Current user

BimServer

Software	Software Name [version]	**BimServer [1.5.138]**		Software house		**http://bimserver.org**	
	Proprietary or open source software?			Kind of software			
	open source			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	MacBook Pro 15-inch 2017	macOS 10.13.6	Intel Core i7 2,8GHz	Radeon Pro 555	16Go	500Go	25Go
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			

Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
	2.2) short comments to the previous question (optional)	It is not directly visible, but a query on IfcSite object gives the same coordinates as in the IFC file (59°19'55", 18°3'53", 148.2)
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
	3.2) short comments to the previous question (optional)	It is not directly visible, but a query on IfcSite object gives the same coordinates as in the IFC file (59°19'55", 18°3'53", 148.2)
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
	4.2) short comments to the previous question (optional)	It is not directly visible, but a query on IfcRepresentationContext object gives the same TrueNorth direction as in the IFC file (-0.534352349, 0.845261833)
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	The software does not have the necessary tools to determine this information

BimServer 1.5.138 – macOS 10.13.6
Open source
BIM
Level of tester expertise: 2 - Current user

	5.2) short comments to the previous question (optional)	There is nothing native in bimserver to check this, but there is no visible problem in BimView or iTowns.
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
	6.2) short comments to the previous question (optional)	No Translation
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relat	9.1) Are the relationships between the objects retained?	Yes
Geometry	10.1) Is geometry read correctly?	Yes
	10.2) short comments to the previous question (optional)	BimServer use IfcOpenShell (http://ifcopenshell.org/) to generate the geometries
Nor	11.1) Did the normals change?	Yes
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	12.2) short comments to the previous question (optional)	BimServer included a 3D visu in BimViews and BimSurfer
	13.1) Is it possible to view the model in 2D?	No
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	No
Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	BimServer expose an API with query capabilities It's based on JSON syntax and could test Object Id, Object type or properties It's possible to build and check queries directly in BimViews
	15.1.2) Attach screenshots	

BimServer 1.5.138 – macOS 10.13.6
Open source
BIM
Level of tester expertise: 2 - Current user

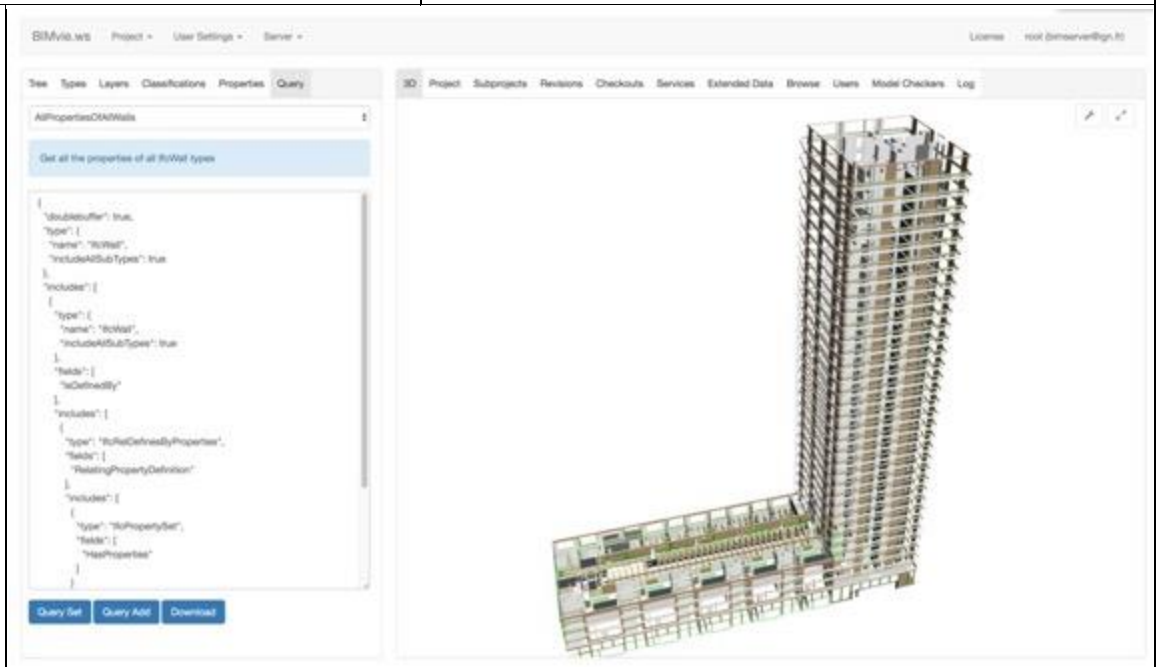
Analysis	16.1) Is it possible to analyse the objects and the model?	No
	16.1.3) Time required to perform the analysis about the model itself (type 1)	No analysis of type 1 are possible
	16.1.3) Time required to perform the analysis about the model performances (type2)	No analysis of type 2 are possible
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	No
	19) How long does it take for the data to be exported to IFC?	1-5 minutes
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	more than one hour
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	less than a minute
	Please report on any errors the software gives when importing the file.	The geometric creation is very long (more than one hour), but finally, it works
Proportions	24.1) Does the model maintain its correct dimensions and proportions?	The software does not have the necessary tools to determine this information
	24.2) short comments to the previous question (optional)	It seems to be good, but there is no tool to measure distances
IFC definitio	25.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	27.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relationships	28.1) Are the relationships between the objects retained?	Yes
	28.2) short comments to the previous question (optional)	In BimViews the relationships are not directly visible in the 'Properties' tab, it's only available from the 'Browse' tab and it's not easy to found a specific object in a very large model like this one
Geometry	29.1) Is geometry read correctly?	Yes
	29.2) short comments to the previous question (optional)	This seems to be correct except that there is no roof at the top of the tower
Normals	30.1) Did the normals change?	Yes

BimServer 1.5.138 – macOS 10.13.6

Open source

BIM

Level of tester expertise: 2 - Current user

2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	32.1) Is it possible to view the model in 2D?	No
Querying	34.1) Is it possible to query the model and the attributes?	The answers are the same I gave during the test with Myran.ifc
	34.1.2) Attach screenshots	
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	36) How long does it take for the data to be exported to IFC?	it crashes without completing the operation
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	less than a minute
	38) Please report on any errors the software gives when importing the file.	Relationships are not directly visible in the Properties tab of BimViews, it's necessary to find the object in the 'Browse' tab
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
	40.2) short comments to the previous question (optional)	IfcSite object keep the coordinates (RefLatitude, RefLongitude, RefElevation)

BimServer 1.5.138 – macOS 10.13.6

Open source

BIM

Level of tester expertise: 2 - Current user

Orientation	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	The software does not have the necessary tools for checking it
Orientation	42.1) Is the model oriented correctly with respect to the true North?	Yes
	42.2) short comments to the previous question (optional)	it's in TrueNorth property of the IfcGeometricRepresentationContext object (checked in the Browse tab of BimViews)
Proportions	43.1) Does the model maintain its correct dimensions and proportions?	The software does not have the necessary tools to determine this information
IFC definitions	44.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	46.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relat	47.1) Are the relationships between the objects retained?	Yes
Geo	48.1) Is geometry read correctly?	Yes
Normals	49.1) Did the normals change?	Yes
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	55) How long does it take for the data to be exported to IFC?	less than a minute

Trimble SketchUp 2019 – macOS Mojave
Proprietary
3D viewer
1 - Very beginner user (it is nearly the first time you use it)

SketchUp

Software	Software Name [version]	**SketchUp [2019]**		Software house		**Trimble**	
	Proprietary or open source software?			Kind of software			
	proprietary			CAD			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Mac book air 13 inch 2016	macOS Mojave	2,2GZ	x	8GB	256	22
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			

	Test with Myran.ifc	
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it crashes without completing the operation
	How long does it take, approximately, to:Pan the model	the software does not allow this
	How long does it take, approximately, to:Rotate the model	the software does not allow this
	How long does it take, approximately, to:Query an object	the software does not allow this
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
	Please report on any errors the software gives when importing the file.	The model is not shown
	Test with UpTown.ifc	
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation
	Test with Savigliano.ifc	
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	the software does not allow this
	How long does it take, approximately, to:Zoom into the model to see more detail	the software does not allow this
	How long does it take, approximately, to:Pan the model	it crashes without completing the operation
	How long does it take, approximately, to:Rotate the model	it crashes without completing the operation
	How long does it take, approximately, to:Query an object	it crashes without completing the operation
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it crashes without completing the operation

	38) Please report on any errors the software gives when importing the file.	Import failed
	39) Attach screenshots regarding the eventually reported errors.	

FZKViewer 5.1 – Windows 10 Enterprise
Proprietary
3D viewer
1 - Very beginner user (it is nearly the first time you use it)

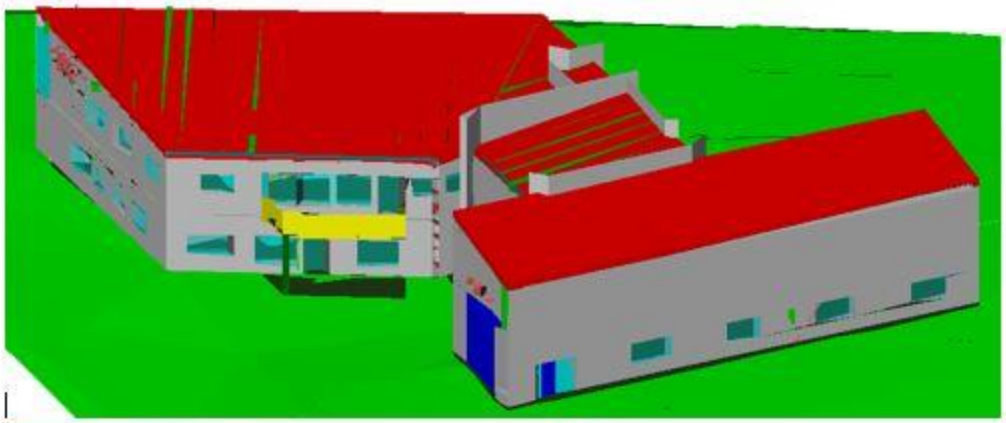
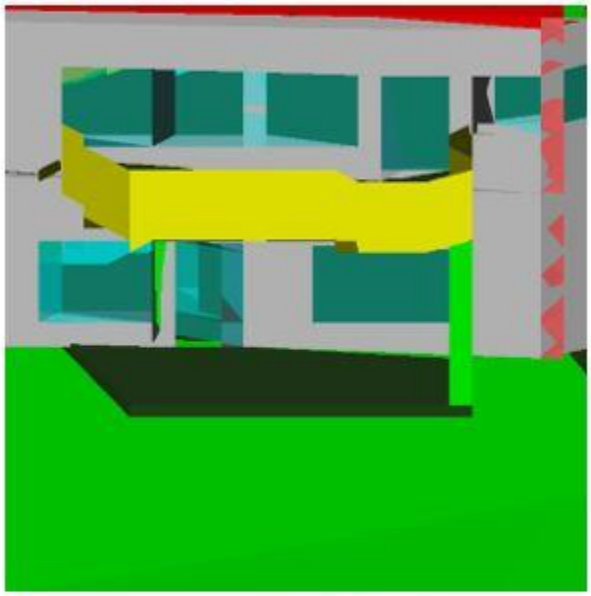
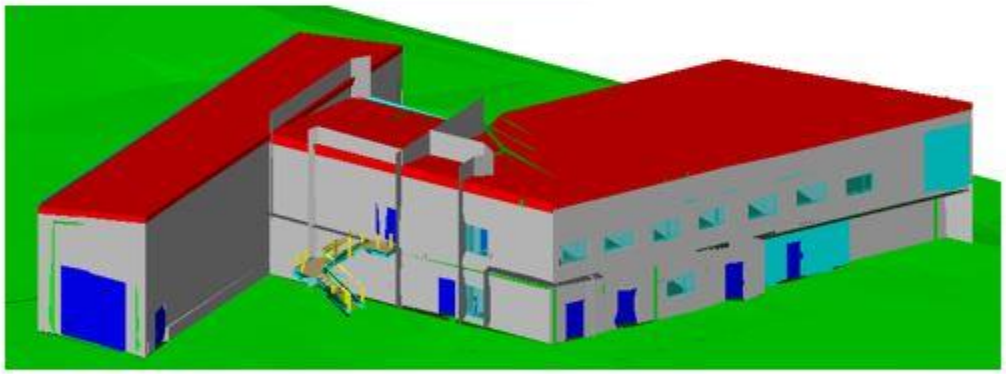
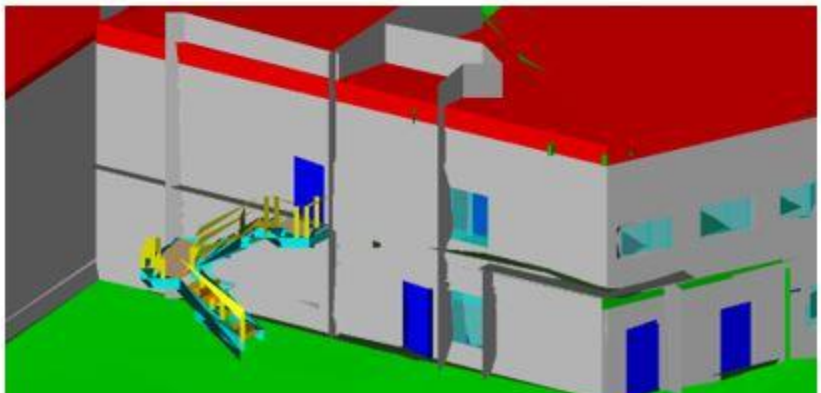
FZKViewer

Software	Software Name [version]	**FZKViewer [5.1]**		Software house		**Karlsruhe Institute for Technology, C:\Downloads\FZKViewer-5.1_Build-978.zip**	
	Proprietary or open source software?			Kind of software			
	open source			3D viewer			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	HP ZBook 15 G3, 2018	Windows 10 Enterprise, 64-bit	Intel ® Core™ i7-6820HQ CPU	NVIDIA Quatro M1000M	32	474	217
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			

Test with Myran.ifc

Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
	Please report on any errors the software gives when importing the file.	Error 776: Boolean Operation - clipping plane generation for CdgisModel geometry failed; Geometry face - Invalid outer loop; Geometry polyline - Polyline contains colinear points, points removed; Geometry polylines - Double point removed
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
	5.2) short comments to the previous question (optional)	A measured distance is still correct, 22840.8 mm in the description and 22851.5 mm when I measure.
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	Yes

	6.2) short comments to the previous question (optional)	The geometrical representation looks a bit distorted when viewing the model, but seem to be correctly translated (examples in the Word document provided)
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
	7.2) short comments to the previous question (optional)	Examples are given in the Word document
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
	8.2) short comments to the previous question (optional)	Examples are given in the Word document
Relationships	9.1) Are the relationships between the objects retained?	Yes
	9.2) short comments to the previous question (optional)	Example is provided in the Word document
Geometry	10.1) Is geometry read correctly?	No
	10.1.1) What changes / inconsistencies / errors / other issues were noted?	The dimensions of the building seem to be ok, but visually more or less all objects look distorted

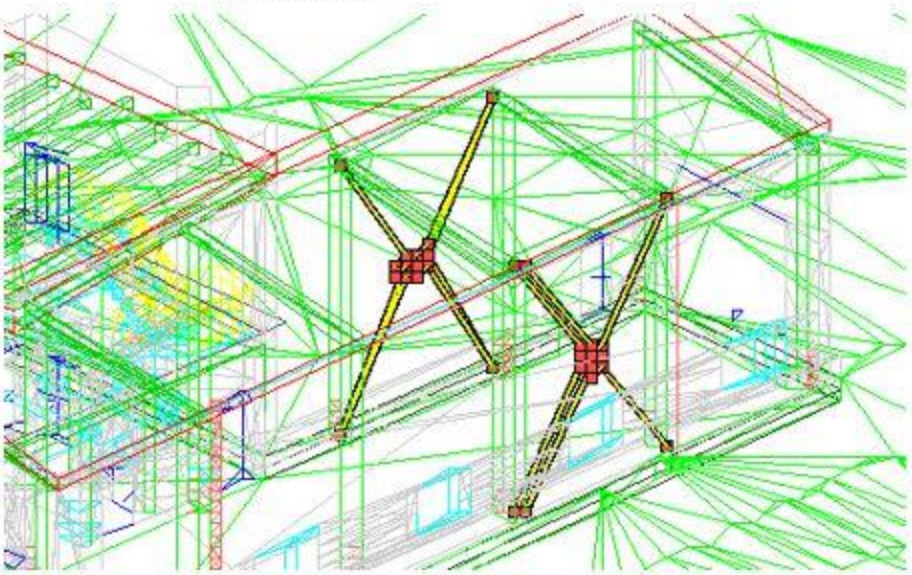
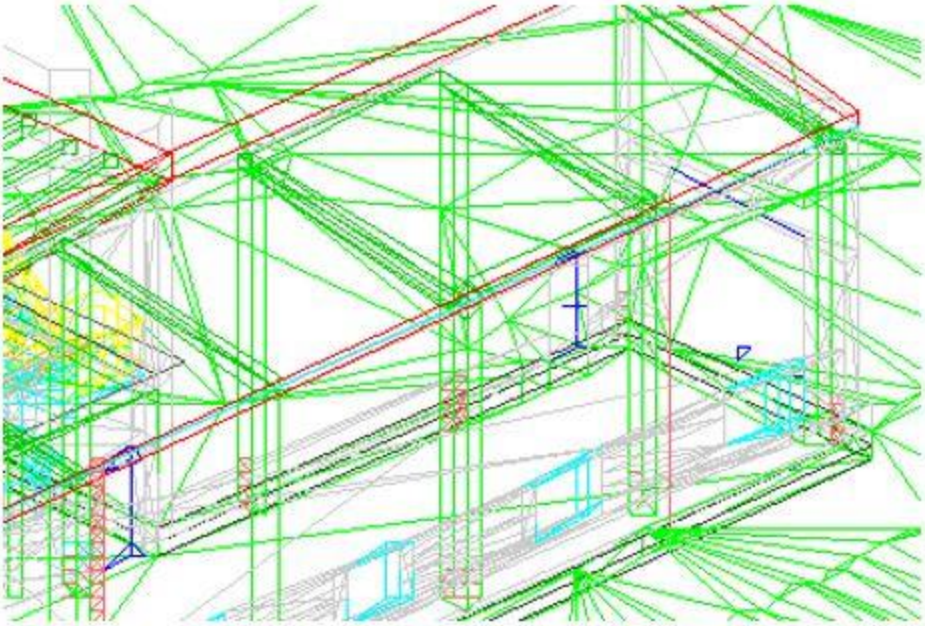
	10.1.2) Attach screenshots	   

FZKViewer 5.1 – Windows 10 Enterprise

Proprietary

3D viewer

1 - Very beginner user (it is nearly the first time you use it)

No	11.1) Did the normals change?	Yes
2D	12.1) Is it possible to view the model in 3D?	Yes
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	It is possible to add and remove and recover elements
	14.1.2) Attach screenshots	*The element "Vinkryss" selected:*  *The element "Vinkryss" removed:* 
	14.2) short comments to the previous question (optional)	The software crashes when I try to add an element

FZKViewer 5.1 – Windows 10 Enterprise

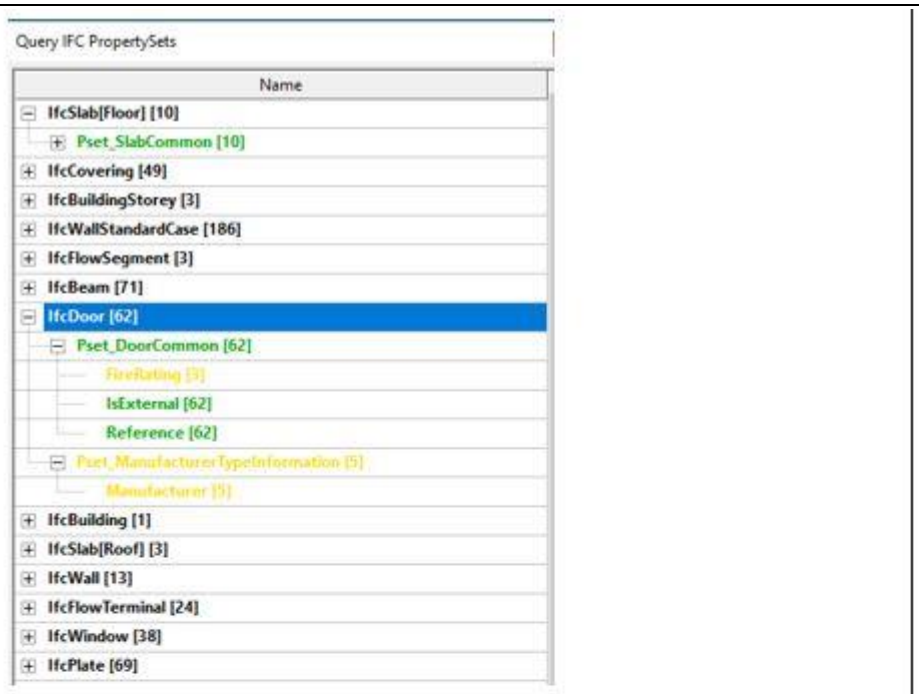
Proprietary

3D viewer

1 - Very beginner user (it is nearly the first time you use it)

Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	Many different predefined queries ara avaliable, e.g. IFC PropertySets, Door Information, Entity Type information, Geometry Type information

15.1.2) Attach screenshots



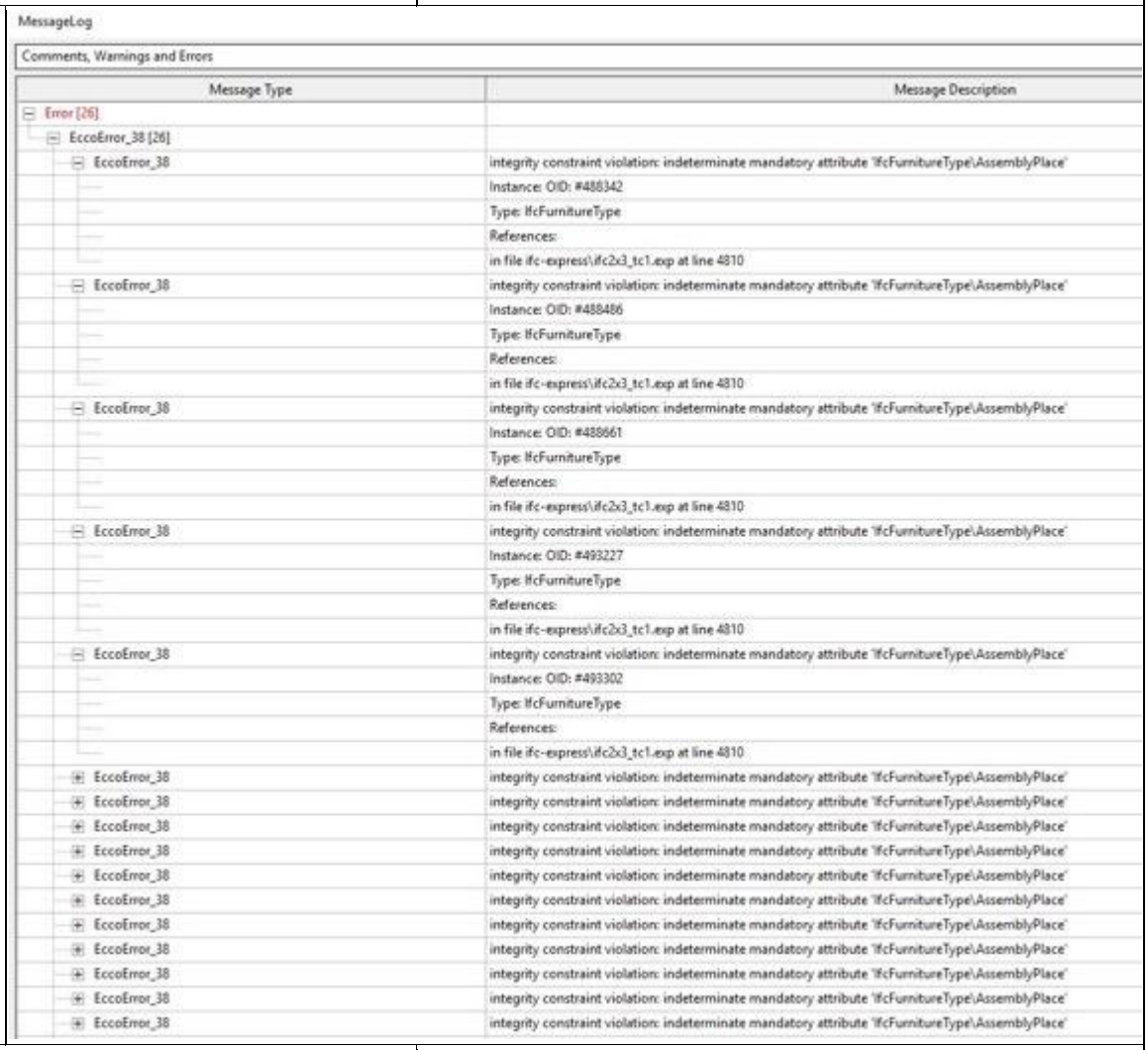
Door Information:

Entity Type information:

Geometry Type information:

Query Geometry Type Information

Name	Value
Brep	1278
Extrusion - ArbitraryClosedProfile	320
Extrusion - ArbitraryProfileWithVoids	239
Extrusion - CircleProfile	40
Extrusion - I-ShapeProfile	12
Extrusion - RectangleProfile	755
Line	2
MappedGeometry	562
Polyline	235
SetOfGeometry	185
SurfaceModel	998

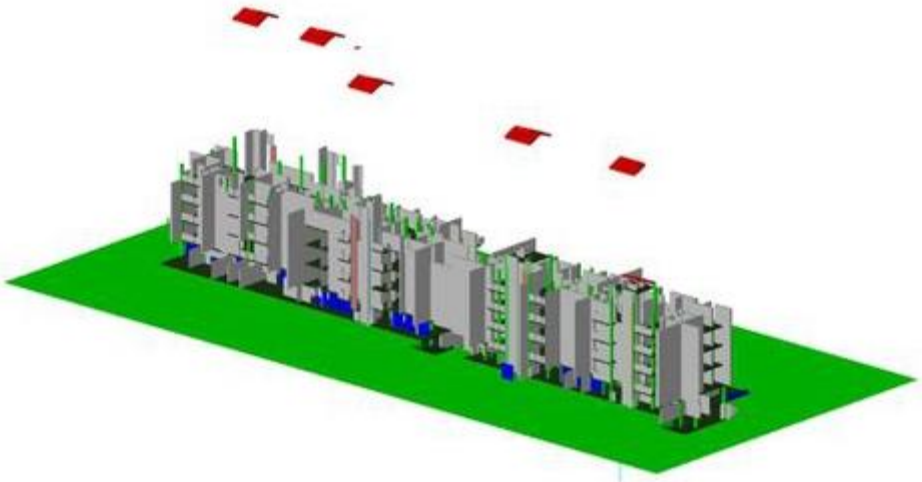
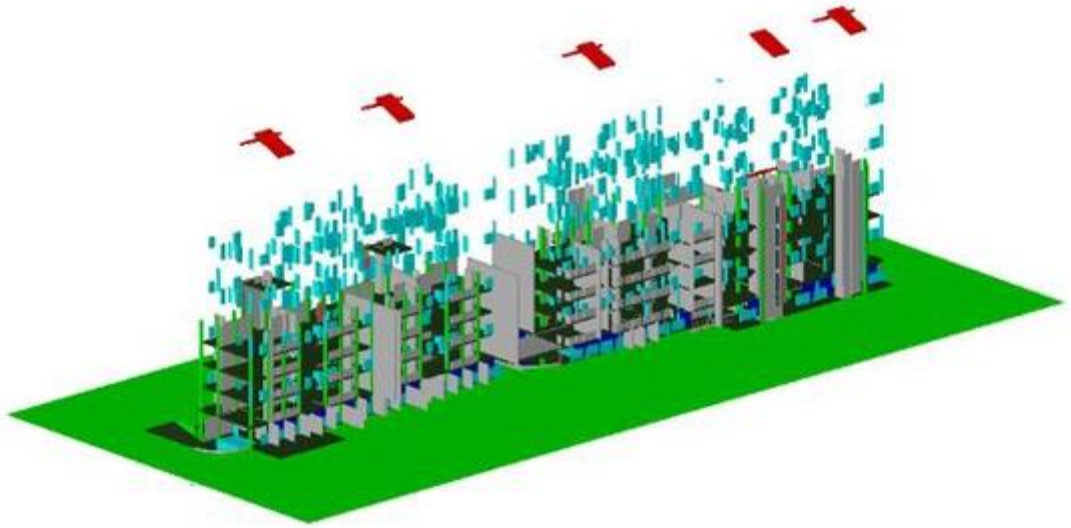
Analysis	16.1) Is it possible to analyse the objects and the model?	Yes, analysis about the model validity and features (geometry, semantics, schema validity...) are possible (type 1)
	16.1.1) What analysis are possible? Do you know if the results are reliable?	Type 1 - IfcSchemaValidation. Do not know if it is reliable.
	16.1.2) Attach screenshots	
	16.1.3) Time required to perform the analysis about the model itself (type 1)	it's almost immediate
	16.1.3) Time required to perform the analysis about the model performances (type2)	No analysis of type 2 are possible
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	No
	19) How long does it take for the data to be exported to IFC?	it's almost immediate

FZKViewer 5.1 – Windows 10 Enterprise
Proprietary
3D viewer
1 - Very beginner user (it is nearly the first time you use it)

Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	5-20 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	it's almost immediate
	Please report on any errors the software gives when importing the file.	Did not note them down, will try again later and add it to the Word document.
Proportions	24.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	25.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	27.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relat	28.1) Are the relationships between the objects retained?	Yes
Geo	29.1) Is geometry read correctly?	Yes
Normals	30.1) Did the normals change?	Yes
2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	32.1) Is it possible to view the model in 2D?	No
Querying	34.1.1) What kinds of query are possible?	Model Information (e.g. File Header, Property sets), Entity Information (e.g. Space Information, Text information), Element Type Information, Quantities, File Statistics (e.g. File statistics and SRS statistics)

	34.1.2) Attach screenshots	Query SRS Info Name / Value Used Spartial Reference System: — Local CRS - Local Cartesian Coordinate System Bounding Box in Local CRS: Position min: X — 0 Y — 0 Z — 0 Position max: X — 96.4630211572531 Y — 60.7528174853782 Z — 0 Bounding Box in Longitude / Latitude: Position min: Longitude (decimal degree) — 4.48689999865437 Longitude (degree, minute, second) — E 4° 29' 12.8400" Latitude (decimal degree) — 51.9160299999024 Latitude (degree, minute, second) — N 51° 54' 57.7080" Position max: Longitude (decimal degree) — 4.48832009185352 Longitude (degree, minute, second) — E 4° 29' 17.9523" Latitude (decimal degree) — 51.9165583269303 Latitude (degree, minute, second) — N 51° 54' 59.6100" Bounding Box in UTM Coordinates (Zone 31): Position min: Easting — 602264.639309486 Northing — 5752743.45339065 Position max: Easting — 602361.102330434 Northing — 5752804.20620813 Model Bounding Box: Position min: X — -1000 Y — -1000 Z — -2680 Position max: X — 95463 Y — 59752.8 Z — 105652
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	36) How long does it take for the data to be exported to IFC?	1-5 minutes
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it's almost immediate
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate

	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
	38) Please report on any errors the software gives when importing the file.	Boolean operation - clipping plane generation for CsgiModelGeometry failed; EccoError - runtime error: incompatible operand types transition <> enum_literal; Geometry CSG - Geometry is part of IfcColumn; Invalid outer loop; Polylines contains colinear points, points removed; Geometry polyline - double point removed; OpenGL - invalid action; Door/Window - incomplete profile definition; Port not located within element bounding box; Representation identifier of IfcPlate not unique, change to Body_1; Triangulation
	39) Attach screenshots regarding the eventually reported errors.	
erenci ng	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
Hei ght	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
Orie ntati on	42.1) Is the model oriented correctly with respect to the true North?	Yes
Pro porti ons	43.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC defi nitio	44.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hier arch y	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attri bute s	46.1) Are the attributes present in the IFC entities retained and consistent?	Yes
R el at	47.1) Are the relationships between the objects retained?	Yes
G e o	48.1) Is geometry read correctly?	Yes
N o r	49.1) Did the normals change?	Yes
2D/3 D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	55) How long does it take for the data to be exported to IFC?	it's almost immediate

	55.2) Attach screenshots (optional)	*IFC2x3:*  *IFC4:* 

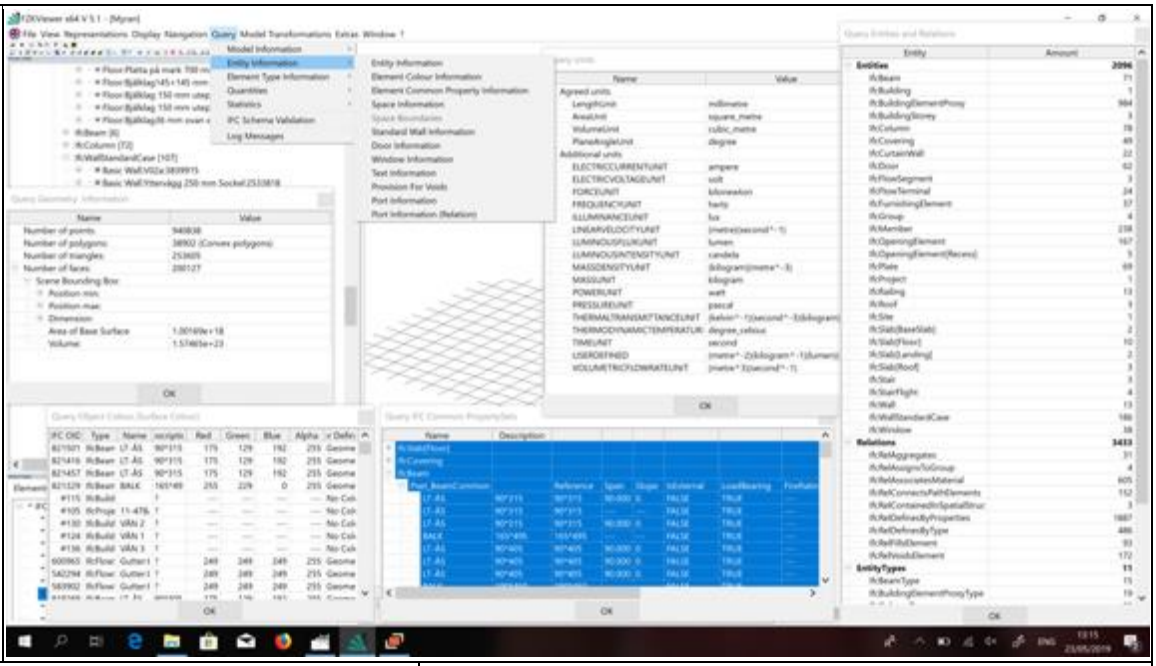
FZK Viewer

Software	Software Name [version]	**FZK Viewer [5.1 Build 978]**		Software house		**Karlsruhe Institute of Technology (KIT) - Institute for Automation and Applied Informatics (IAI) (https://www.iai.kit.edu/english/1302.php)**	
	Proprietary or open source software?			Kind of software			
	open source			3D viewer			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	DELL XPS 15 9570 - 2019	Windows 10 Pro (version 1809) 64-bit operating system, x64-based processor	Intel(R) Core(TM) i7-8750H CPU @ 2.20 GHz 2.21 GHz	\-	32,0 GB (31,7 GB usable)	937 GB	848 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			

Test with Myran.ifc

Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	the software does not allow this
	How long does it take, approximately, to:Zoom into the model to see more detail	the software does not allow this
	How long does it take, approximately, to:Pan the model	the software does not allow this
	How long does it take, approximately, to:Rotate the model	the software does not allow this
	How long does it take, approximately, to:Query an object	the software does not allow this
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
	Other	the geometry is not visualised, therefore it is not possible to make the measurements
IFC definitio	6.1) Is the eventual translation consistent with the IFC definitions?	Yes

	Other		Sometimes hierarchical relationships and aggregation relationships are visualised in the same way
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?		Yes
	Other		Sometimes they are different from the ones in the descriptions
	Other		Many errors are given during the import phase, and no geometry can be visualised
	Other		The software could map the normals through colours, but it is impossible to check, since the geometry is not visualised
2D/3D	12.1) Is it possible to view the model in 3D?		Yes
	12.2) short comments to the previous question (optional)		the 3D view is possible, and many pre-set views can be chosen (axonometries, sides/top/bottom, isometric views, user defined views...). However, since the geometry is not here visualised, it is not possible to check them.
	13.1) Is it possible to view the model in 2D?		No
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?		No
Querying	15.1) Is it possible to query the model and the attributes?		Yes
	15.1.1) What kinds of query are possible?	\- Direct query of an element (from the 3D view, from the properties and relations tables, from the hierarchical view); - Browse of model information (header, used MVD, measure units, owner history, used property sets, used materials); - Browse of Entity information tables of: entities, entities colours, entities common properties, space information (no info for this file), space boundaries (no info for this file), specific entities like standard wall, for, window, text, provision for voids, port information; - Browse of element type information; - Quantities (calculation of quantities and space quantities (volumes, surfaces...)(however, no information is present here for this file); - Statistics: file statistics (with included entities, relations and entity types), geometry statistics, (with n. of points, polygons, triangles, faces and bounding box), SRS, space boundaries.	

	15.1.2) Attach screenshots	
Analysis	16.1) Is it possible to analyse the objects and the model?	Yes
	16.1.1) What analysis are possible? Do you know if the results are reliable?	It is possible to analyse the model to validate the IFC Schema (I do not know if the results are reliable); It is possible to represent the model based on: - type of elements - entities - face normals - customisable property values - owner history - internal/external - U-value - spaces by temperature - spaces by internal/external - spaces by usage type - spaces by space type - spaces by occupant number - spaces boundaries by internal/external - spaces boundaries by virtual/physical - spaces boundary by type - walls by width - walls by layers
	16.1.3) Time required to perform the analysis about the model itself (type 1)	less then a minute
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	17.2) short comments to the previous question (optional)	no pre-processing is needed, nor customisation is possible. You can just select 'export to IFC'

	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	No
	19) How long does it take for the data to be exported to IFC?	it's almost immediate
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it's almost immediate
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
	38) Please report on any errors the software gives when importing the file.	no errors
	39) Attach screenshots regarding the eventually reported errors.	
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	40.1.1) Where is the origin of the model coordinate reference system as imported in the software?	RefLatitude is read as N 41 degrees 47'59.9972"; RefLongitude is E 12 degrees 36' 0.1373" RefElevation is 0
	40.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	Local reference system; m is the length unit and degree the plane angle unit
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	41.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0
Orientation	42.1) Is the model oriented correctly with respect to the true North?	Yes
	42.2) short comments to the previous question (optional)	It is visualised as in the data description, but the value of the True North direction is -234.50 instead of 125.5
	Other	It takes a lot of time to measure the distances and the software stops responding; from how the model is visualised, it appears to have the correct proportions. One of the measures (the length of the left building in the images is similar (45.31 m instead of 42.20 m) but an approximation is made since a snapping system is not possible (also considered the response time of the application)
IFC definitions	44.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes

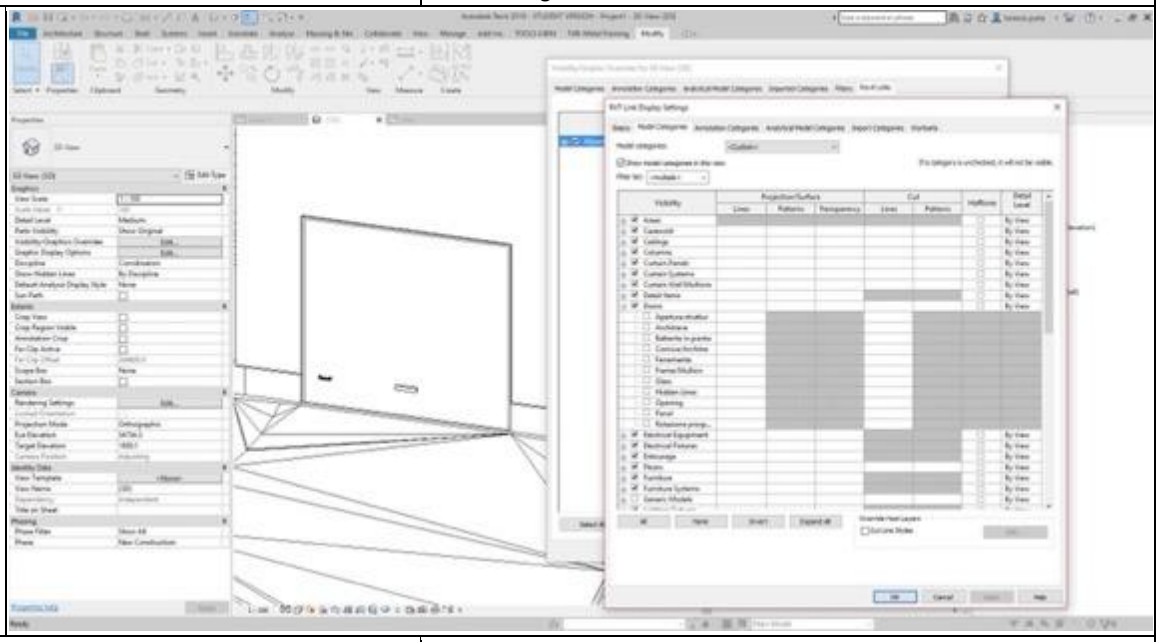
	45.2) short comments to the previous question (optional)	The hierarchical relations and the containment relations are represented in the same way in the hierarchical layers tree
Attributes	46.1) Are the attributes present in the IFC entities retained and consistent?	Yes
	46.2) short comments to the previous question (optional)	When querying some of the elements, the application stops responding for a while and takes time to finish the task.
Relationships	47.1) Are the relationships between the objects retained?	Yes
	Other	Generally yes, but some elements (some roof pitches) are not visualised
Normals	49.1) Did the normals change?	Yes
	49.2) short comments to the previous question (optional)	They appear mostly consistent, some images are attached at the end
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	No
Editing	52.1) Is it possible to edit the model (attributes, geometry, other)?	No
Querying	53.1) Is it possible to query the model and the attributes?	Yes
	53.1.1) What kinds of query are possible?	see answers for Myran model
Analysis	54.1) Is it possible to analyse the objects and the model?	Yes
	54.1.1) What analysis are possible? Do you know if the results are reliable?	see Myran description; the results are almost immediate
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	55) How long does it take for the data to be exported to IFC?	it's almost immediate
	55.1) Comment to the previous question (optional)	another possible export format is the IFC-ZIP

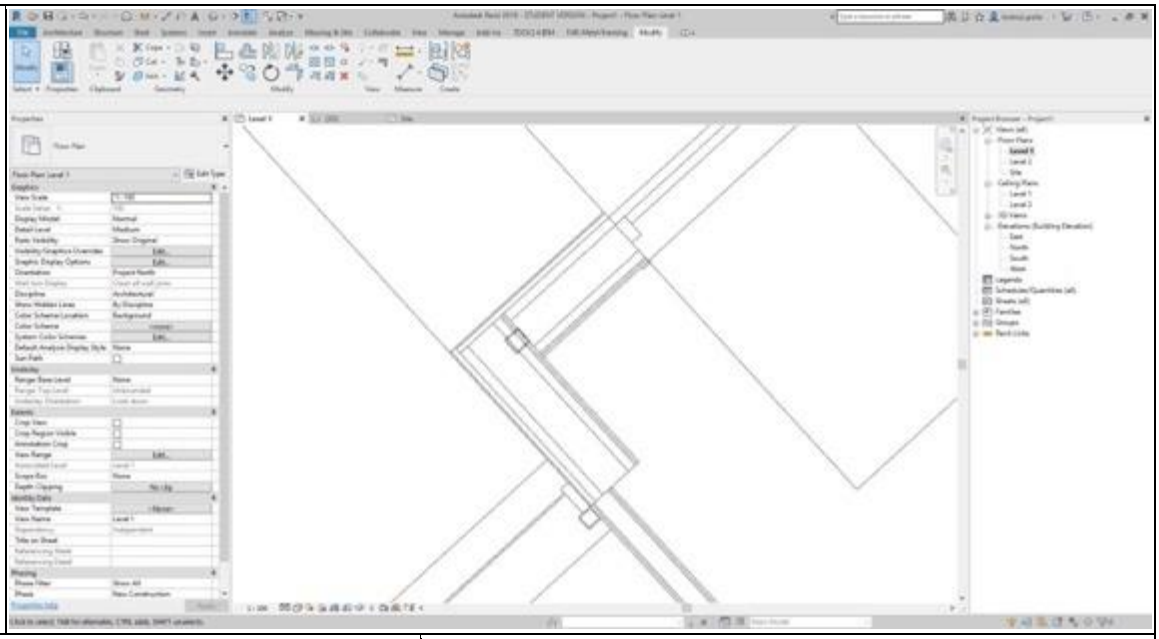
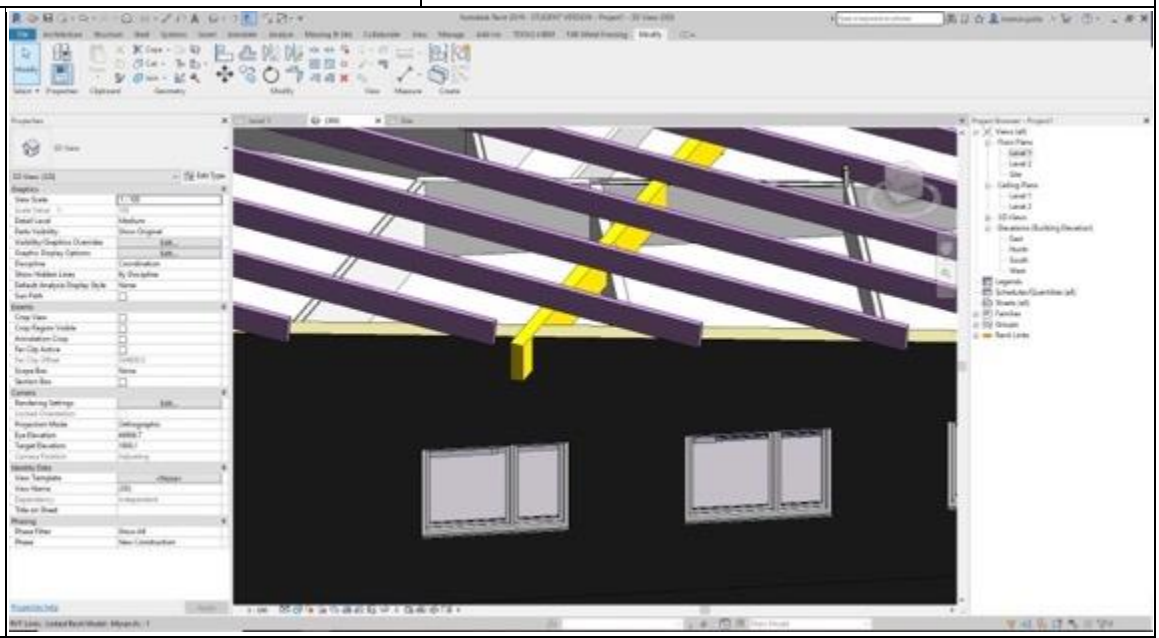
Autodesk Revit

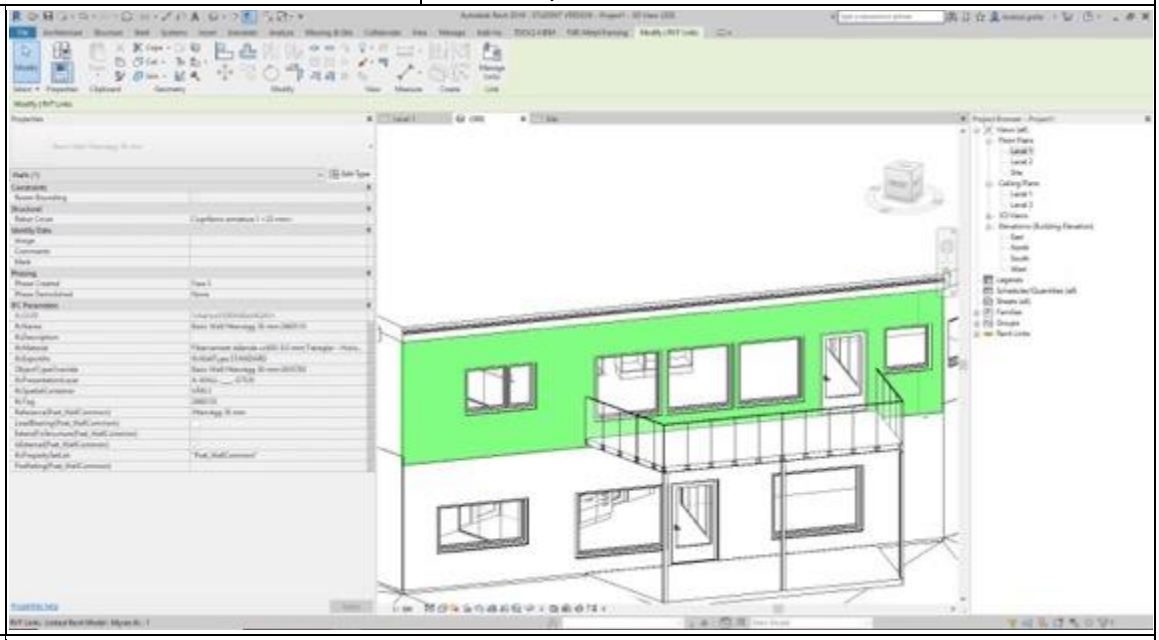
Software	Software Name [version]	**Autodesk Revit [2019]**		Software house		**Autodesk**	
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	HP Envy Notebook - 2015	Microsoft Windows 10 Home	Intel Core i7-6700HQ	NVIDIA GeForce GTX 950M	16.0 GB	120 GB	10.8 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	2015-07-24	CV2.0	certified in (date)	2013-04-16	CV2.0-Arch	

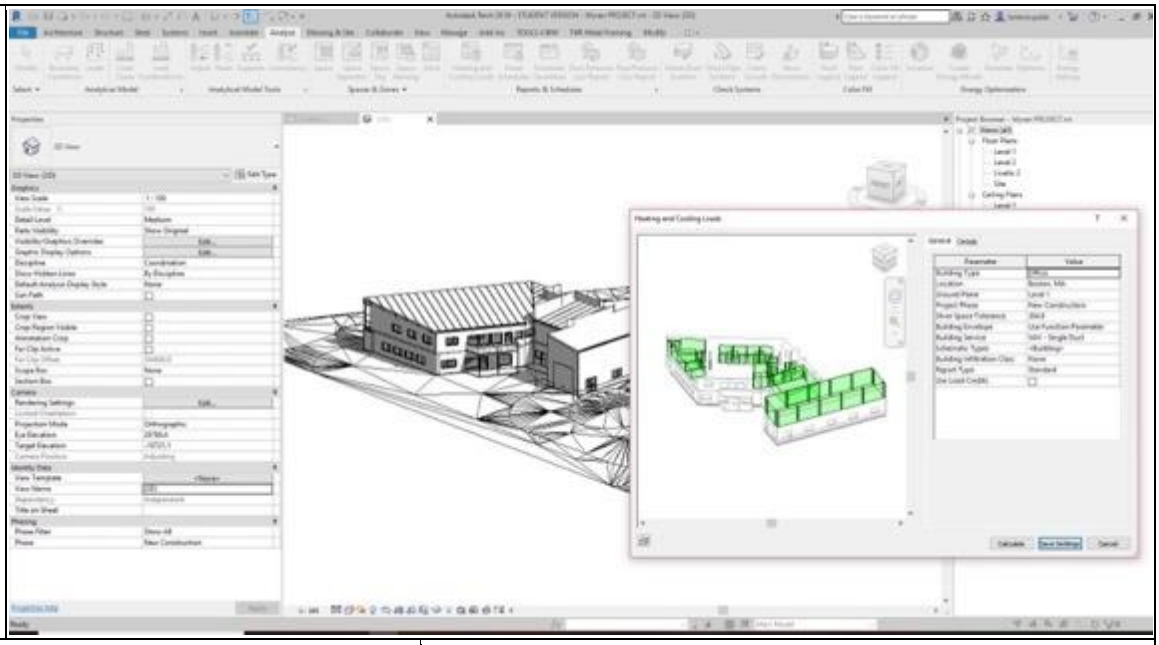
Test with Myran.ifc

Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
	Please report on any errors the software gives when importing the file.	Some walls intersect with the floors and do not join correctly, subtracting the volumes. Furthermore, the subtraction solids inside the families of doors and windows, which are used to pierce the walls, are mistakenly displayed.
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	No

Hierarchy	7.1.1) What changes / inconsistencies / errors / other issues were noted?	The subcategories of families are not recognized by the ifc file. If I try, for example, to turn off the display on a view of a subcategory, I can't do it. However, I can turn off the display of all categories of families.
	7.1.2) Attach screenshots	
	7.2) short comments to the previous question (optional)	The display of the subcategories of the doors families are turned off, but all the elements of the door are still visible.
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relat	9.1) Are the relationships between the objects retained?	Yes
Geometry	10.1) Is geometry read correctly?	No
	10.1.1) What changes / inconsistencies / errors / other issues were noted?	Some walls intersect with the floors and the beams but do not join correctly, subtracting the volumes. Often the stratigraphy of the walls is not correct in the corners and intersections.

	10.1.2) Attach screenshots	
	10.2) short comments to the previous question (optional)	The stratigraphy of the walls is not correct in the corners and intersections.
Normals	11.1) Did the normals change?	No
	11.1.1) What changes / inconsistencies / errors / other issues were noted?	Under the roof the beams changes color.
	11.1.2) Attach screenshots	
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	Yes
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	No

	14.2) short comments to the previous question (optional)	It is possible to query some data of the model, but it is not possible to modify geometries or parameters.
Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	Selecting the elements it is possible to display the properties and some parameters.
	15.1.2) Attach screenshots	
	15.2) short comments to the previous question (optional)	The properties show the parameters of the selected element (for example the creation phase, the name of the wall, the materials of the stratigraphy, etc.).
Analysis	16.1) Is it possible to analyse the objects and the model?	Yes, analysis about the modelled building performances (energy, noise, shadows...) are possible (type 2)
	16.1.1) What analysis are possible? Do you know if the results are reliable?	It is possible to perform the energy analysis. However Revit is not a specialized software for this function, so the results are not reliable. It is also possible to perform the solar study. In this case the result is more reliable.

	16.1.2) Attach screenshots	
	16.1.3) Time required to perform the analysis about the model itself (type 1)	No analysis of type 1 are possible
	16.1.3) Time required to perform the analysis about the model performances (type2)	5-20 minutes
	16.2) short comments to the previous question (optional)	In order to perform the energy analysis it is first necessary to carry out a series of operations on the model: activate the room bounding, compute the spaces, attribute thermophysical properties and then launch the calculation.
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	No
	18.2) short comments to the previous question (optional)	During export it's possible choose to change the detail level for some element geometries, but only creating a new export preset. Using the basic presets provided by the software this parameter cannot be changed.
	19) How long does it take for the data to be exported to IFC?	it's almost immediate
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	more than one hour
	How long does it take, approximately, to:Zoom into the model to see more detail	more than one hour
	How long does it take, approximately, to:Pan the model	less than a minute
	How long does it take, approximately, to:Rotate the model	less than a minute
	How long does it take, approximately, to:Query an object	less than a minute

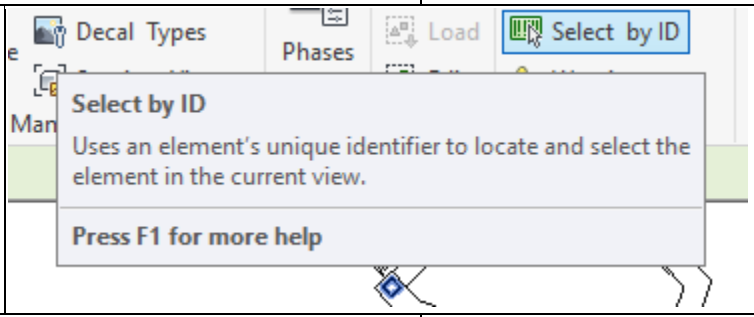
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	less than a minute
Properties	24.1) Does the model maintain its correct dimensions and proportions?	Yes
semantics	25.1) Is the eventual translation consistent with the IFC definitions?	Yes
	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	No
	26.1.1) What changes / inconsistencies / errors / other issues were noted?	The subcategory of families is not recognized by the ifc file.
	27.1) Are the attributes present in the IFC entities retained and consistent?	Yes
	28.1) Are the relationships between the objects retained?	Yes
Geometry	29.1) Is geometry read correctly?	Yes
Normals	30.1) Did the normals change?	Yes
2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	32.1) Is it possible to view the model in 2D?	Yes
Editing	33.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	It is possible to query some data of the model, but it is not possible to modify geometries or parameters. The only possible operation is to move the model, using the appropriate command or project points, changing the georeferencing.
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	36) How long does it take for the data to be exported to IFC?	20 minutes-1 hour
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it's almost immediate
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
	39) Attach screenshots regarding the eventually reported errors.	
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
Orientation	42.1) Is the model oriented correctly with respect to the true North?	Yes

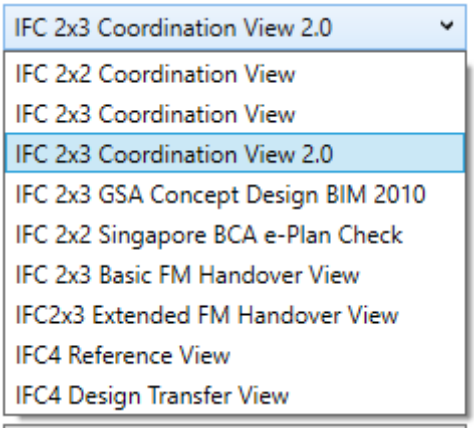
Proportions	43.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	44.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	No
	45.1.1) What changes / inconsistencies / errors / other issues were noted?	The subcategory of families is not recognized by the ifc file.
Attributes	46.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relat	47.1) Are the relationships between the objects retained?	Yes
Geometry	48.1) Is geometry read correctly?	No
	48.1.1) What changes / inconsistencies / errors / other issues were noted?	Some walls intersect with the floors and the beams and do not join correctly, subtracting the volumes. Furthermore, the subtraction solids inside the families of doors and windows, which are used to pierce the walls, are mistakenly displayed.
Normals	49.1) Did the normals change?	Yes
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	Yes
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
Exp	55) How long does it take for the data to be exported to IFC?	it's almost immediate

Autodesk Revit

Software	Software Name [version]	**Revit [2018]**		Software house		**Autodesk**	
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Aspire R5-471T	Windows 10	Intel (R) Core (TM) i5-6200	Intel HD Graphics 520	8	500 (SSD)	65
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	2015-02-07	CV2.0	certified in (date)	2013-04-16	CV2.0-Arch	

Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
	3.2) short comments to the previous question (optional)	The precision of the height is in mm.
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
	4.2) short comments to the previous question (optional)	Alignment can be changed
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
	5.2) short comments to the previous question (optional)	Units are also in mm

IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	No
	6.1.1) What changes / inconsistencies / errors / other issues were noted?	Some classes that are different in IFC are the same in Revit
	6.1.2) Attach screenshots	IfcTank — Specialty Equipment IfcTankType — Specialty Equipment IfcTransportElement — Specialty Equipment IfcTransportElementType — Specialty Equipment
	6.2) short comments to the previous question (optional)	These are the standard settings. It is possible to set own Revit Categories (therefore set them to the correct IFC Class name)
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	No
	7.1.1) What changes / inconsistencies / errors / other issues were noted?	The elements are ordered in the Revit Families that are different from the IFC-hierarchy
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
	8.2) short comments to the previous question (optional)	Pitch Angle is given in degrees not in radian
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	Yes
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	attributes, georeferencing, for sure geometries (but geometries at all couldn't assessed because not found)
Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	select by the Object type, select by id
	15.1.2) Attach screenshots	
Analysis	16.1) Is it possible to analyse the objects and the model?	Yes
	16.1.1) What analysis are possible? Do you know if the results are reliable?	possible analysis in screenshot. Results are currently not reliable due to the model (no masses available)
	16.1.2) Attach screenshots	
	16.1.3) Time required to perform the analysis about the model itself (type 1)	less then a minute

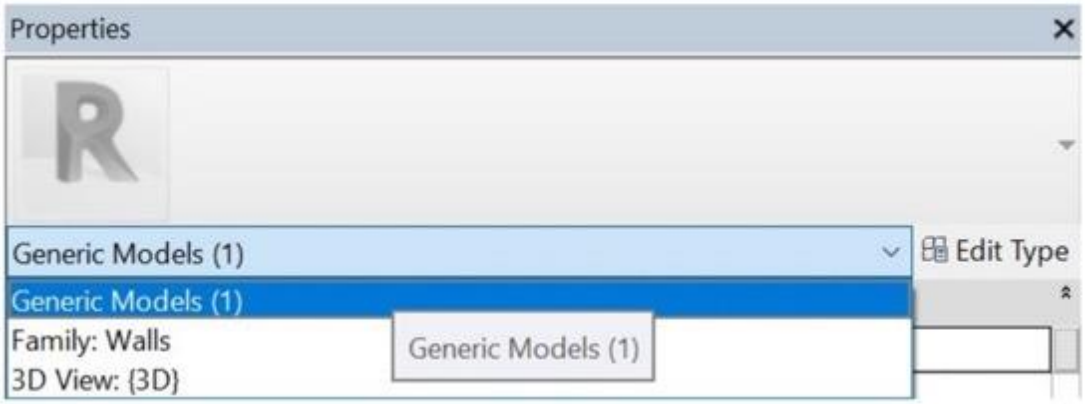
	16.2) short comments to the previous question (optional)	not every possible analysis could be assessed (because not possible)
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	Yes
	18.1.1) Which ones are available?	possible definitions can be found in the screenshot
	18.1.2) Is it possible to add a customised MVD to be used for exporting IFC?	Yes
	18.1.2.1) What kind of customisation is possible?	It is possible to create a new export scheme where many different parameters can be changed.
	18.1.2.2) Attach screenshots and files	
	19) How long does it take for the data to be exported to IFC?	1-5 minutes
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation

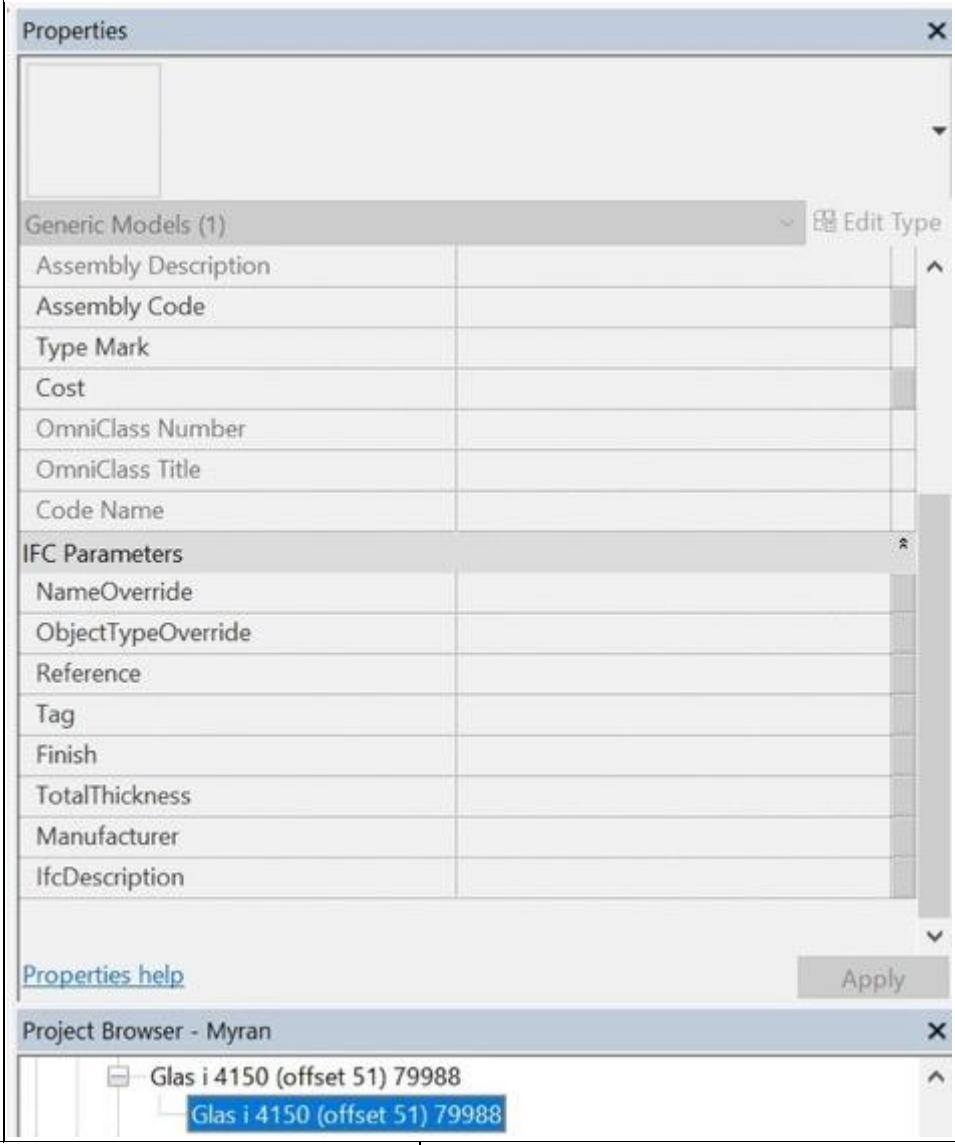
Autodesk Revit 2018 – Windows 10 Home
Proprietary
BIM
1 - Very beginner user (it is nearly the first time you use it)

REVIT

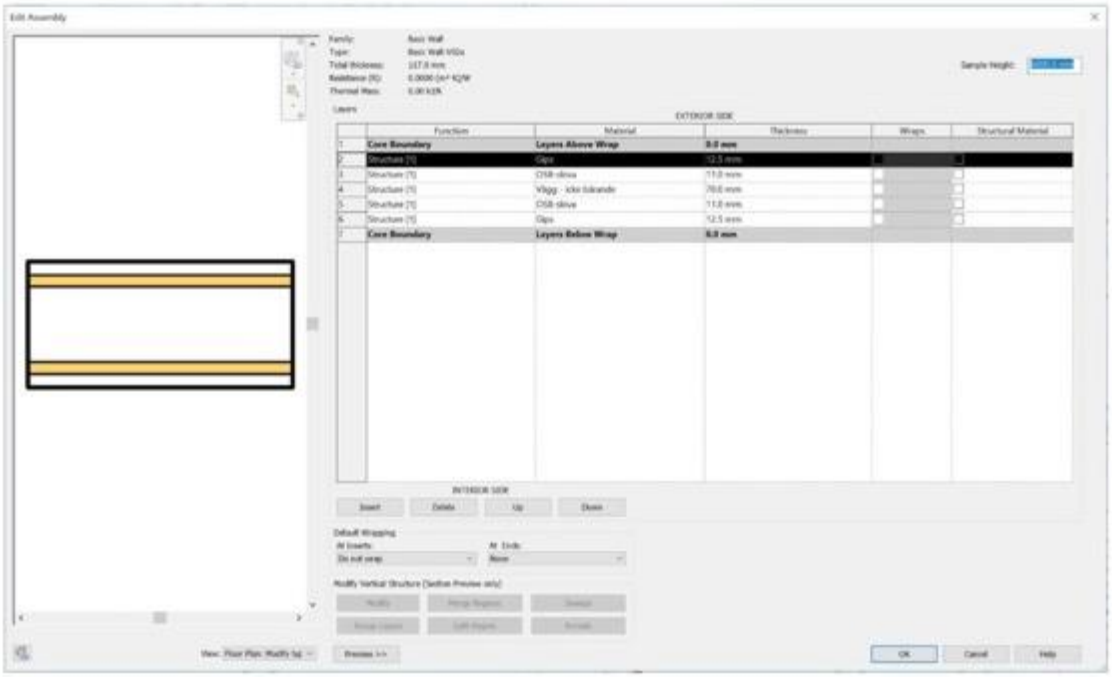
Software	Software Name [version]	**REVIT [2018]**		Software house		**AUTODESK**	
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	HP ZBook Studio G5/ 2018	Microsoft Windows 10 Home	Intel(R) Core(TM) i7-8750H CPU @ 2.20GHz, 2208 Mhz, 6 Core(s), 12 Logical Processor(s)	NVDIA Quadro P1000, 4096 MB(memory), 1493 MHz(clock)	16 GB	455GB	286GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	2015-07-24	CoordinationView 2.0	certified in (date)	2013-04-16	CoordinationView 2.0	

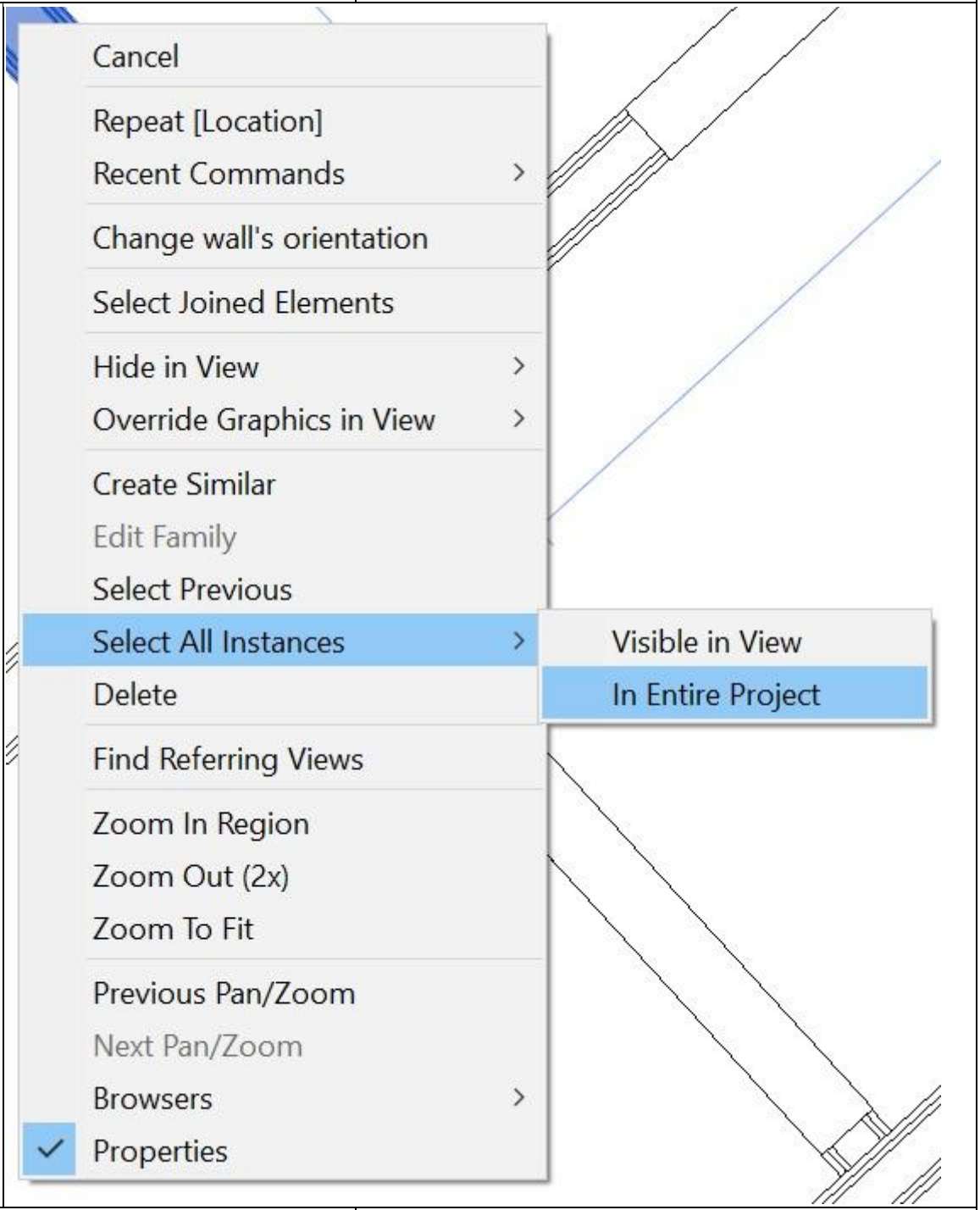
Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	No

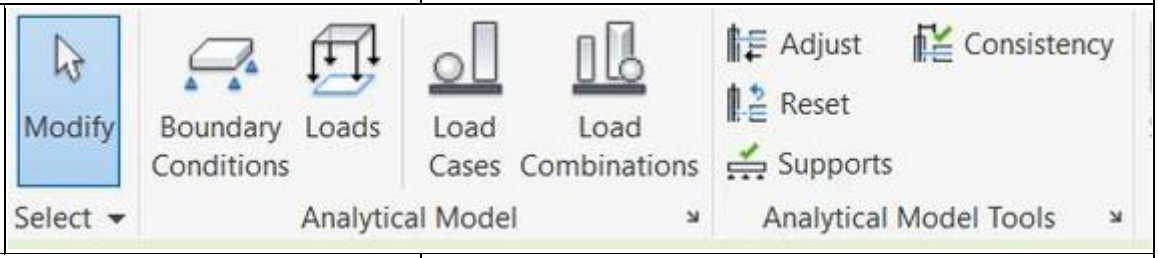
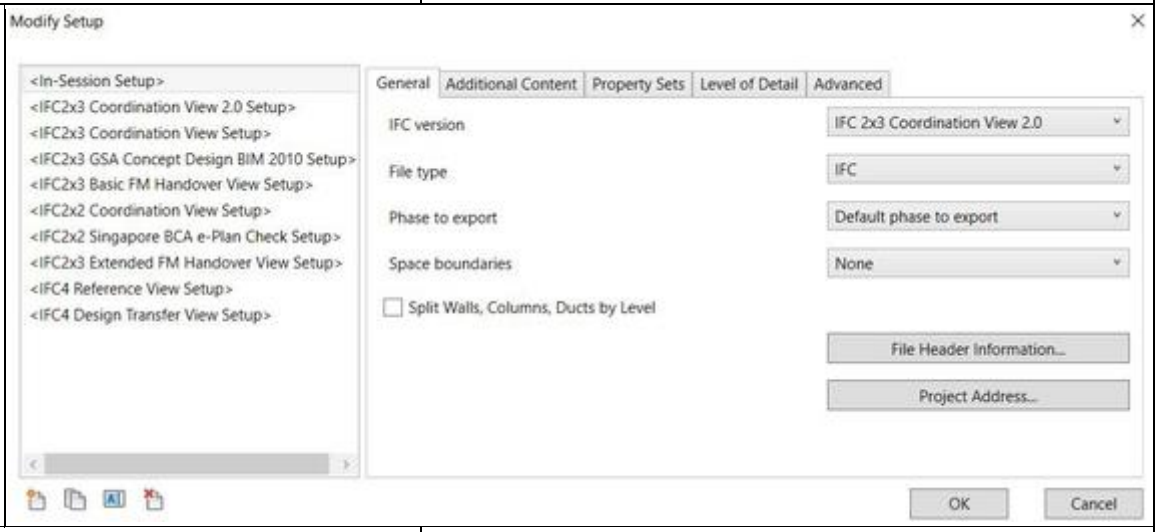
	7.1.1) What changes / inconsistencies / errors / other issues were noted?	During import many elements had to be unjoined and deleted in order for the model to load. As a result many of the relationships could not be maintained. Though some hierarchy was found, ie some elements could be selected that belonged to a group but not a family of objects.
	7.1.2) Attach screenshots	Some kind of hierarchy found  Errors during import- Had to unjoin elements in order to load file
Attribute	8.1) Are the attributes present in the IFC entities retained and consistent?	No

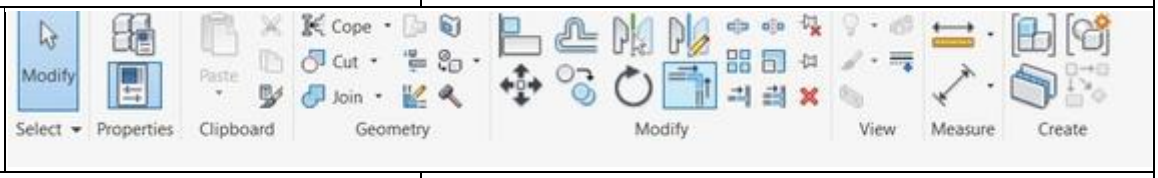
	8.1.1) What changes / inconsistencies / errors / other issues were noted?	Some of the attribute found are consistent with the IFC entities' attributes but most of them are missing.
	8.1.2) Attach screenshots	
Relationships	9.1) Are the relationships between the objects retained?	No
	9.1.1) What changes / inconsistencies / errors / other issues were noted?	Many relationships were unjoined during import.
Geometry	10.1) Is geometry read correctly?	No
	10.1.1) What changes / inconsistencies / errors / other issues were noted?	No geometry information were found.
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	Yes
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes

	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	There are lots of ways to manipulate attributes, geometries, modify semantics etc

	14.1.2) Attach screenshots	Modification in the geometry Edit attributes of the wall layers example 

Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	Selecting elements, attributes of elements, instances of the same family of objects.
	15.1.2) Attach screenshots	
Analyse	16.1) Is it possible to analyse the objects and the model?	Yes

	16.1.1) What analysis are possible? Do you know if the results are reliable?	Reliability of results depends on the framework that is examined (geometry, semantics). Considering that attributes were unjoined and we could not access and evaluate geometry information of the model, there is no certainty on the accuracy of the results.
	16.1.2) Attach screenshots	
	16.1.3) Time required to perform the analysis about the model itself (type 1)	less then a minute
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	Yes
	18.1.1) Which ones are available?	IFC 2x2 & 2x3 Coordination View, and Coordination View 2.0
	18.1.2) Is it possible to add a customised MVD to be used for exporting IFC?	Yes
	18.1.2.1) What kind of customisation is possible?	Specify categories of IFC to be exported, also splitting elements(walls, columns..)
	18.1.2.2) Attach screenshots and files	
	19) How long does it take for the data to be exported to IFC?	1-5 minutes
Test with UpTown.ifc		
Perform ance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation

	How long does it take, approximately, to:Zoom into the model to see more detail	it crashes without completing the operation
	How long does it take, approximately, to:Pan the model	it crashes without completing the operation
	How long does it take, approximately, to:Rotate the model	it crashes without completing the operation
	How long does it take, approximately, to:Query an object	it crashes without completing the operation
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	it crashes without completing the operation
Normals	30.1) Did the normals change?	Yes
2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	32.1) Is it possible to view the model in 2D?	Yes
Editing	33.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	33.1.2) Attach screenshots	
Querying	34.1) Is it possible to query the model and the attributes?	Yes
	34.1.1) What kinds of query are possible?	Select elements, attributes, families of elements.
Analysis	35.1) Is it possible to analyse the objects and the model?	Yes
	35.1.3) Time required to perform the analysis about the model (type 1)	5-20 minutes
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	36) How long does it take for the data to be exported to IFC?	1-5 minutes
Test with Savigliano.ifc		
	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation

Autodesk Revit 2018

Software	Software Name [version]	**Autodesk Revit 2018 [18.0.0.420]**		Software house		**Autodesk**	
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Lenovo T480 2018	Windows 10 Enterprise	Intel i5-8250U	Nividia GeForce MX150	8	480	240
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	2015-07-24	buildingSMART	certified in (date)	2013-04-16	buildingSMART	

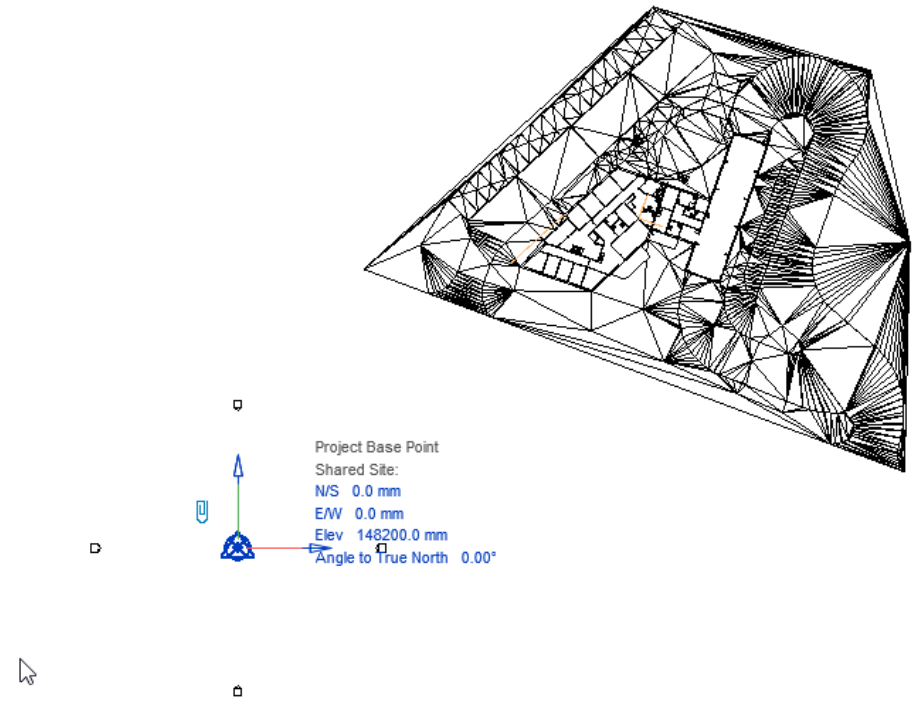
Test with Myran.ifc

Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
	Please report on any errors the software gives when importing the file.	Error message Elements Can't keep elements joined. Walls : Basic Wall : Basic Wall:Yttervägg 36 mm : id 246962 Walls : Basic Wall : Basic Wall:Yttervägg 240 mm : id 247515 Can't keep elements joined. Walls : Basic Wall : Basic Wall:V04 : id 246649 Walls : Basic Wall : Basic Wall:V04 : id 246757 Walls : Basic Wall : Basic Wall:V03 : id 247099 Can't keep elements joined. Walls : Basic Wall : Basic Wall:Yttervägg 36 mm : id 246820 Walls : Basic Wall : Basic Wall:Yttervägg 36 mm : id 246862 Walls : Basic Wall : Basic Wall:Yttervägg 36 mm : id 246877 Walls : Basic Wall : Basic Wall:Yttervägg 240 mm : id 247581 Can't keep elements joined. Walls : Basic Wall : Basic Wall:Yttervägg 36 mm : id 246820 Walls : Basic Wall : Basic Wall:Yttervägg 36 mm : id 246862 Walls : Basic Wall : Basic Wall:Yttervägg 36 mm : id 246877 Walls : Basic Wall : Basic Wall:Yttervägg 240 mm : id 247581 Can't make cut-out. Void Blend : id 246656 IfcOpeningElements : Opening 580221 : Opening 580221 : id 246687 Can't make cut-out. Void Extrusion : id 246786 IfcOpeningElements : Opening 518892 : Opening 518892 : id 246795 Can't make cut-out. Void Extrusion : id 247320 IfcOpeningElements : Opening 204231 : Opening 204231 : id 247329 Can't cut instance of Opening 518565 out of Wall. Walls : Basic Wall : Basic Wall:Yttervägg 36 mm : id 246820 IfcOpeningElements : Opening 518565 : Opening 518565 : id 246840 Can't regenerate Family Opening 204231. Edit Family to modify it. Type : IfcOpeningElements : Opening 204231 : Opening 204231 : id 247327 Can't regenerate Family Opening 518892. Edit Family to modify it. Type : IfcOpeningElements : Opening 518892 : Opening 518892 : id 246793 Can't regenerate Family Opening 580221. Edit Family to modify it. Type : IfcOpeningElements : Opening 580221 : Opening 580221 : id 246685 Rectangular

		opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 248291 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 248308 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 248344 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 248392 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 248558 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 248586 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:Yttervägg 36 mm : id 246820 IfcOpeningElements : Opening 518565 : Opening 518565 : id 246840 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:Yttervägg 36 mm : id 246862 IfcOpeningElements : Opening 518437 : Opening 518437 : id 246876 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:Yttervägg 36 mm : id 246877 IfcOpeningElements : Opening 517844 : Opening 517844 : id 246940 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:V06a : id 247614 IfcOpeningElements : Opening 579680 : Opening 579680 : id 247628 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:V06a : id 247629 IfcOpeningElements : Opening 564238 : Opening 564238 : id 247643 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:V02a : id 247644 IfcOpeningElements : Opening 564114 : Opening 564114 : id 247658 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:Yttervägg 36 mm : id 247682 IfcOpeningElements : Opening 517009 : Opening 517009 : id 248557 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:Yttervägg 36 mm : id 247714 IfcOpeningElements : Opening 516266 : Opening 516266 : id 247749 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:V05c : id 247869 IfcOpeningElements : Opening 4481 : Opening 4481 : id 247885 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:Yttervägg 120 mm : id 247887 IfcOpeningElements : Opening 3999 : Opening 3999 : id 247901 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:V02a : id 247902 IfcOpeningElements : Opening 3237 : Opening 3237 : id 247916 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:V05b : id 247919 IfcOpeningElements : Opening 2727 : Opening 2727 : id 247964 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:V11b : id 247966 IfcOpeningElements : Opening 2589 : Opening 2589 : id 247980 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:V02a : id 247981 IfcOpeningElements : Opening 2271 : Opening 2271 : id 247995 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:V06a : id 247996 IfcOpeningElements : Opening 2209 : Opening 2209 : id 248010 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:V02a : id 248011 IfcOpeningElements : Opening 1949 : Opening 1949 : id 248025 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:V02a : id 248026 IfcOpeningElements : Opening 1844 : Opening 1844 : id 248040 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:V02a : id 248041 IfcOpeningElements : Opening 1652 : Opening 1652 : id 248055 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:V08 : id 248057 IfcOpeningElements : Opening 1349 : Opening 1349 : id 248073 Instance of in-place family is not cutting host. Walls : Basic Wall : Basic Wall:Yttervägg 240 mm : id 248213 IfcOpeningElements : Opening 540 : Opening 540 : id 248227 Can't keep elements joined. Walls : Basic Wall : Basic Wall:Innervägg 70 mm Icke Bärande : id 247058 Void Blend : id 247065 IfcOpeningElements : Opening 511763 : Opening 511763 : id 247076 Can't keep elements joined. Walls : Basic Wall : Basic Wall:V04 : id 246649 Void Blend : id 246656 Void Extrusion : id 246678 IfcOpeningElements : Opening 580221 : Opening 580221 : id 246687 The following problems were encountered in the IFC file: IFC: IfcPolyLine #589477 is too short, discarding. The following problems were encountered in the IFC file: IFC: IfcProfileDef #519093 has a very short segment that can't be fixed. Highlighted floors overlap. Floors : Floor : Floor:Platta på mark 700 mm : id 249412 Floors : Floor : Floor:Bjälklag 150 mm uteplats : id 249613 Highlighted floors overlap. Floors : Floor : Floor:Platta på mark 700 mm : id 249412

		Floors : Floor : Floor:Bjälklag 150 mm uteplats : id 249624 Highlighted floors overlap. Floors : Floor : Floor:Platta på mark 700 mm : id 249412 Floors : Floor : Pad:Pad 1 : id 251286 Highlighted floors overlap. Floors : Floor : Floor:Bjälklag 220 mm : id 249443 Floors : Floor : Floor:Bjälklag 150 mm balkong : id 250719 Highlighted floors overlap. Floors : Floor : Floor:Bjälklag 220 mm : id 249443 Floors : Floor : Floor:Bjälklag 100 mm : id 250828 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:V04 : id 246649 Walls : Basic Wall : Basic Wall:V04 : id 246757 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:V04 : id 246757 Walls : Basic Wall : Basic Wall:Portalvägg : id 249867 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:Yttervägg 36 mm : id 246862 Walls : Basic Wall : Basic Wall:Yttervägg 36 mm : id 246877 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:Yttervägg 36 mm : id 246877 Walls : Basic Wall : Basic Wall:Yttervägg 36 mm : id 248535 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:V02a : id 247351 Walls : Basic Wall : Basic Wall:Brandcellsgräns EI30 - Smart build env : id 251318 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:V02a : id 247644 Walls : Basic Wall : Basic Wall:Brandcellsgräns EI30 - Smart build env : id 251316 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:Innervägg enl. K 262 mm : id 247752 Walls : Basic Wall : Basic Wall:V13 : id 251255 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:Innervägg enl. K 262 mm : id 247752 Walls : Basic Wall : Basic Wall:Brandcellsgräns EI30 - Smart build env : id 251323 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:Yttervägg_parocelement 200 mm : id 247789 Walls : Basic Wall : Basic Wall:Brandcellsgräns EI30 - Smart build env : id 251327 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:Vägg enl. K 197 : id 247840 Walls : Basic Wall : Basic Wall:Brandcellsgräns EI30 - Smart build env : id 251327 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:V02a : id 247981 Walls : Basic Wall : Basic Wall:Brandcellsgräns EI30 - Smart build env : id 251318 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:V06a : id 247996 Walls : Basic Wall : Basic Wall:Brandcellsgräns EI30 - Smart build env : id 251319 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:V02a : id 248011 Walls : Basic Wall : Basic Wall:Brandcellsgräns EI30 - Smart build env : id 251320 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:V02a : id 248026 Walls : Basic Wall : Basic Wall:Brandcellsgräns EI30 - Smart build env : id 251321 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:V02a : id 248041 Walls : Basic Wall : Basic Wall:Brandcellsgräns EI30 - Smart build env : id 251317 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:Yttervägg 240 mm : id 248116 Walls : Basic Wall : Basic Wall:Brandcellsgräns EI30 - Smart build env : id 251324 Highlighted walls overlap. One of

		them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:Yttervägg 240 mm : id 248167 Walls : Basic Wall : Basic Wall:Brandcellsgräns EI30 - Smart build env : id 251323 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:V02a : id 249194 Walls : Basic Wall : Basic Wall:Brandcellsgräns EI30 - Smart build env : id 251315 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:Yttervägg 240 mm : id 249428 Walls : Basic Wall : Basic Wall:Brandcellsgräns EI30 - Smart build env : id 251324 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:Innervägg enl. K 262 mm : id 249429 Walls : Basic Wall : Basic Wall:Brandcellsgräns EI30 - Smart build env : id 251323 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:V02a : id 249633 Walls : Basic Wall : Basic Wall:Brandcellsgräns EI30 - Smart build env : id 251321 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Basic Wall:V05a : id 250935 Walls : Basic Wall : Basic Wall:Brandcellsgräns EI30 - Smart build env : id 251318 Insert conflicts with joined Wall. IfcOpeningElements : Opening 517401 : Opening 517401 : id 246982 Walls : Basic Wall : Basic Wall:Yttervägg 240 mm : id 247581 Insert conflicts with joined Wall. Walls : Basic Wall : Basic Wall:V04 : id 247120 Windows : F15-02 : F15-02 - Mark 42 : id 250811 Insert conflicts with joined Wall. IfcOpeningElements : Opening 515903 : Opening 515903 : id 247787 Walls : Basic Wall : Basic Wall:Brandcellsgräns EI30 - Smart build env : id 251318 Insert conflicts with joined Wall. Walls : Basic Wall : Basic Wall:V02a : id 248026 Windows : F15-01 : F15-01 - Mark 18 : id 249566 Insert conflicts with joined Wall. Walls : Basic Wall : Basic Wall:V08 : id 248057 IfcOpeningElements : Opening 827 : Opening 827 : id 248166
	Other	only elevation is correctly specified; Northern and Eastern values are 0.0 and 0.0
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
	3.2) short comments to the previous question (optional)	elevation correct
Orientation	4.1) Is the model oriented correctly with respect to the true North?	No
	4.1.1) How is the model oriented, with respect to the reference direction?	Angle to True North 0.0°

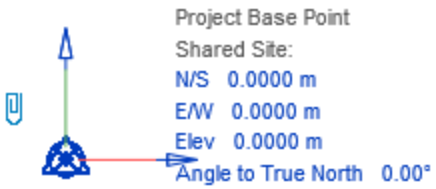
	4.1.2) Attach screenshots	
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
	5.2) short comments to the previous question (optional)	Height of Section B can not be measured unambiguously due to the sloped roof
IFC definitio	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	No
	8.1.1) What changes / inconsistencies / errors / other issues were noted?	no plate specified, only the complete glass front
Geometry	10.1) Is geometry read correctly?	In general yes, but reported errors lead to broken objects etc.
Normals	11.1) Did the normals change?	The software does not have the necessary tools for checking it
2D/3D	13.1) Is it possible to view the model in 3D?	Yes
	12.1) Is it possible to view the model in 2D?	Yes
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	Revit internal attributes + IFC Attributes except the IfcGUID
Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	filtering objects by category

Analysis	16.1) Is it possible to analyse the objects and the model?	Maybe possible; too unexperienced with software to perform such tasks
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	Yes
	18.1.1) Which ones are available?	IFC2x3 Coordination View 2.0 IFC2x3 Coordination View IFC2x3 GSA Concept Design BIM 2010 IFC2x3 Basic FM Handover View IFC2x2 Coordination View IFC2x2 Singapore BCA e-Plan Check IFC2x3 Extended FM Handover View IFC4 Reference View IFC4 Design Transfer View
	Other	I don't know; not experienced enough
	19) How long does it take for the data to be exported to IFC?	it crashes without completing the operation
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	The software was not able to import it, even without crushing
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
	38) Please report on any errors the software gives when importing the file.	Error message Elements Can't keep elements joined. Walls : Basic Wall : Muro di base:Strutturale - 35 cm:425707 : id 226945 Walls : Basic Wall : Muro di base:Generico - 10 cm:298586 : id 233246 Can't keep elements joined. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 230075 Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 233969 Walls : Basic Wall : Muro di base:Muro balconi - 10 cm:520552 : id 235803 Can't keep elements joined. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 231458 Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 235844 Walls : Basic Wall : Muro di base:Muro balconi - 10 cm:520552 : id 236092 Can't keep elements joined. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 231931 Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 236131 Walls : Basic Wall : Muro di base:Muro balconi - 10 cm:520552 : id 236418 Can't keep elements joined. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232485 Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 236558 Walls : Basic Wall : Muro di base:Muro balconi - 10 cm:520552 : id 236817 Can't keep elements joined. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 233933 Walls : Basic Wall :

		Muro di base:Generico - 40 cm:133292 : id 233934 Walls : Basic Wall : Muro di base:Muro balconi - 10 cm:520552 : id 238168 Can't keep elements joined. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 235804 Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 235805 Walls : Basic Wall : Muro di base:Muro balconi - 10 cm:520552 : id 238185 Can't keep elements joined. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 236093 Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 236094 Walls : Basic Wall : Muro di base:Muro balconi - 10 cm:520552 : id 238202 Can't keep elements joined. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 236419 Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 236430 Walls : Basic Wall : Muro di base:Muro balconi - 10 cm:520552 : id 238219 Instance(s) of 100 x 220 cm not cutting anything. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232247 Windows : 100 x 220 cm : 100 x 220 cm - Mark 195 : id 236763 Instance(s) of 100 x 220 cm 90384 not cutting anything. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232247 Windows : 100 x 220 cm 90384 : 100 x 220 cm 90384 - Mark 194 : id 236762 Instance(s) of 120 x 135 cm not cutting anything. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232058 Windows : 120 x 135 cm : 120 x 135 cm - Mark 186 : id 236739 Instance(s) of 120 x 135 cm not cutting anything. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232188 Windows : 120 x 135 cm : 120 x 135 cm - Mark 193 : id 236761 Instance(s) of 120 x 135 cm 98850 not cutting anything. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232293 Windows : 120 x 135 cm 98850 : 120 x 135 cm 98850 - Mark 196 : id 236764 Instance(s) of 120 x 135 cm 98850 not cutting anything. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232339 Windows : 120 x 135 cm 98850 : 120 x 135 cm 98850 - Mark 188 : id 236742 Instance(s) of 120 x 215 cm not cutting anything. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232058 Windows : 120 x 215 cm : 120 x 215 cm - Mark 185 : id 236738 Instance(s) of 120 x 215 cm 80979 not cutting anything. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 230937 Windows : 120 x 215 cm 80979 : 120 x 215 cm 80979 - Mark 91 : id 235009 Instance(s) of 120 x 215 cm 80979 not cutting anything. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232339 Windows : 120 x 215 cm 80979 : 120 x 215 cm 80979 - Mark 187 : id 236741 Instance(s) of 140 x 140 cm not cutting anything. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232516 Windows : 140 x 140 cm : 140 x 140 cm - Mark 203 : id 236795 Instance(s) of 140 x 140 cm not cutting anything. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232549 Windows : 140 x 140 cm : 140 x 140 cm - Mark 200 : id 236792 Instance(s) of 140 x 140 cm 242263 not cutting anything. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232516 Windows : 140 x 140 cm 242263 : 140 x 140 cm 242263 - Mark 201 : id 236793 Instance(s) of 70 x 140 cm not cutting anything. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 230827 Windows : 70 x 140 cm : 70 x 140 cm - Mark 104 : id 235034 Instance(s) of 70 x 140 cm not cutting anything. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232293 Windows : 70 x 140 cm : 70 x 140 cm - Mark 197 : id 236765 Instance(s) of 70 x 140 cm 93420 not cutting anything. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 230827 Windows : 70 x 140 cm 93420 : 70 x 140 cm 93420 - Mark 103 : id 235033 Instance(s) of 70 x 140 cm 93420 not cutting anything. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232188 Windows : 70 x 140 cm 93420 : 70 x 140 cm 93420 - Mark 192 : id 236760 Instance(s) of 80 x 135 cm not cutting anything. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232454 Windows : 80 x 135 cm : 80 x 135 cm - Mark 206 : id 236798 Instance(s) of 80 x 135 cm 95126 not cutting anything. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 230937 Windows : 80 x 135 cm 95126 : 80 x 135 cm 95126 - Mark 105 : id 235035 Instance(s) of 80 x 135 cm 95126 not cutting anything. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232454 Windows : 80 x 135 cm 95126 : 80 x 135 cm 95126 - Mark 207 : id 236799 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 229378 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 229382 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening :

		Rectangular Straight Wall Opening : id 229727 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 229729 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 230056 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 230057 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 230059 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 230060 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 230720 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 230721 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 230723 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 230724 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 231912 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 231913 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 231915 Rectangular opening doesn't cut its host. Rectangular Straight Wall Opening : Rectangular Straight Wall Opening : id 231916 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 227322 IfcOpeningElements : Opening 260236 : Opening 260236 : id 227360 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 227437 IfcOpeningElements : Opening 258067 : Opening 258067 : id 227475 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 20 cm:2340 : id 227816 IfcOpeningElements : Opening 111868 : Opening 111868 : id 227830 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 20 cm:2340 : id 228118 IfcOpeningElements : Opening 107237 : Opening 107237 : id 228132 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 20 cm:2340 : id 228556 IfcOpeningElements : Opening 54012 : Opening 54012 : id 228570 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Strutturale - 35 cm:425707 : id 229206 IfcOpeningElements : Opening 234884 : Opening 234884 : id 231079 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 230147 IfcOpeningElements : Opening 67349 : Opening 67349 : id 230185 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 230827 IfcOpeningElements : Opening 116159 : Opening 116159 : id 230859 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 230937 IfcOpeningElements : Opening 116790 : Opening 116790 : id 230981 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 230937 IfcOpeningElements : Opening 116812 : Opening 116812 : id 230995 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232058 IfcOpeningElements : Opening 257394 : Opening 257394 : id 232074 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232058 IfcOpeningElements : Opening 257416 : Opening 257416 : id 232088 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232058 IfcOpeningElements : Opening 257438 : Opening 257438 : id 232102 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232058 IfcOpeningElements : Opening 257460 : Opening 257460 : id 232116 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232188 IfcOpeningElements : Opening 257826 : Opening 257826 : id 232204 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232188 IfcOpeningElements : Opening 257848 : Opening 257848 : id 232218 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232247 IfcOpeningElements : Opening 258201 : Opening 258201 : id 232263 Instance of in-

		place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232293 IfcOpeningElements : Opening 258484 : Opening 258484 : id 232309 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232339 IfcOpeningElements : Opening 258730 : Opening 258730 : id 232355 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232339 IfcOpeningElements : Opening 258752 : Opening 258752 : id 232369 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232339 IfcOpeningElements : Opening 258774 : Opening 258774 : id 232383 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232339 IfcOpeningElements : Opening 258796 : Opening 258796 : id 232397 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232454 IfcOpeningElements : Opening 260366 : Opening 260366 : id 232470 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232516 IfcOpeningElements : Opening 260811 : Opening 260811 : id 232534 Instance of in-place family is not cutting host. Walls : Basic Wall : Muro di base:Generico - 40 cm:133292 : id 232549 IfcOpeningElements : Opening 260961 : Opening 260961 : id 232579 Can't keep elements joined. Walls : Basic Wall : Muro di base:Strutturale - 35 cm:425707 : id 232580 Void Extrusion : id 232663 IfcOpeningElements : Opening 271716 : Opening 271716 : id 232670 The following problems were encountered in the IFC file: There were 1 errors and 0 warnings encountered while reading the IFC file. Please look at D:\GeoBIMBenchmark\Savigliano\Savigliano.ifc.log for more information. Highlighted floors overlap. Floors : Floor : Pavimento:Pavimento - 36 cm : id 233753 Floors : Floor : Pavimento:Calcestruzzo da 300 mm : id 236886 Highlighted floors overlap. Floors : Floor : Pavimento:Pavimento - 36 cm : id 234222 Floors : Floor : Pavimento:Balconi : id 234264 Highlighted floors overlap. Floors : Floor : Pavimento:Pavimento - 36 cm : id 234222 Floors : Floor : Pavimento:Marmetta balconi - 3 cm : id 238579 Highlighted floors overlap. Floors : Floor : Pavimento:Pavimento - 36 cm : id 235652 Floors : Floor : Piattaforma:Magrone : id 240014 Highlighted floors overlap. Floors : Floor : Pavimento:Pavimento - 36 cm : id 236834 Floors : Floor : Piattaforma:Magrone : id 240029 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Muro di base:Strutturale - 35 cm:425707 : id 226945 Walls : Basic Wall : Muro di base:Generico - 10 cm:298586 : id 233252 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Muro di base:Strutturale - 20 cm:301367 : id 228258 Walls : Basic Wall : Muro di base:Strutturale - 20 cm:301367 : id 233602 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Muro di base:Strutturale - 20 cm:301367 : id 228281 Walls : Basic Wall : Muro di base:Strutturale - 20 cm:301367 : id 233545 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Muro di base:Generico - 20 cm:2340 : id 228304 Walls : Basic Wall : Muro di base:Generico - 20 cm:2340 : id 233532 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Muro di base:Strutturale - 20 cm:301367 : id 230229 Walls : Basic Wall : Muro di base:Strutturale - 20 cm:301367 : id 233601 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Muro di base:Strutturale - 20 cm:301367 : id 233544 Walls : Basic Wall : Muro di base:Strutturale - 20 cm:301367 : id 234424 Highlighted walls overlap. One of them may be ignored when Revit finds room boundaries. Use Cut Geometry to embed one wall within the other. Walls : Basic Wall : Muro di base:Strutturale - 20 cm:301367 : id 233546 Walls : Basic Wall : Muro di base:Strutturale - 20 cm:301367 : id 234436 Insert conflicts with joined Wall. IfcOpeningElements : Opening : Opening : id 226979 Walls : Basic Wall : Muro di base:Generico - 10 cm:298586 : id 233246 Insert conflicts with joined Wall. IfcOpeningElements : Opening 246895 : Opening 246895 : id 228043 Walls : Basic

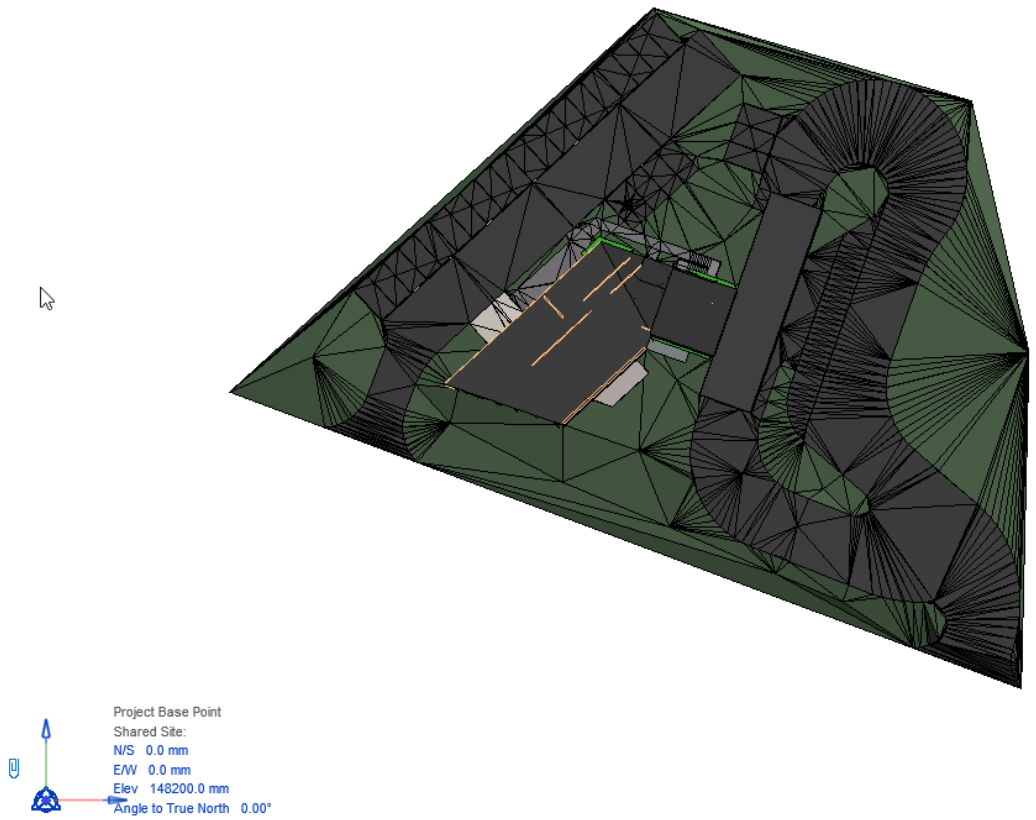
		Wall : Muro di base:Generico - 10 cm:298586 : id 235847 Insert conflicts with joined Wall. IfcOpeningElements : Opening 246895 : Opening 246895 : id 228043 Walls : Basic Wall : Muro di base:Generico - 10 cm:298586 : id 235848 Insert conflicts with joined Wall. IfcOpeningElements : Opening 66743 : Opening 66743 : id 228473 Walls : Basic Wall : Muro di base:Generico - 10 cm:298586 : id 233970 Insert conflicts with joined Wall. IfcOpeningElements : Opening 272600 : Opening 272600 : id 229205 Walls : Basic Wall : Muro di base:Strutturale - 35 cm:425707 : id 236829 Insert conflicts with joined Wall. Walls : Basic Wall : Muro di base:Generico - 10 cm:298586 : id 233944 Doors : 80 x 210 cm 65949 : 80 x 210 cm 65949 - Mark 64 : id 233951 Insert conflicts with joined Wall. Walls : Basic Wall : Muro di base:Generico - 10 cm:298586 : id 235738 Doors : 80 x 210 cm 238431 : 80 x 210 cm 238431 - Mark 196 : id 235744 Insert conflicts with joined Wall. Walls : Basic Wall : Muro di base:Generico - 10 cm:298586 : id 235817 Doors : 80 x 210 cm 65949 : 80 x 210 cm 65949 - Mark 208 : id 235824 Insert conflicts with joined Wall. Walls : Basic Wall : Muro di base:Generico - 10 cm:298586 : id 236036 Doors : 80 x 210 cm 238431 : 80 x 210 cm 238431 - Mark 226 : id 236042 Insert conflicts with joined Wall. Walls : Basic Wall : Muro di base:Generico - 10 cm:298586 : id 236105 Doors : 80 x 210 cm 65949 : 80 x 210 cm 65949 - Mark 238 : id 236112 Insert conflicts with joined Wall. Walls : Basic Wall : Muro di base:Generico - 10 cm:298586 : id 236362 Doors : 80 x 210 cm 238431 : 80 x 210 cm 238431 - Mark 255 : id 236368 Insert conflicts with joined Wall. Walls : Basic Wall : Muro di base:Generico - 10 cm:298586 : id 236491 Doors : 80 x 210 cm 65949 : 80 x 210 cm 65949 - Mark 267 : id 236498 Insert conflicts with joined Wall. Walls : Basic Wall : Muro di base:Generico - 10 cm:298586 : id 236750 Doors : 80 x 210 cm 238431 : 80 x 210 cm 238431 - Mark 285 : id 236756
	39) Attach screenshots regarding the eventually reported errors.	
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	40.1.1) Where is the origin of the model coordinate reference system as imported in the software?	N: 0; E:0; Elev:0; Angle to True North:0;
	40.1.2) Attach screenshots	
	40.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	no CRS specified; unit: meters
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	41.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0 m
	41.1.3) What is the height reference system?	no reference system specified
Orientation	42.1) Is the model oriented correctly with respect to the true North?	No

	42.1.1) How is the model oriented, with respect to the reference direction?	no orientation; angle to true north 0.0°
	Other	correct dimensions but sections at different heights. (e.g at 12.17 m instead of 12 m)
IFC definitions	44.1) Is the eventual translation consistent with the IFC definitions?	No
	44.1.1) What changes / inconsistencies / errors / other issues were noted?	element not imported
Attribute s	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	46.1) Are the attributes present in the IFC entities retained and consistent?	No
	46.1.1) What changes / inconsistencies / errors / other issues were noted?	window not imported
Relationshi	47.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Geometry	48.1) Is geometry read correctly?	No
	48.1.1) What changes / inconsistencies / errors / other issues were noted?	elements missing and some are broken
Normals	49.1) Did the normals change?	The software does not have the necessary tools for checking it
2D	50.1) Is it possible to view the model in 3D?	Yes
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	55) How long does it take for the data to be exported to IFC?	it crashes without completing the operation

Autodesk Revit 2019.2

Software	Software Name [version]	**Autodesk Revit 2019.2 [19.2.1.1]**		Software house		**Autodesk**	
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	LENOVO T480s, 2018	Windows 10 Enterprise	Intel Core i5-8250U	Intel UHD Graphics 620	8	475	207
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	2015-07-24	buildingSMART	certified in (date)	2013-04-16	buildingSMART	

Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
	Please report on any errors the software gives when importing the file.	76 errors, diverse errors regarding "Can't make cut out", "Can't keep elements joined.", ...
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
Georeferenc	2.1.1) Where is the origin of the model coordinate reference system as imported in the software?	0 / 0

	2.1.2) Attach screenshots	
	2.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	no crs specified, unit: mm
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
Orientation	4.1) Is the model oriented correctly with respect to the true North?	No
	4.1.1) How is the model oriented, with respect to the reference direction?	0.00°
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
	5.2) short comments to the previous question (optional)	Section B is not clearly measurable because the roof is sloped.
IFC definitio	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	No
	8.1.1) What changes / inconsistencies / errors / other issues were noted?	No Plate specified, only the complete glass wall

	8.1.2) Attach screenshots	
Relationships	9.1) Are the relationships between the objects retained?	Yes
	9.2) short comments to the previous question (optional)	I think ye, but it is hard to figure out
Geometry	10.1) Is geometry read correctly?	Yes
	10.2) short comments to the previous question (optional)	Not always
Normals	11.1) Did the normals change?	The software does not have the necessary tools for checking it
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	Yes
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	Revit attributes, also IFC parameters if applicable (also IfcGUID), Geometry is full editable
Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	Category filter for elements, no direct query (select....)
Analysis	16.1) Is it possible to analyse the objects and the model?	Yes, analysis about the model validity and features (geometry, semantics, schema validity...) are possible (type 1)
	16.1.1) What analysis are possible? Do you know if the results are reliable?	Geometry / topology check at import, no semantic check
	16.1.3) Time required to perform the analysis about the model itself (type 1)	No analysis of type 1 are possible

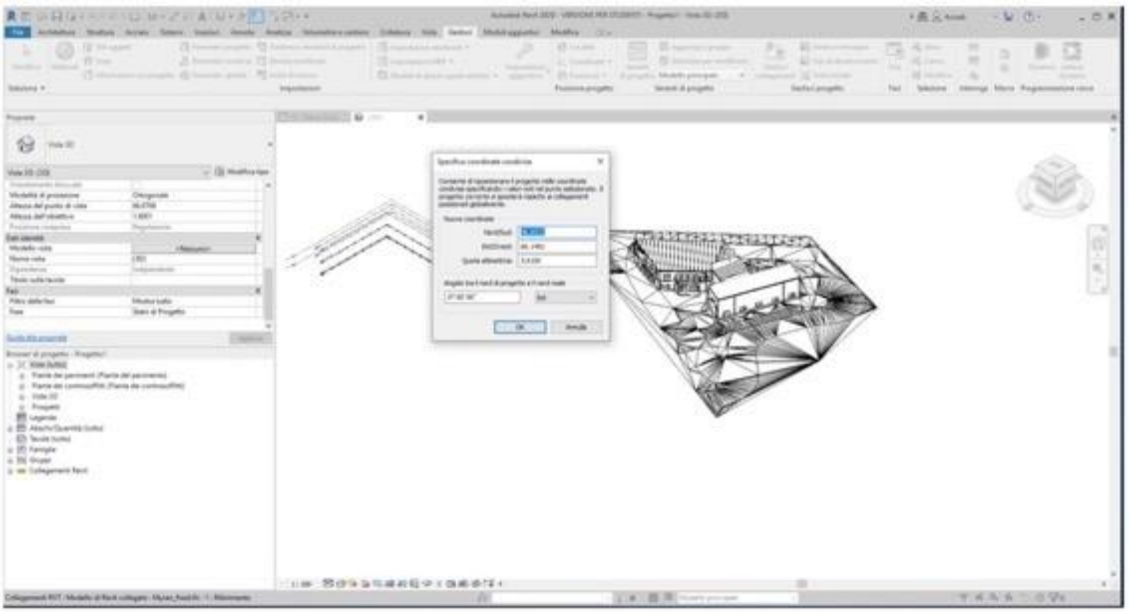
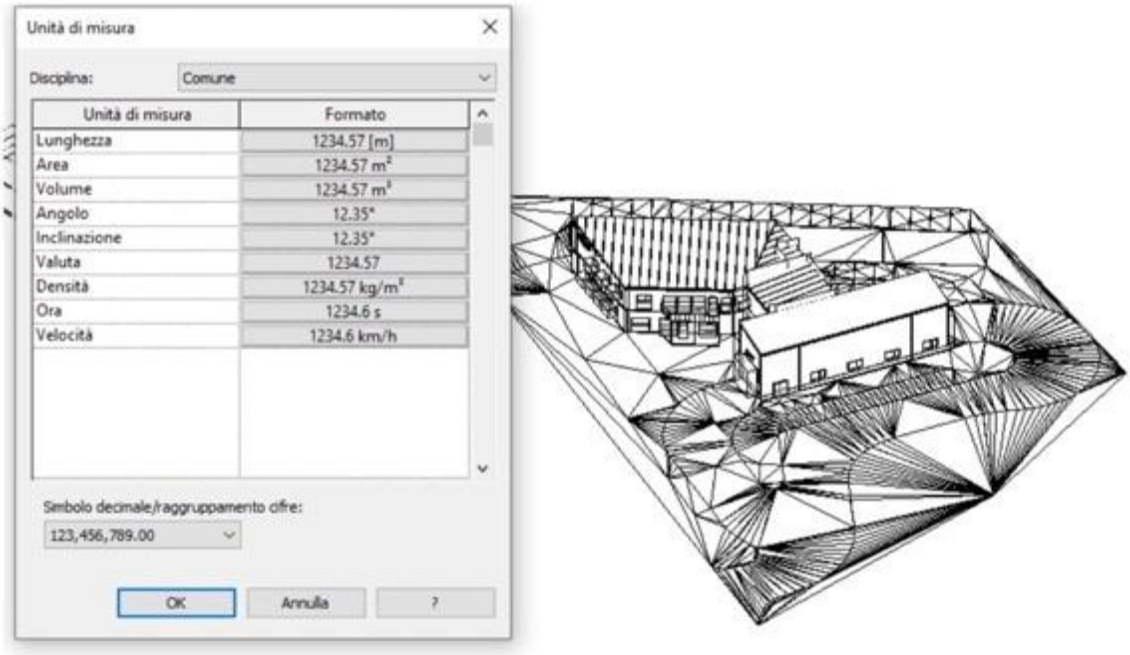
	16.1.3) Time required to perform the analysis about the model performances (type2)	No analysis of type 2 are possible
	16.2) short comments to the previous question (optional)	Type 1: only implicit at import / Type 2: no experience
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	Yes
	18.1.1) Which ones are available?	IFC2x3 Coordination View 2.0 IFC4 Reference View IFC4 Design Transfer View IFC2x3 Coordination View IFC2x3 GSA Concept Design BIM 2010 IFC2x3 Basic FM Handover View IFC2x2 Coordination View IFC2x2 Singapore BCA e-Plan View IFC2x3 COBie 2.4 Design Deliverable
	18.1.2) Is it possible to add a customised MVD to be used for exporting IFC?	No
	18.2) short comments to the previous question (optional)	Only IFC configuration json (regarding IFC Export for Revit)
	19) How long does it take for the data to be exported to IFC?	it's almost immediate
Test with UpTown.ifc		
	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	The software was not able to import it, even without crushing
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
	38) Please report on any errors the software gives when importing the file.	46 errors, 65 warnings
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	40.1.1) Where is the origin of the model coordinate reference system as imported in the software?	0 / 0
	40.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	no crs, unit: m

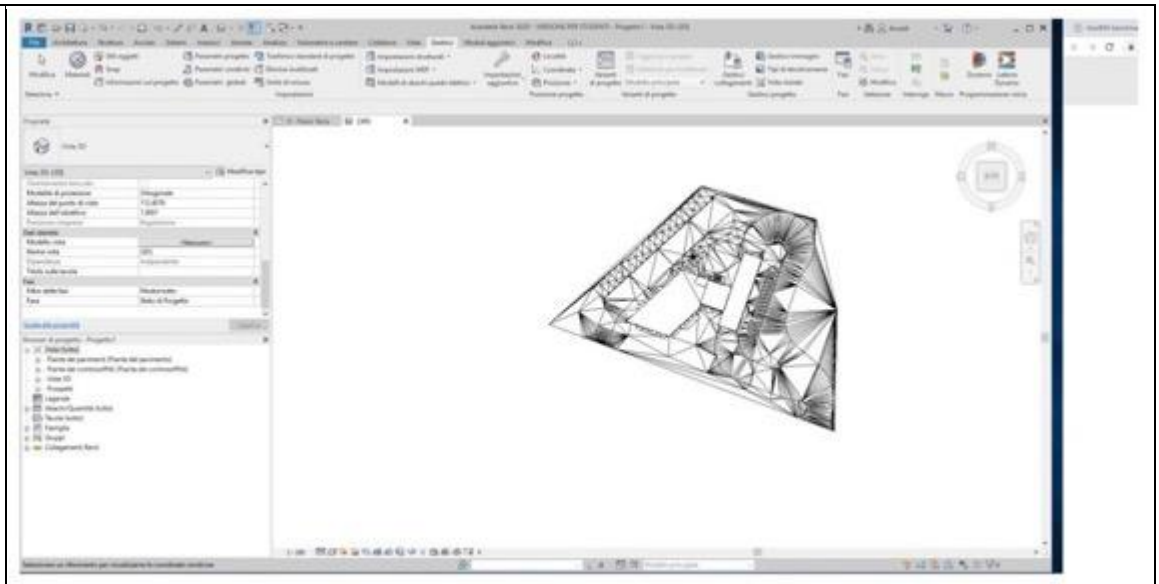
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	41.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0
	41.1.3) What is the height reference system?	no system
Orientation	42.1) Is the model oriented correctly with respect to the true North?	No
	42.1.1) How is the model oriented, with respect to the reference direction?	0.00°
Proportions	43.1) Does the model maintain its correct dimensions and proportions?	Yes
	43.2) short comments to the previous question (optional)	but some measure differ in a few cm (maybe because its hard to find the same points to measure out of the sketch)
IFC definitions	44.1) Is the eventual translation consistent with the IFC definitions?	No
	44.1.1) What changes / inconsistencies / errors / other issues were noted?	Building element was not imported
Hierarchy	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Relationships	47.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Geometry	48.1) Is geometry read correctly?	No
	48.1.1) What changes / inconsistencies / errors / other issues were noted?	Many elements are missing. Some elements are broken regarding their storey
Normals	49.1) Did the normals change?	The software does not have the necessary tools for checking it
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	Yes
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	55) How long does it take for the data to be exported to IFC?	it's almost immediate

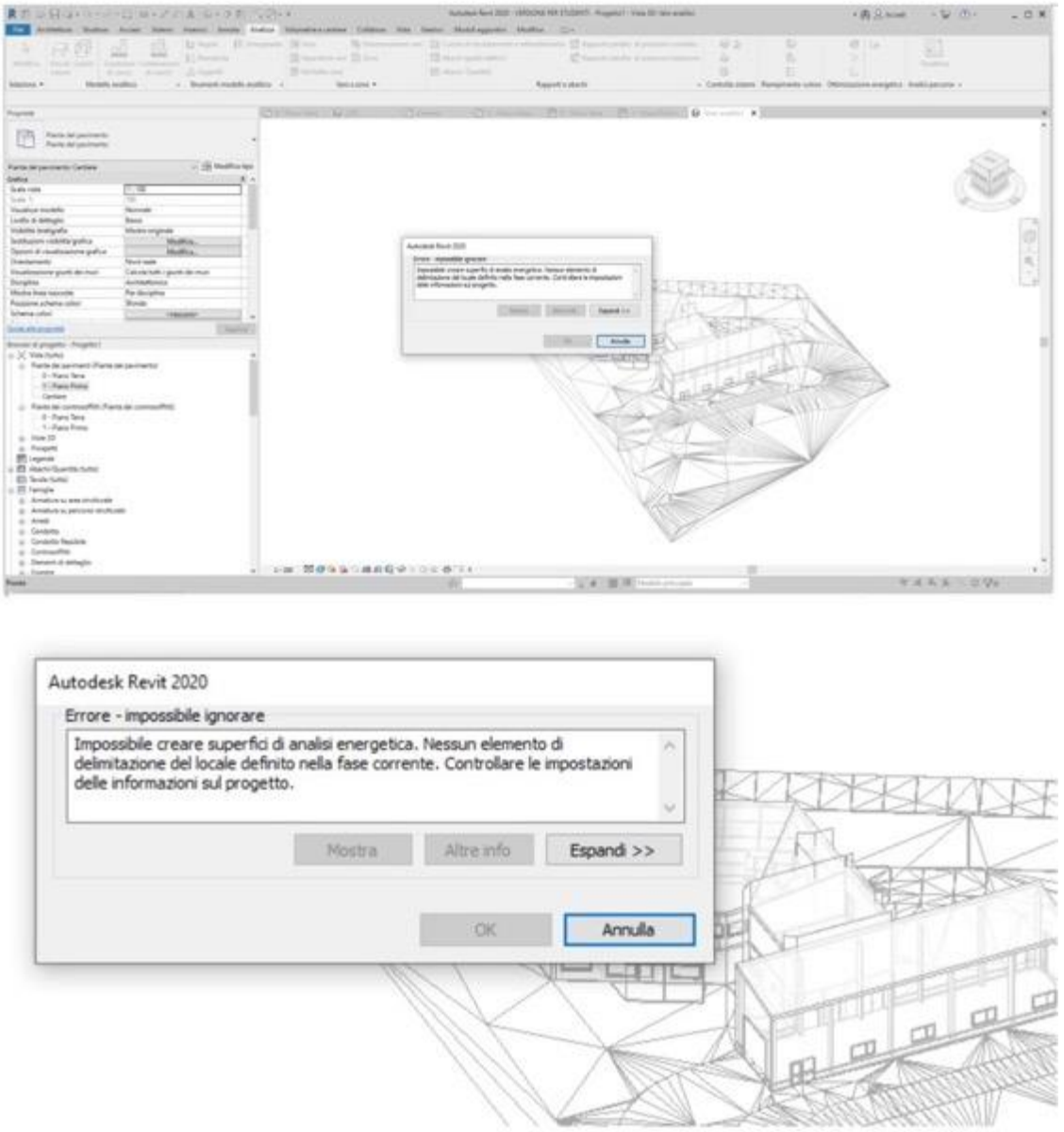
Autodesk Revit 2020

Software	Software Name [version]	**Autodesk Revit 2020 [Educational 2020]**		Software house		**Autodesk**	
	Proprietary or open source software?			Kind of software			
	Proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Assembled (Motherboard TUF Z390-PRO GAMING)	Windows 10 Pro version 1809	Intel (R) Core (TH) i7-9700K CPU @3.60GHz 3.60GHz	Nvidia Geforce GTX 1660Ti	64 GB	465 GB + 3630 GB	353 GB + 77.9 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			

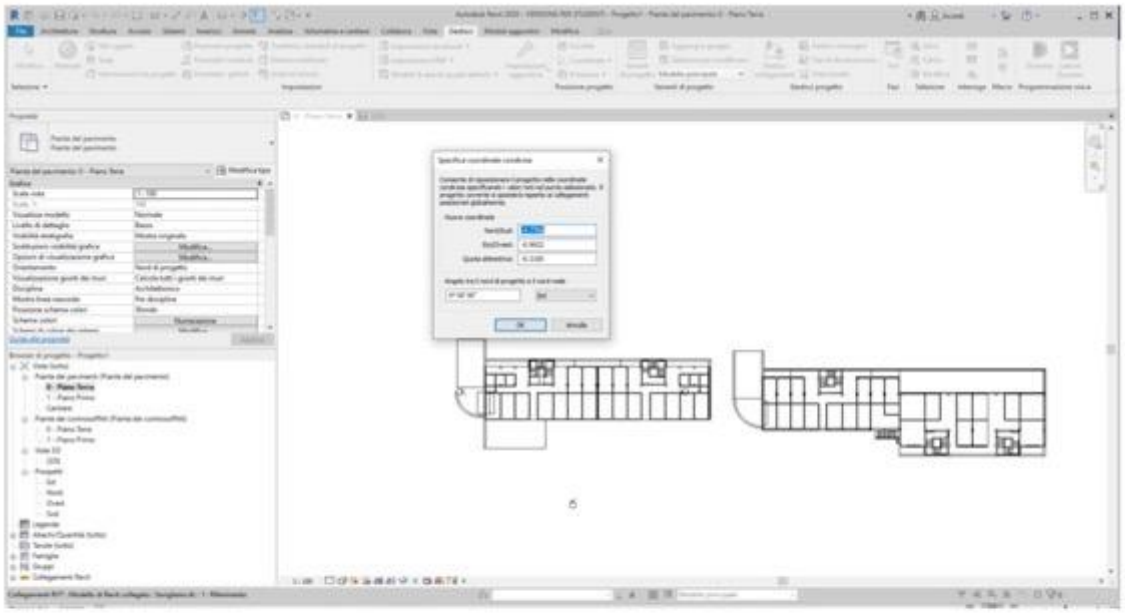
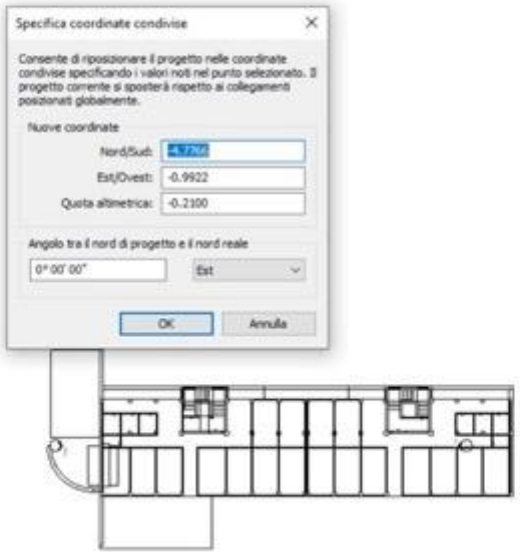
Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	less than a minute
	Please report on any errors the software gives when importing the file.	no error
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	2.1.1) Where is the origin of the model coordinate reference system as imported in the software?	The IFC lost the coordinate reference system, so I can't get the origin. I can decide the new origin as I want.

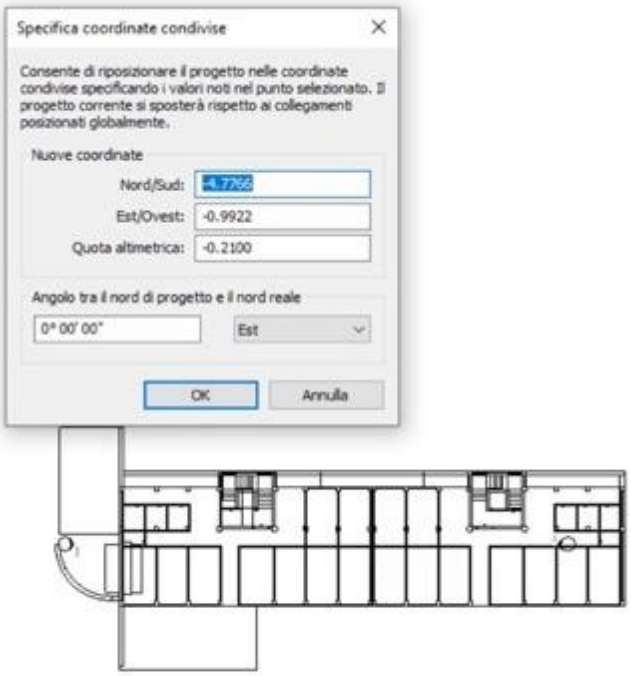
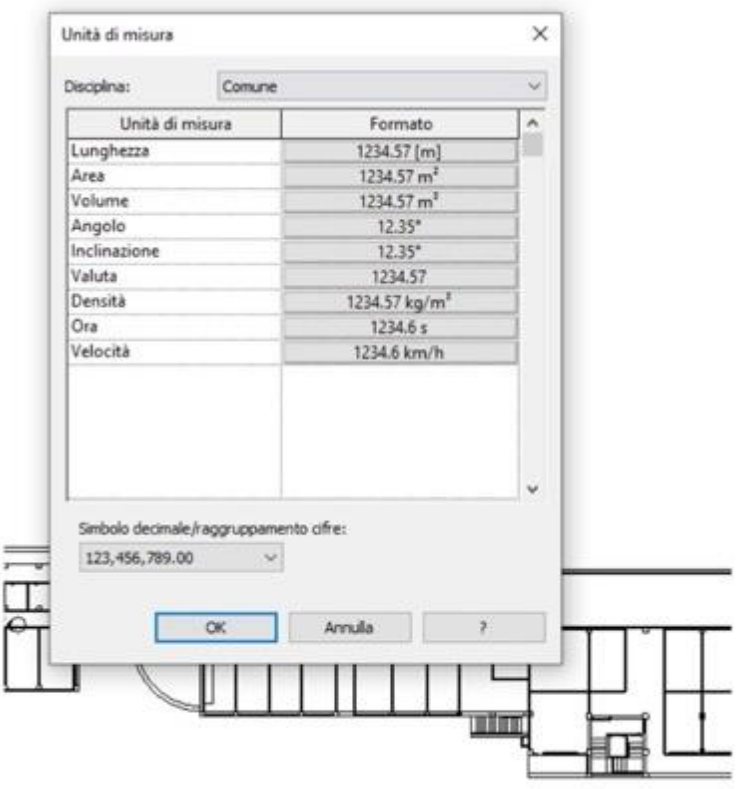
	2.1.2) Attach screenshots	
	2.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	CRS: geographic, UoM: meters
	2.1.4) Attach screenshots	
	2.2) short comments to the previous question (optional)	no comments
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
	3.2) short comments to the previous question (optional)	no comments.
Orientation	4.1) Is the model oriented correctly with respect to the true North?	No
	4.1.1) How is the model oriented, with respect to the reference direction?	The model is oriented.

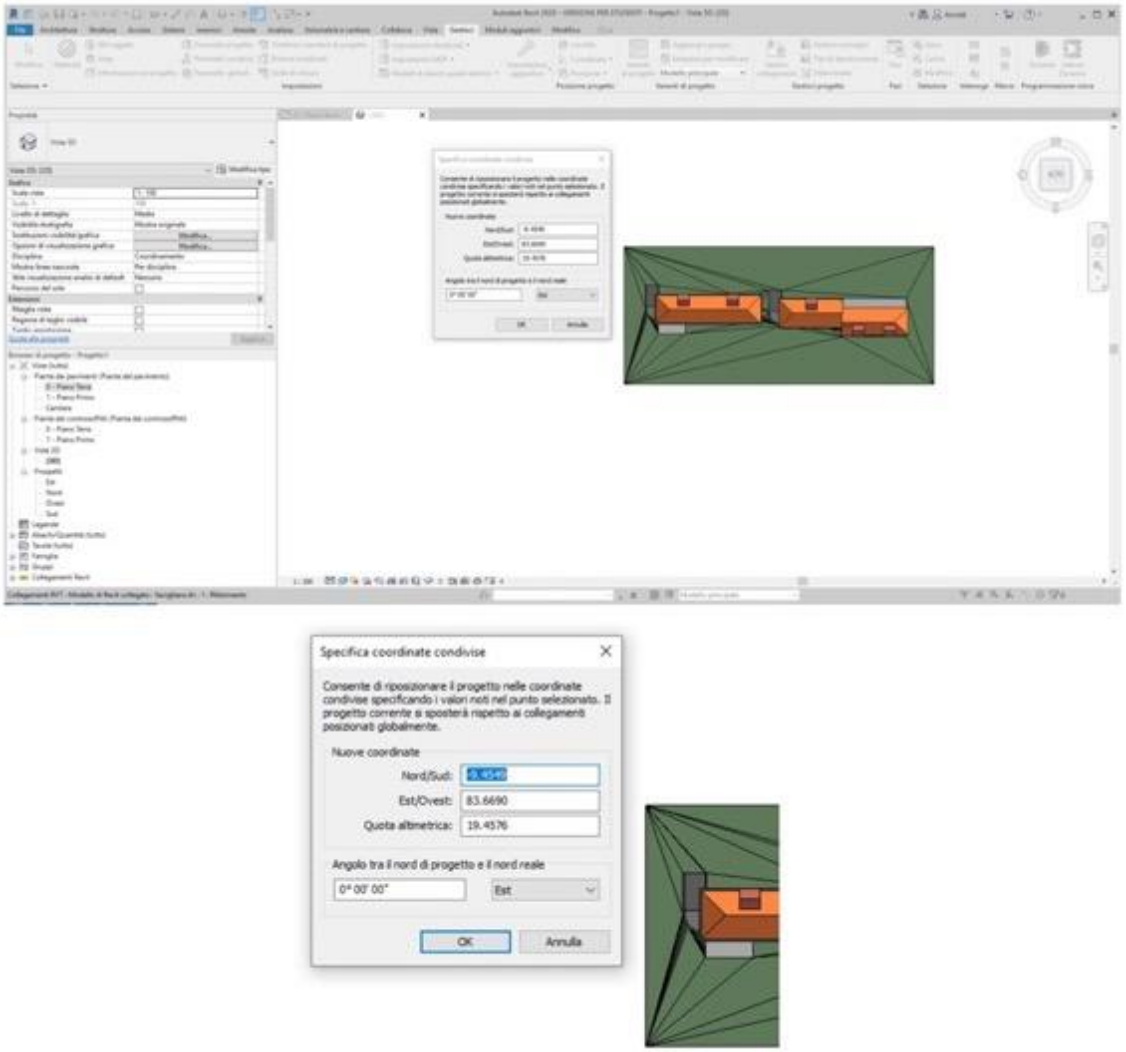
	4.1.2) Attach screenshots	
	4.2) short comments to the previous question (optional)	no comments
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
	5.2) short comments to the previous question (optional)	no comments
Geometry	10.1) Is geometry read correctly?	Yes
	10.2) short comments to the previous question (optional)	no comments.
Normals	11.1) Did the normals change?	Yes
	11.2) short comments to the previous question (optional)	no comments.
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	12.2) short comments to the previous question (optional)	no comments.
	13.1) Is it possible to view the model in 2D?	Yes
	13.2) short comments to the previous question (optional)	no comments.
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	No
	14.2) short comments to the previous question (optional)	The software doesn't allow me to edit the features.
Querying	15.1) Is it possible to query the model and the attributes?	No
	15.2) short comments to the previous question (optional)	no comments.
Analysis	16.1) Is it possible to analyse the objects and the model?	No
	16.1.1) What analysis are possible? Do you know if the results are reliable?	Revit Educational 2020 allows energetic, structural analyses but they don't work with Myran IFC file.

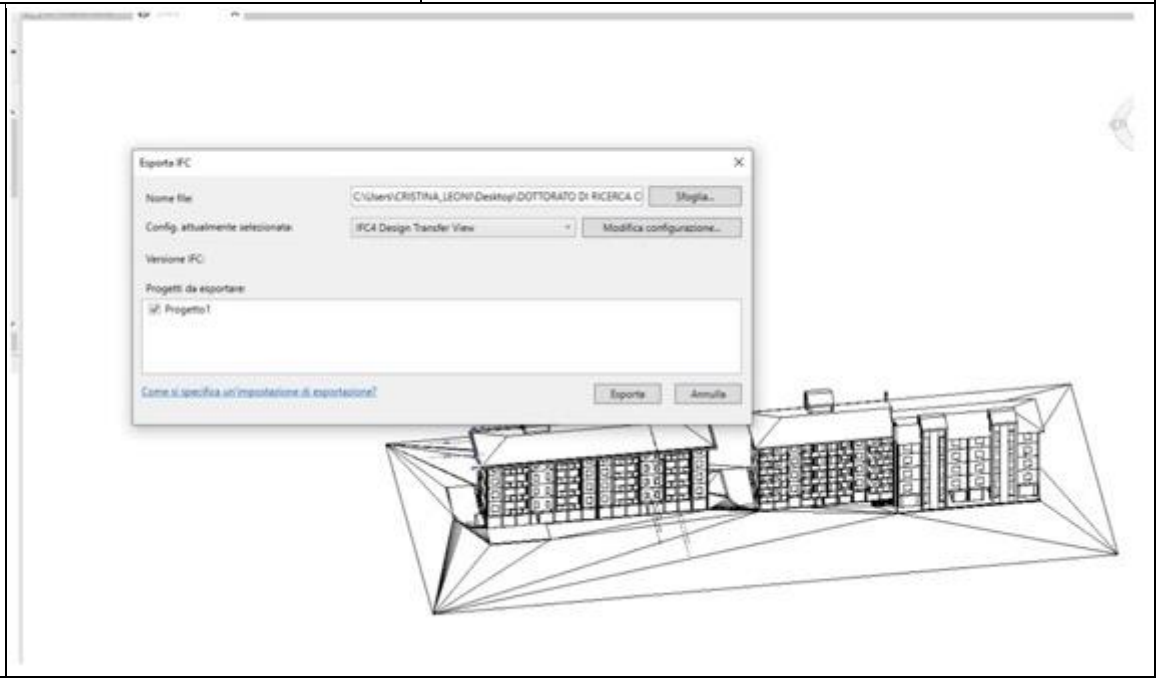
	16.1.2) Attach screenshots	
	16.1.3) Time required to perform the analysis about the model itself (type 1)	No analysis of type 1 are possible
	16.1.3) Time required to perform the analysis about the model performances (type2)	No analysis of type 2 are possible
	16.2) short comments to the previous question (optional)	no comments
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	17.2) short comments to the previous question (optional)	no comments.
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	No
	18.2) short comments to the previous question (optional)	It doesn't appear in the scrooll list.

	19) How long does it take for the data to be exported to IFC?	it's almost immediate
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	20 minutes-1 hour
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	it's almost immediate
	Please report on any errors the software gives when importing the file.	no errors.
Proportions	24.1) Does the model maintain its correct dimensions and proportions?	Yes
	24.2) short comments to the previous question (optional)	no comments
	Other	Not all the features of the IFC file could be selectionable.
	Other	They are not all be readen.
Geometry	29.1) Is geometry read correctly?	Yes
	29.2) short comments to the previous question (optional)	no comments.
Normals	30.1) Did the normals change?	Yes
2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	31.2) short comments to the previous question (optional)	no comments.
	32.1) Is it possible to view the model in 2D?	Yes
	32.2) short comments to the previous question (optional)	no comments.
Editing	33.1) Is it possible to edit the model (attributes, geometry, other)?	No
	33.2) short comments to the previous question (optional)	The software doesn't allow me to edit the features.
Querying	34.1) Is it possible to query the model and the attributes?	No
	34.2) short comments to the previous question (optional)	no comments.
Analysis	35.1) Is it possible to analyse the objects and the model?	No
	35.2) short comments to the previous question (optional)	Revit Educational 2020 allows energetic, structural analyses but they don't work with UpTown IFC file.
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	36) How long does it take for the data to be exported to IFC?	it's almost immediate
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate

	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
	38) Please report on any errors the software gives when importing the file.	no errors
	39) Attach screenshots regarding the eventually reported errors.	
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	40.1.1) Where is the origin of the model coordinate reference system as imported in the software?	The IFC lost the coordinate reference system, so I can't get the origin. I can decide the new origin as I want.
	40.1.2) Attach screenshots	 

	40.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	CRS: geographic, UoM: meters.
	40.1.4) Attach screenshots	 

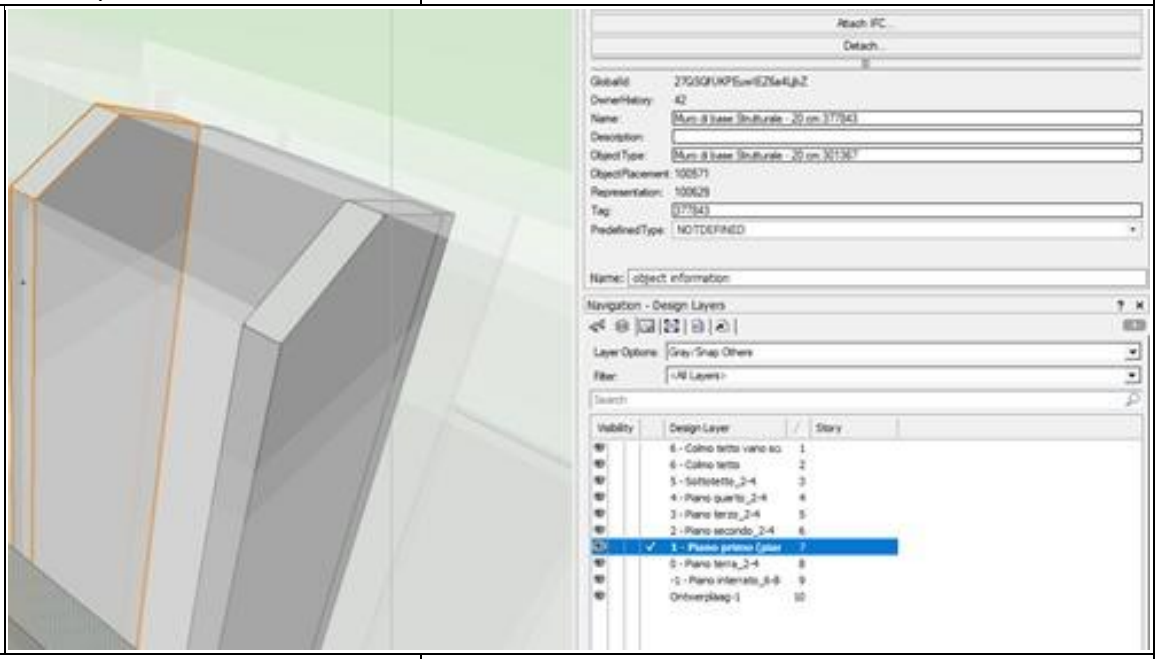
	40.2) short comments to the previous question (optional)	no comments.
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
	41.2) short comments to the previous question (optional)	no comments.
Orientation	42.1) Is the model oriented correctly with respect to the true North?	No
	42.1.1) How is the model oriented, with respect to the reference direction?	The model is not oriented as the Uptown and Myran IFC model.
	42.1.2) Attach screenshots	
	42.2) short comments to the previous question (optional)	no comments.
Proportions	43.1) Does the model maintain its correct dimensions and proportions?	Yes
	43.2) short comments to the previous question (optional)	no comments.
	Other	Not all the features of the IFC file could be selectionable.
	44.2) short comments to the previous question (optional)	Not all the features of the IFC file could be selectionable.
	Other	Not all the features of the IFC file could be selectionable.
	45.2) short comments to the previous question (optional)	Not all the features of the IFC file could be selectionable.

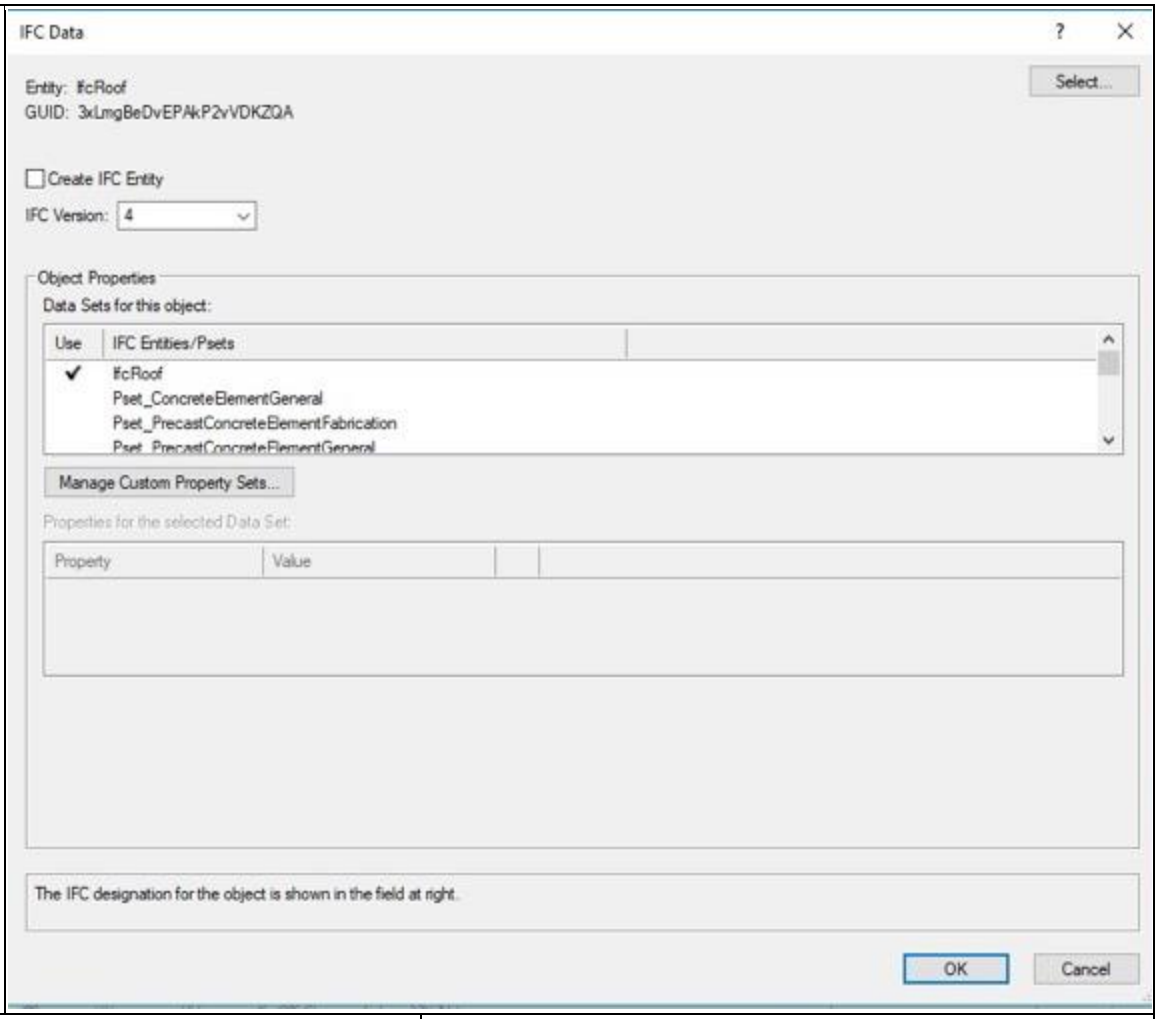
	Other	They are not all be readen.
	46.2) short comments to the previous question (optional)	no other comments.
	Other	Not for all objects.
	47.2) short comments to the previous question (optional)	no other comments.
Geometry	48.1) Is geometry read correctly?	Yes
	48.2) short comments to the previous question (optional)	no comments.
Normals	49.1) Did the normals change?	Yes
	49.2) short comments to the previous question (optional)	no comments.
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	50.2) short comments to the previous question (optional)	no comments.
	51.1) Is it possible to view the model in 2D?	Yes
	51.2) short comments to the previous question (optional)	no comments.
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	55) How long does it take for the data to be exported to IFC?	it's almost immediate
	55.1) Comment to the previous question (optional)	no comments.
	55.2) Attach screenshots (optional)	

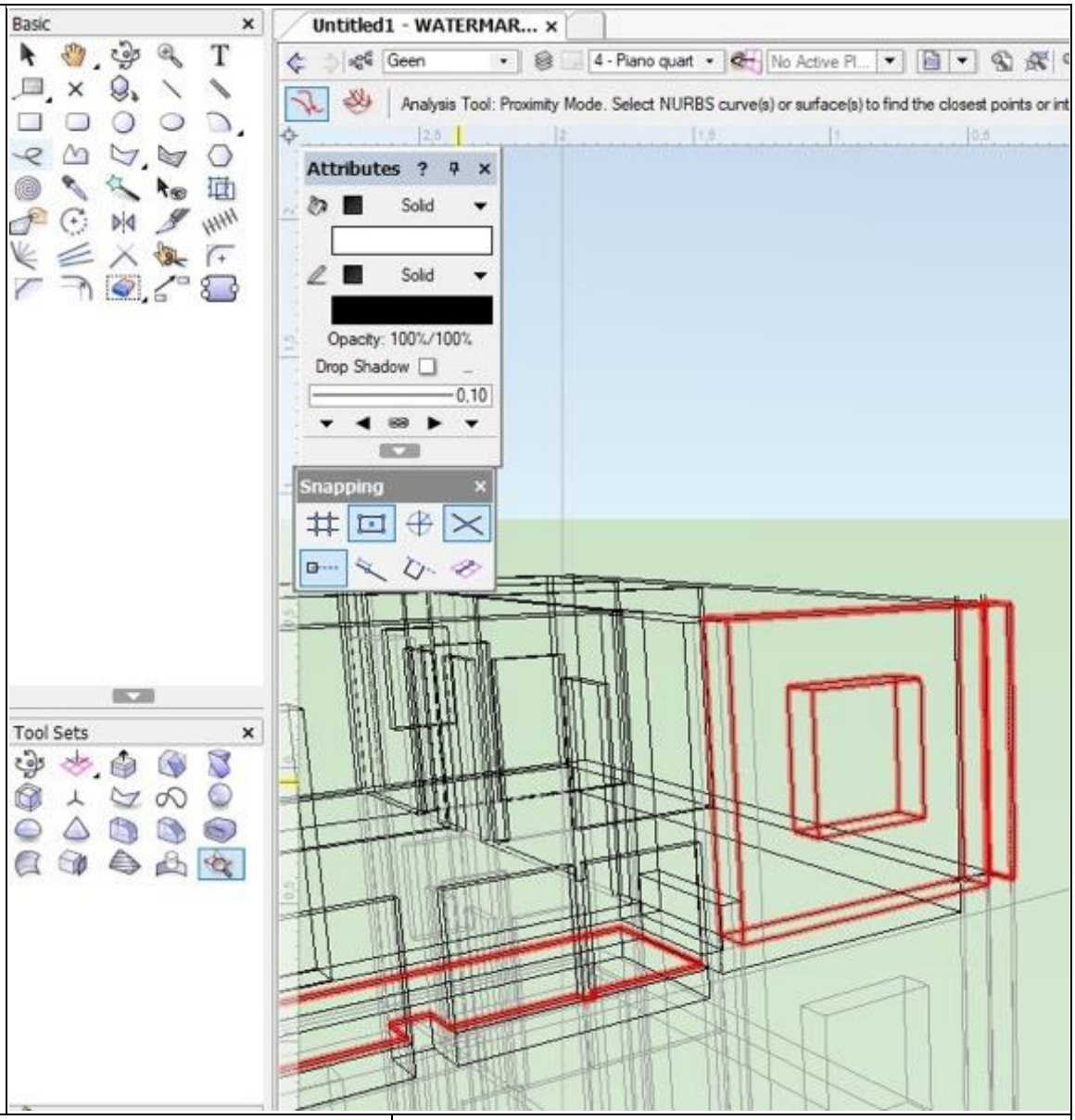
Vectorworks Designer 2019

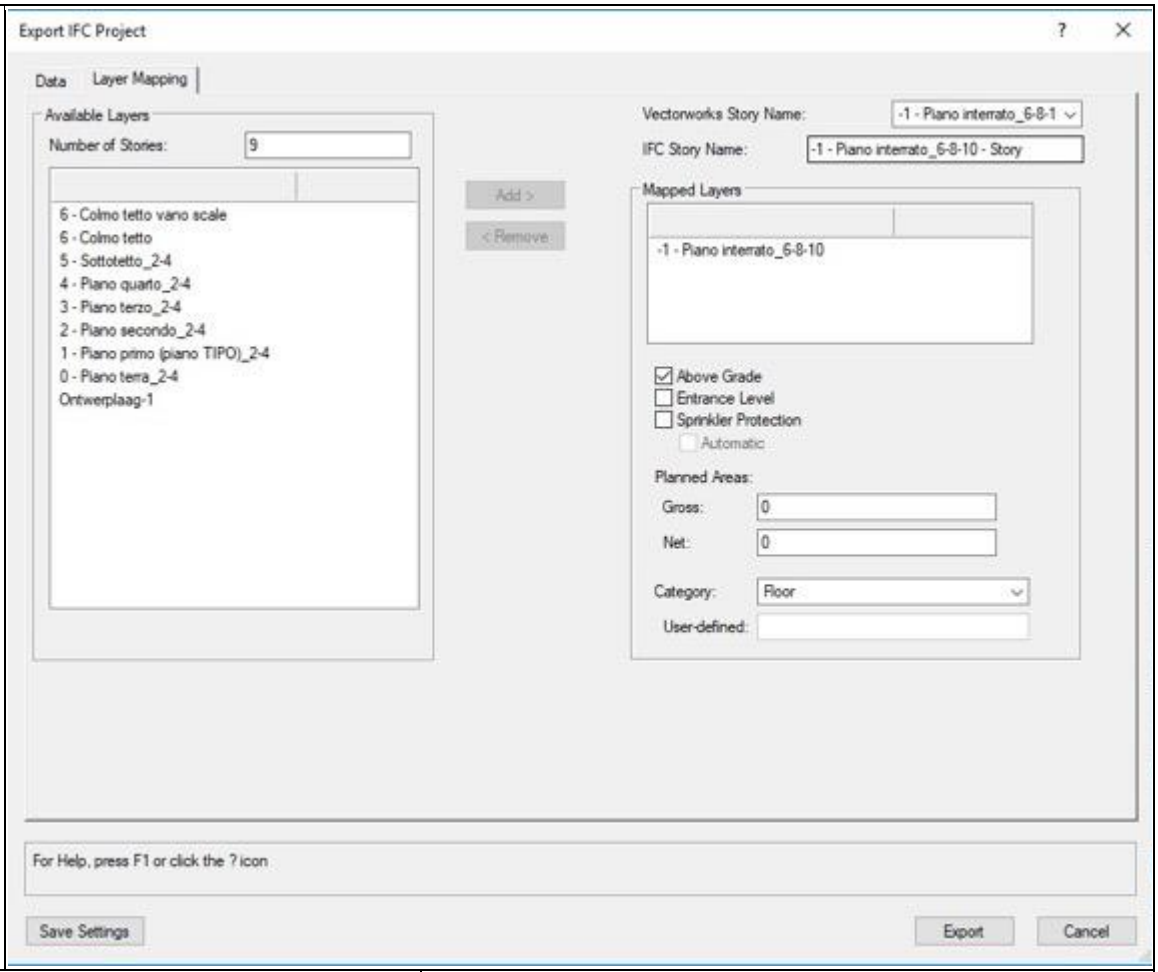
Software	Software Name [version]	**Vectorworks Designer 2019 [2019 SP2]**		Software house		**Software house**	
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	TURBOX 2017	Windows	Intel i7	NVIDIA GTX 960 M	16 GB DDR3	500 GB	216 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	2013-11-11	buildingSMART international	certified in (date)	2013-11-11	buildingSMART international	

Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it's almost immediate
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
	2.2) short comments to the previous question (optional)	Georeferencing tool preserves the origin and orientation of the georeferenced data to match document coordinates
	Other	Height value is equal to zero, however information about the real-world reference system is not given. Relative elevations are provided for the stories of the building.
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
	4.2) short comments to the previous question (optional)	if the ifc geometric representation context has been defined, then the model orientation can be changed.
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes

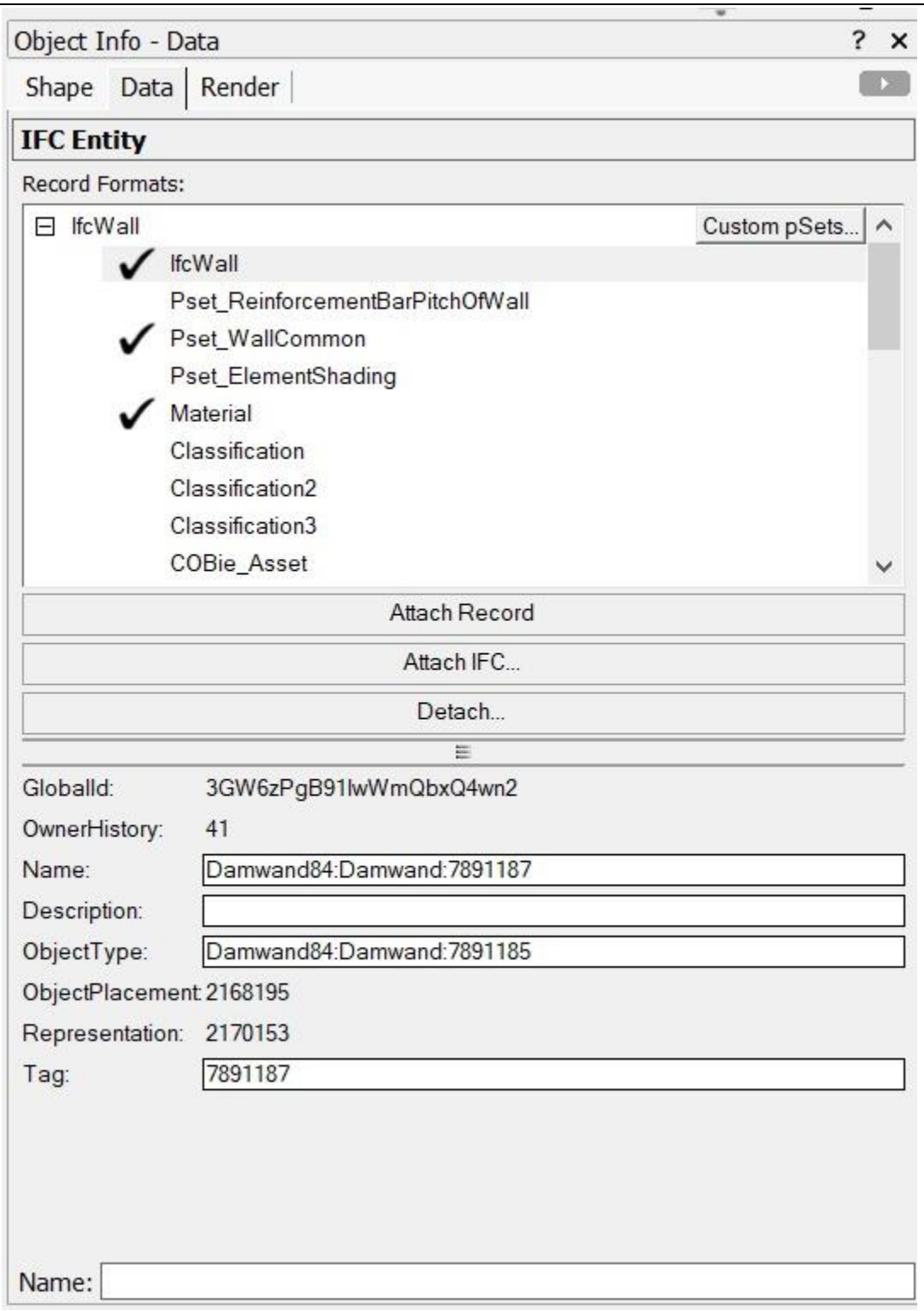
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relat	9.1) Are the relationships between the objects retained?	Yes
Geo	10.1) Is geometry read correctly?	Yes
Normals	11.1) Did the normals change?	The software does not have the necessary tools for checking it
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	Yes
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	Attributes, geometry, scale, units and geo referencing
	14.1.2) Attach screenshots	
Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	Attributes, geometry and entities can be queried.

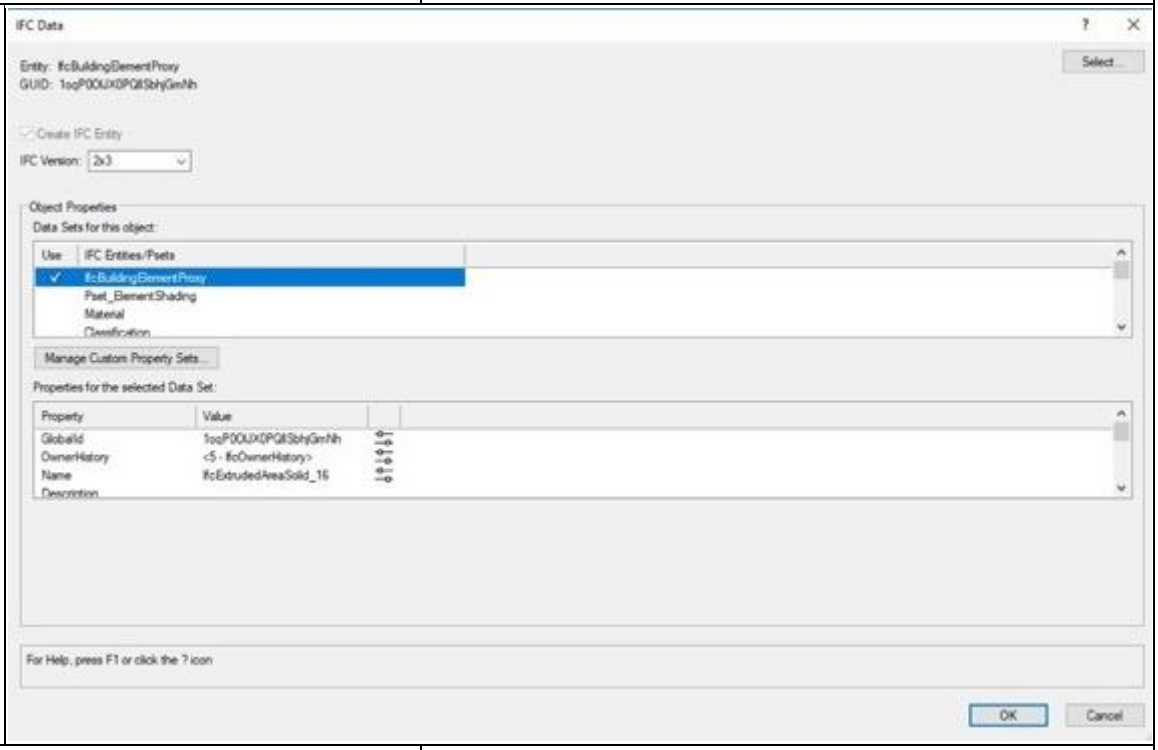
	15.1.2) Attach screenshots	
	15.2) short comments to the previous question (optional)	Query tools are present, however query is possible if the project is connected to a database. Object selection and information retrieval is possible.
	Other	Analysis is possible only for NURBS.(Non Uniform Rational Basis Splines).
	16.1.1) What analysis are possible? Do you know if the results are reliable?	Distance and intersection analysis are possible. The model couldn't be converted to NURBS, thus the analysis wasn't performed.

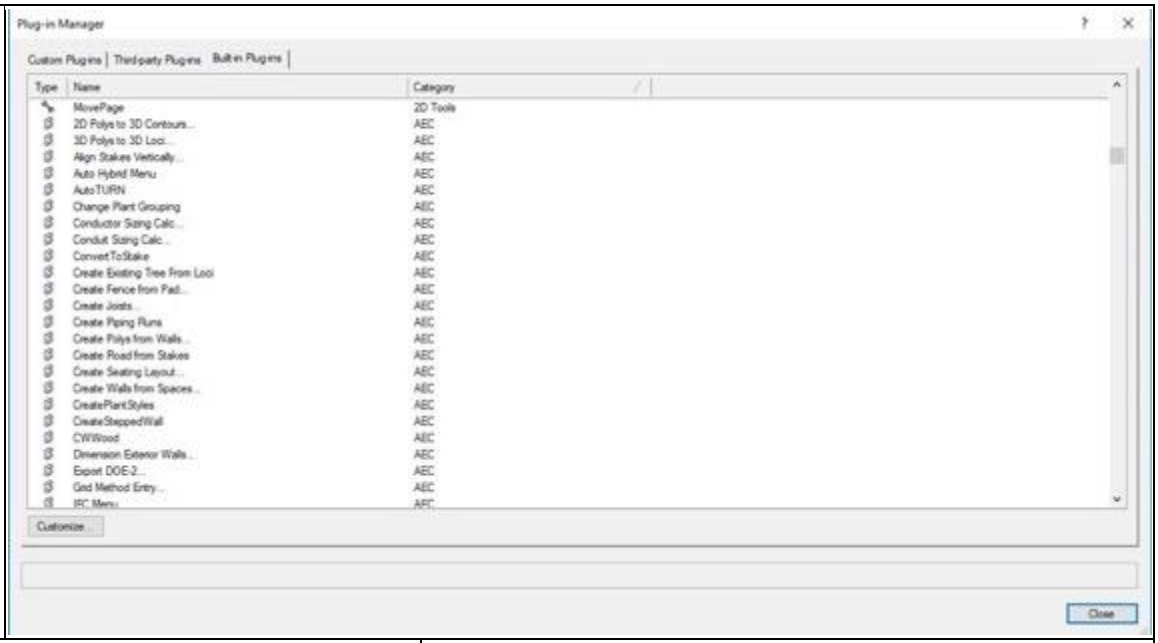
	16.1.2) Attach screenshots	
	16.1.3) Time required to perform the analysis about the model itself (type 1)	it's almost immediate
	16.2) short comments to the previous question (optional)	Answer 16.1.3 is not accurate, as analysis couldn't be performed.
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	Yes
	17.1.1) Can you add a short description of the steps involved in the pre-processing?	A layer mapping pre-process was needed to export the file. Each layer had to be selected separately and assigned to the correct "vector story name".

	17.1.2) Attach screenshots and files	
	Other	Yes, but only for IFC version 2x2 and 2x3.
	18.2) short comments to the previous question (optional)	The studied model is in IFC version 4, thus the MVD couldn't be selected.
	19) How long does it take for the data to be exported to IFC?	less then a minute
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation
	How long does it take, approximately, to:Zoom into the model to see more detail	it crashes without completing the operation
	How long does it take, approximately, to:Pan the model	it crashes without completing the operation
	How long does it take, approximately, to:Rotate the model	it crashes without completing the operation
	How long does it take, approximately, to:Query an object	it crashes without completing the operation
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	it crashes without completing the operation
Proportions	24.1) Does the model maintain its correct dimensions and proportions?	Yes

IFC definitions	25.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	27.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relat	28.1) Are the relationships between the objects retained?	Yes
Geo	29.1) Is geometry read correctly?	Yes
2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	32.1) Is it possible to view the model in 2D?	Yes
Editing	33.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	33.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	Attributes, geometry, georeferencing can be edited. Attributes can be changed in the object info - data bar: for example, IFC entity name and type can be changed. A number of tools exist to modify object's geometry: add surfaces, scale etc. Projection plane, orientation of the model, CRS informations can be also changed.

	33.1.2) Attach screenshots	

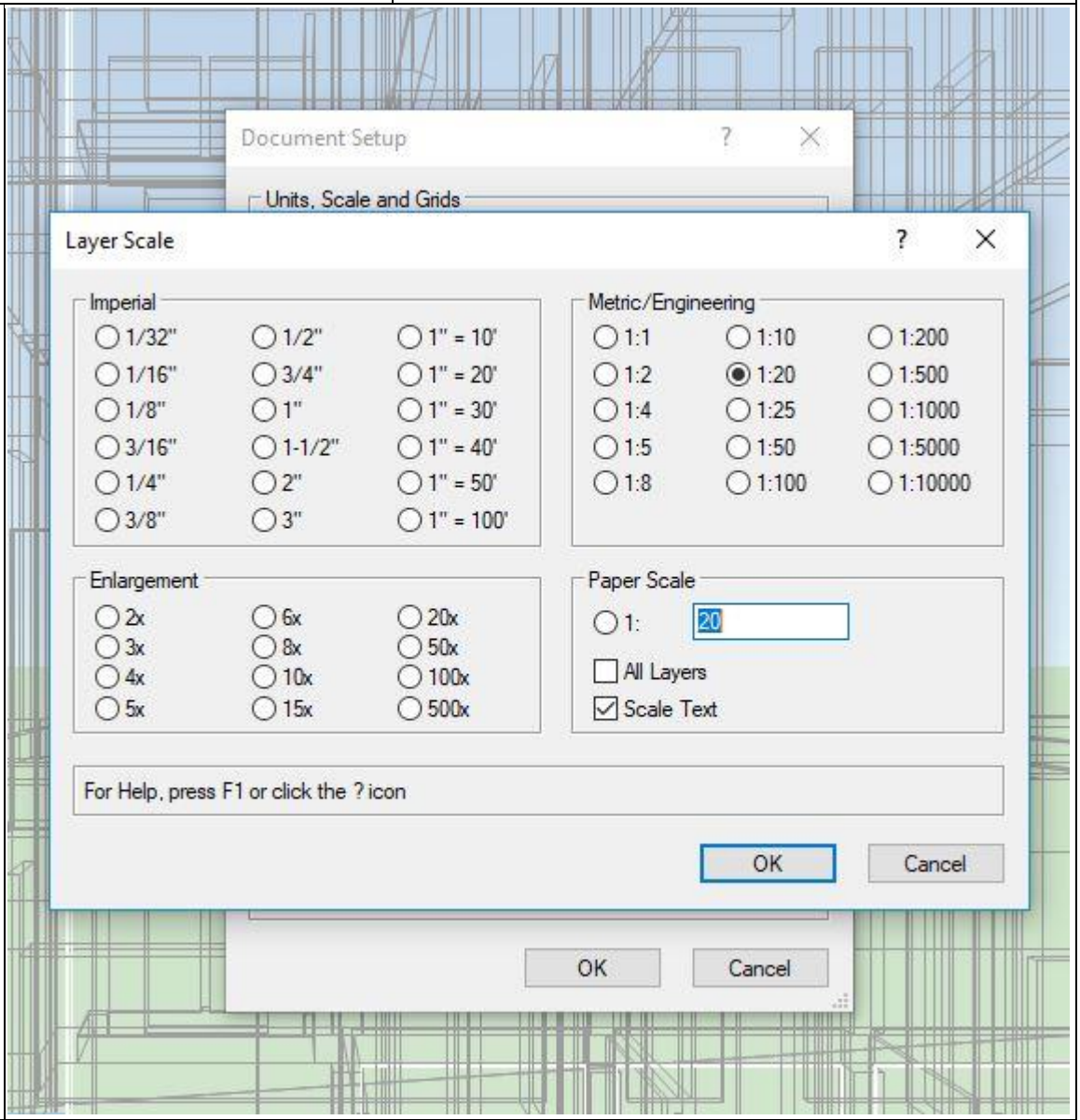
Querying	34.1) Is it possible to query the model and the attributes?	Yes
	34.1.1) What kinds of query are possible?	Queries can be performed if the project is connected to a database. Generic selection and attribute retrieval can be done, class filtering is also possible.
	34.1.2) Attach screenshots	
Analysis	35.1) Is it possible to analyse the objects and the model?	Yes
	35.1.1) What analysis are possible? Do you know if the results are reliable?	Shadow analysis can be performed, selection by location etc. A number of plugins is available for AEC categories. The reliability of the results couldn't be checked.

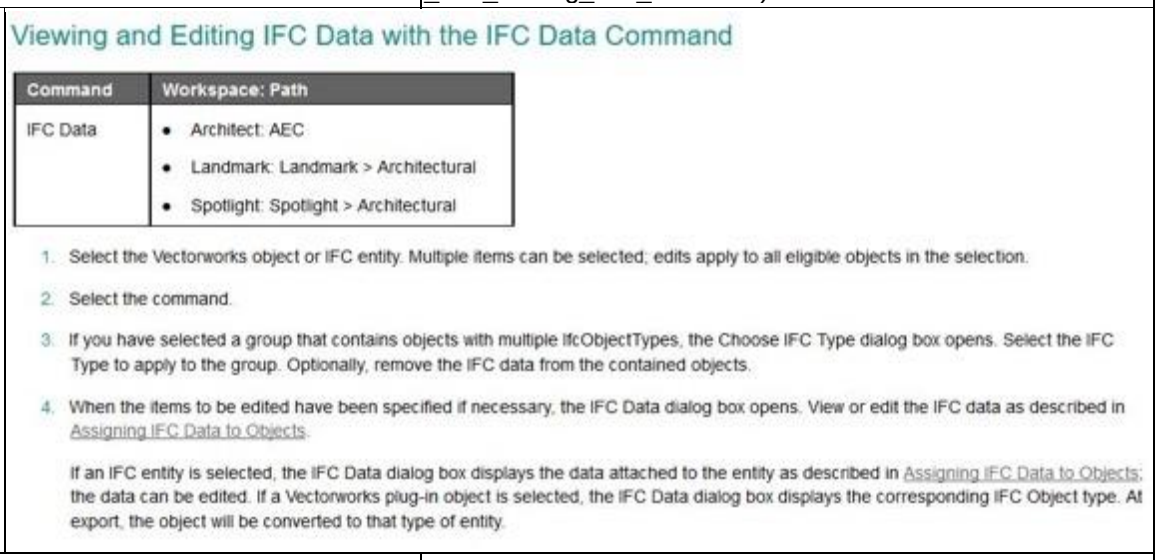
	35.1.2) Attach screenshots	
	35.1.3) Time required to perform the analysis about the model (type 1)	1-5 minutes
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	36) How long does it take for the data to be exported to IFC?	more than one hour
Test with Savigliano.ifc		
	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation

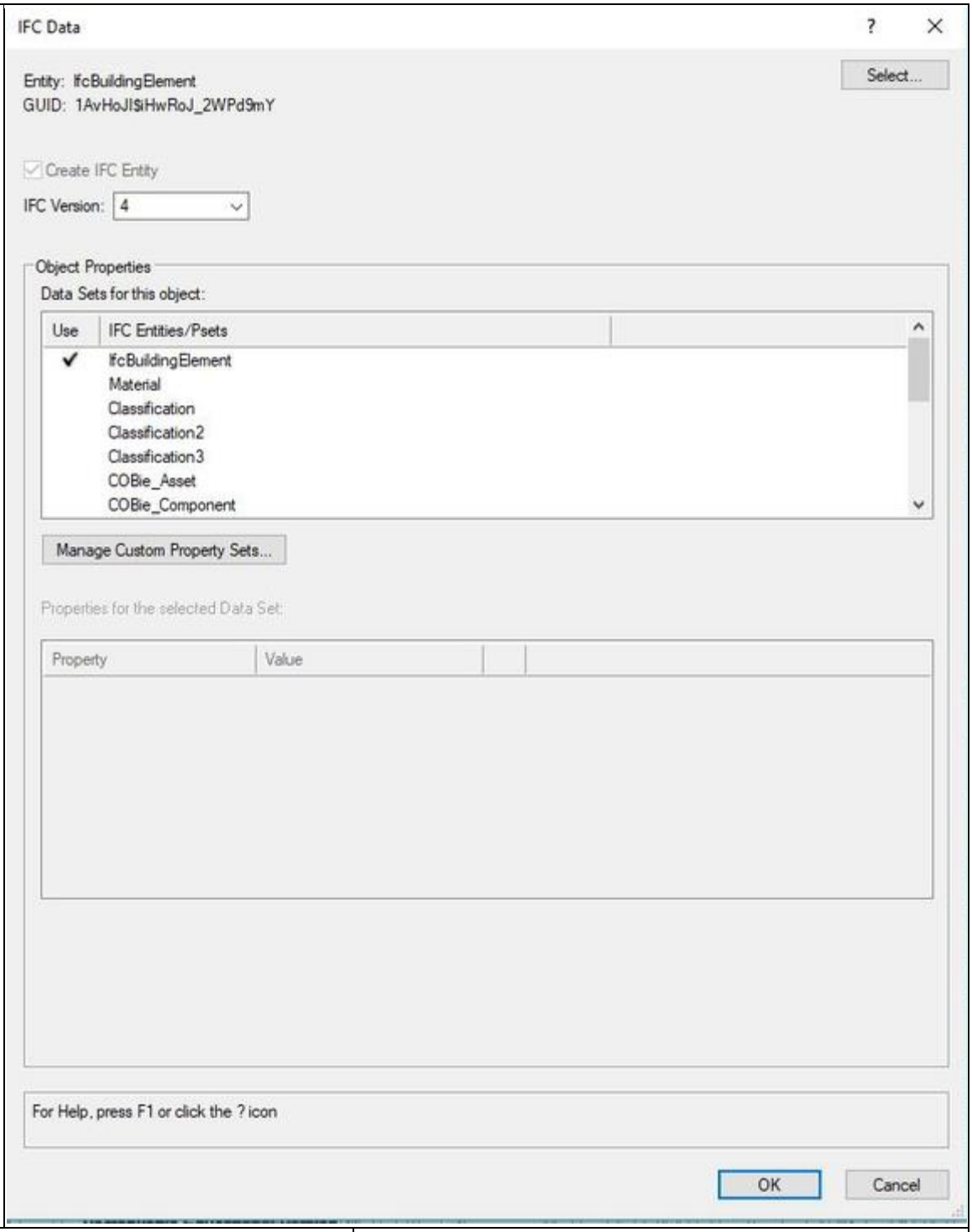
Vectorworks Designer 2019

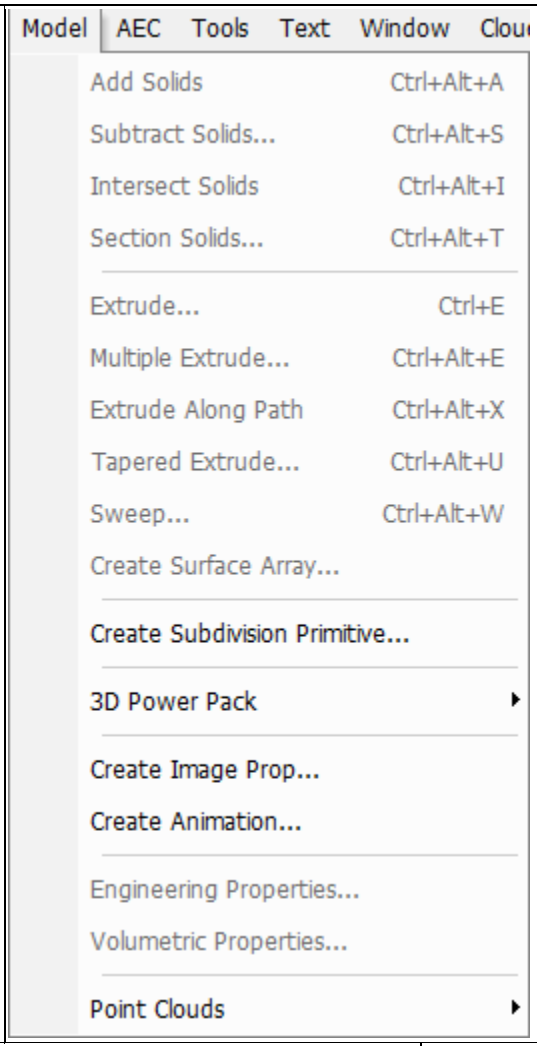
Software	Software Name [version]	**Vectorworks Designer 2019 [2019 SP2 (Build 463397) (64-Bit)]**		Software house		**Software house**	
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	HP ZBook Studio G5	Microsoft Windows 10 Home	Intel(R) Core™ i7-8750	GPU NVIDIA Quadro P1000	16.00 GB	455.00 GB	280.00 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	2013-11-11	buildingSMART International	certified in (date)	2013-11-11	buildingSMART International	

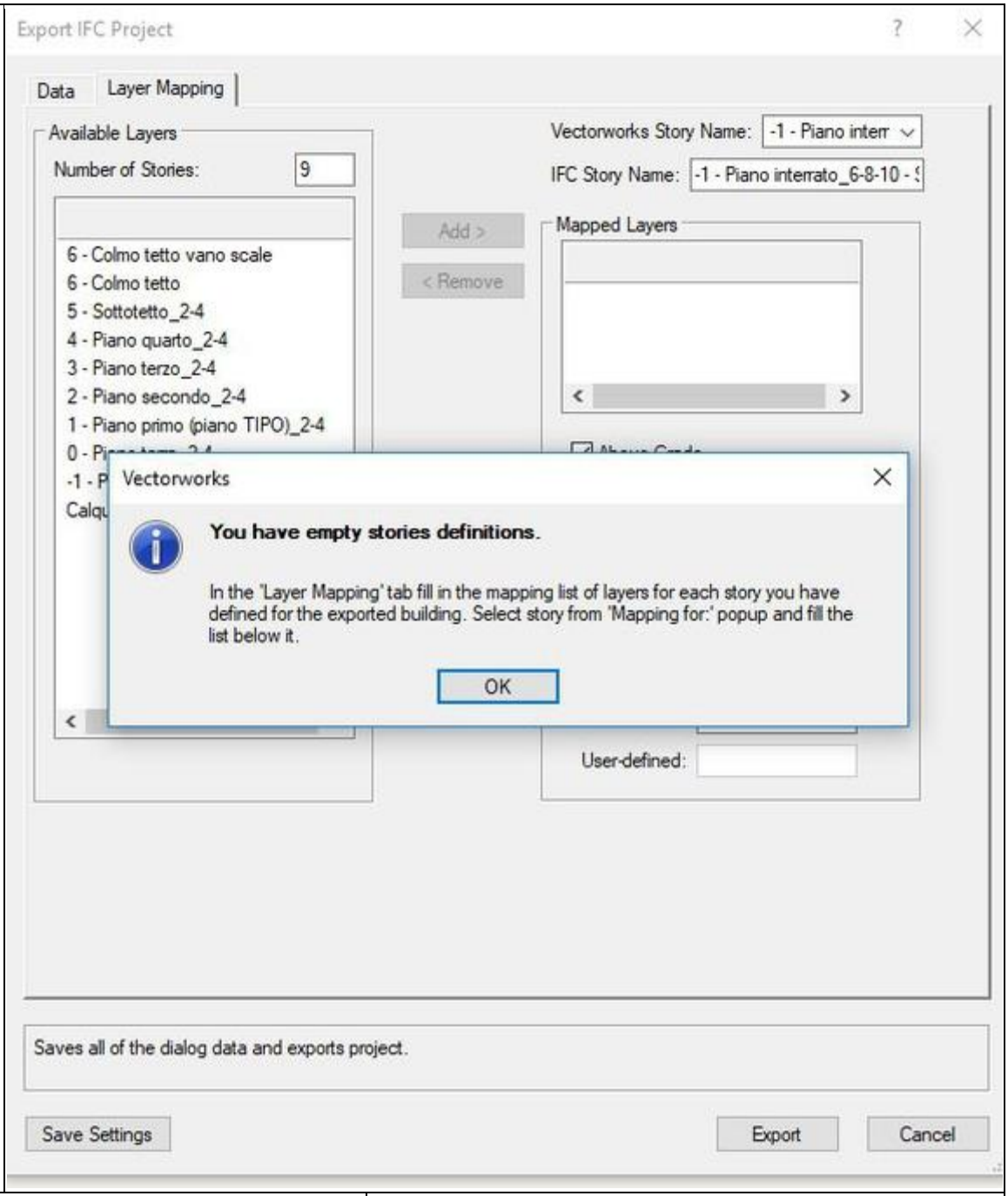
Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less then a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
	2.2) short comments to the previous question (optional)	The software adjusts origin and orientation of georeferenced data to match document coordinates by default. We don't know the actual origin coordinates, therefore we cannot check if they are correct
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
	3.2) short comments to the previous question (optional)	Every layer has its own elevation value
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
	4.2) short comments to the previous question (optional)	The entity that describes the model orientation is the IfcGeometricRepresentationContext. It might be missing in our file, therefore no orientation entity was created
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	No

	5.1.1) How do the dimensions change / how is the model distorted?	A scale of 1:20 is applied by default
	5.1.2) Attach screenshots	
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relationships	9.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Geometry	10.1) Is geometry read correctly?	Yes

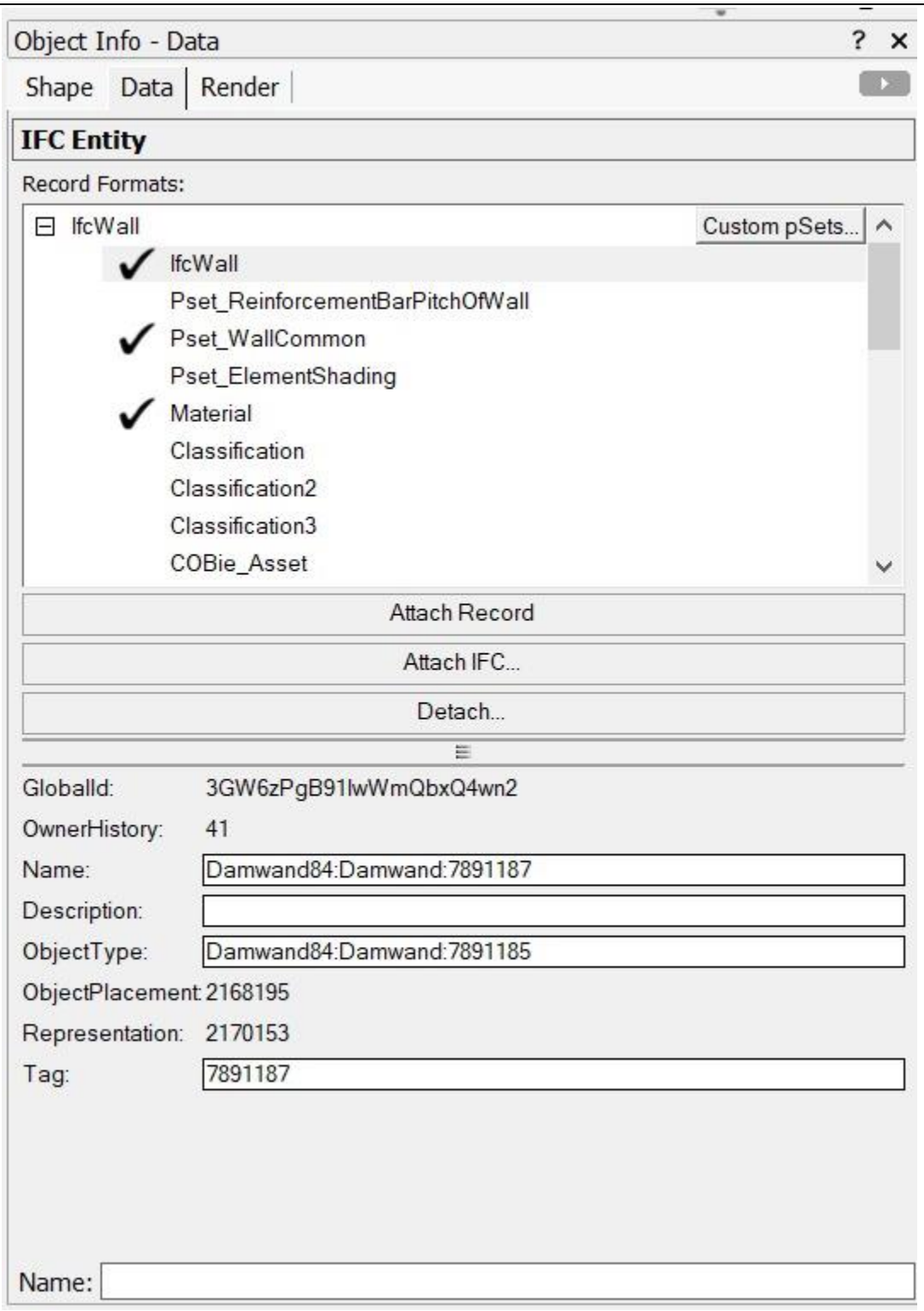
Normal	11.1) Did the normals change?	The software does not have the necessary tools for checking it
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	Yes
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	Attributes, geometry, reference system, scale, measuring units can be modified. Possibly, other attributes can also be modified (http://app-help.vectorworks.net/2019/eng/VW2019_Guide/IFC/Viewing_and_Editing_IFC_Data.htm)
	14.1.2) Attach screenshots	
Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	You can query entities, geometries and attributes

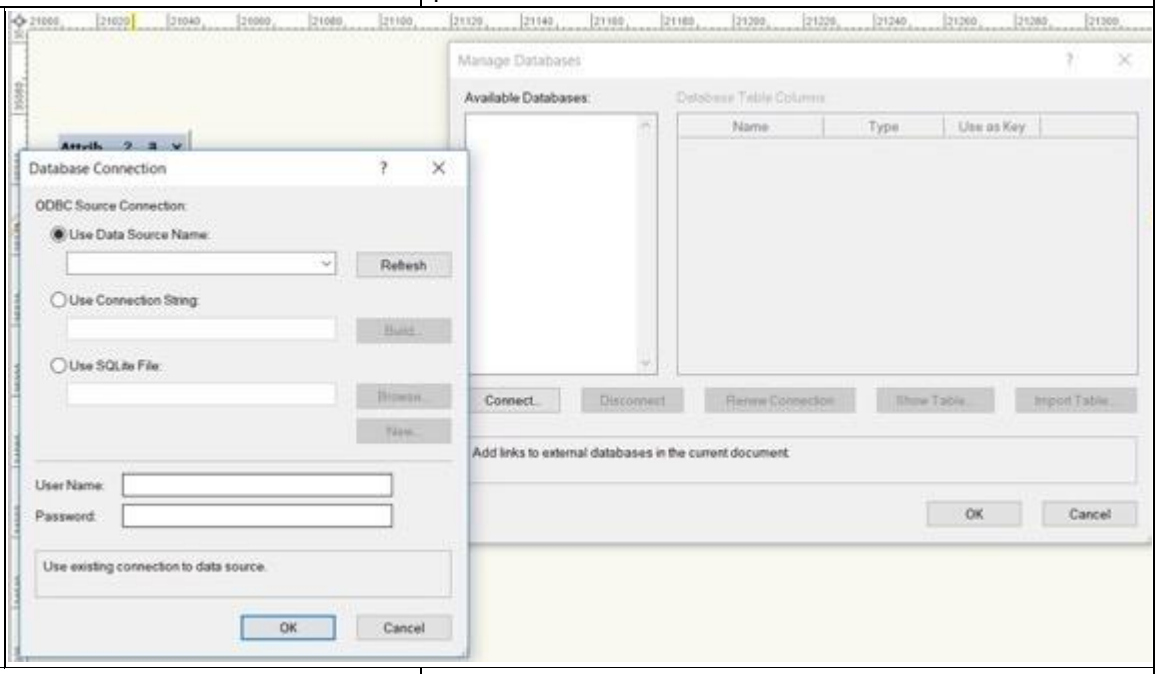
	15.1.2) Attach screenshots	
	16.1.1) What analysis are possible? Do you know if the results are reliable?	Options to do models intersections, subtractions etc. are available. We are not sure if they are considered as analysis tools.

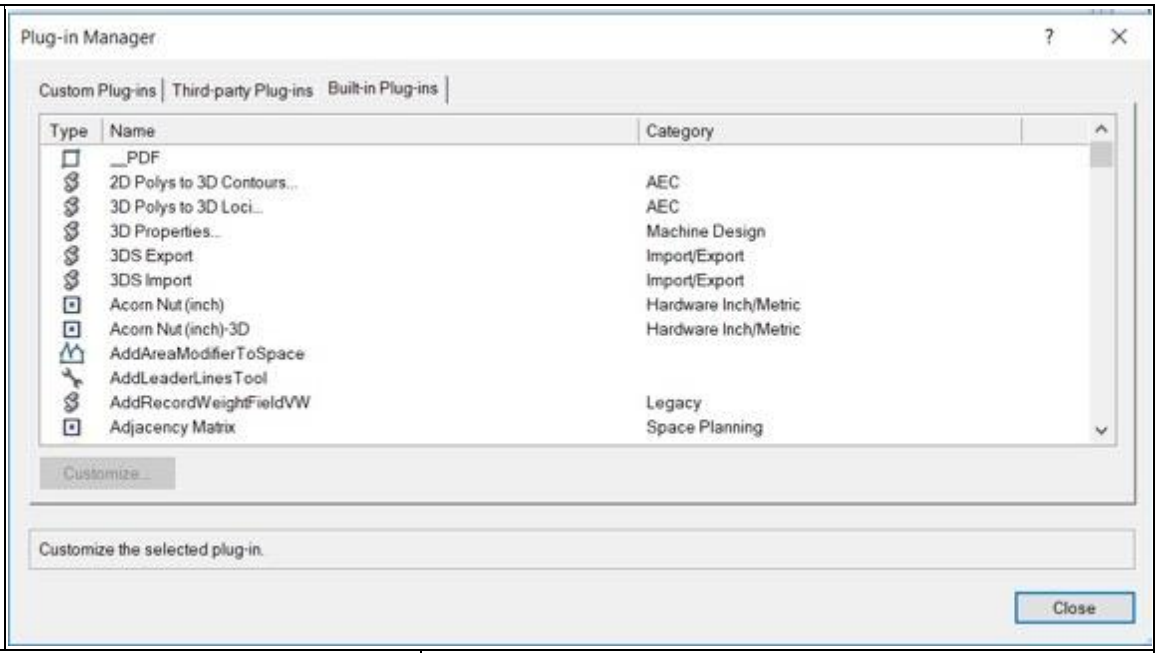
	16.1.2) Attach screenshots	
	16.2) short comments to the previous question (optional)	We didn't manage to use the analysis tools.
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	Yes
	17.1.1) Can you add a short description of the steps involved in the pre-processing?	Selection of each floor and its assigning to corresponding layers.

	17.1.2) Attach screenshots and files	
	Other	Only available for fomer Ifc version (older than 4)
	19) How long does it take for the data to be exported to IFC?	less then a minute
Test with UpTown.ifc		
Perform anc	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation

	How long does it take, approximately, to:Zoom into the model to see more detail	it crashes without completing the operation
	How long does it take, approximately, to:Pan the model	it crashes without completing the operation
	How long does it take, approximately, to:Rotate the model	it crashes without completing the operation
	How long does it take, approximately, to:Query an object	it crashes without completing the operation
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	it crashes without completing the operation
Proportions	24.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	25.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	27.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relat	28.1) Are the relationships between the objects retained?	Yes
Geometry	29.1) Is geometry read correctly?	Yes
	Other	Surface normals can only be displayed for NURBS surfaces. Different visualisation methods didn't provide different colours for different faces directions
2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	32.1) Is it possible to view the model in 2D?	Yes
Editing	33.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	33.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	Attributes, geometry, scale, georeference information, units

	33.1.2) Attach screenshots	

Querying	34.1) Is it possible to query the model and the attributes?	Yes
	34.1.1) What kinds of query are possible?	Class filtering, object selection, attribute filtering and every other generic query. It is also possible to connect the software with a database and perform more complicated queries
	34.1.2) Attach screenshots	
Analysis	35.1) Is it possible to analyse the objects and the model?	Yes
	35.1.1) What analysis are possible? Do you know if the results are reliable?	Depending on the purpose of the analysis there are several plug-ins available, such as an energy efficiency plug-in.

	35.1.2) Attach screenshots	
	35.1.3) Time required to perform the analysis about the model (type 1)	1-5 minutes
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	36) How long does it take for the data to be exported to IFC?	more than one hour
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation

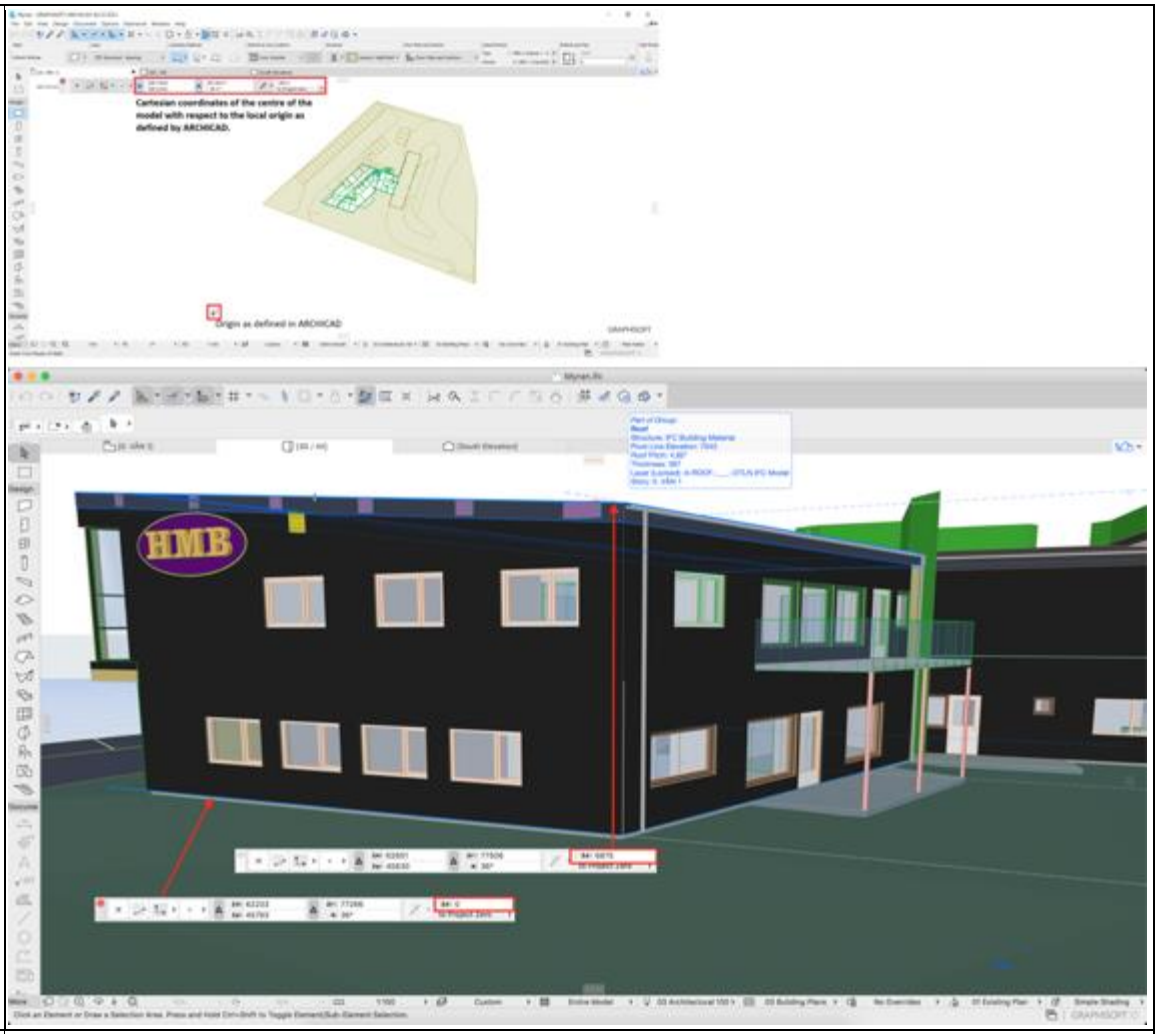
Graphisoft ArchiCAD 22 – Windows 10 Home
Proprietary
BIM
1 - Very beginner user (it is nearly the first time you use it)

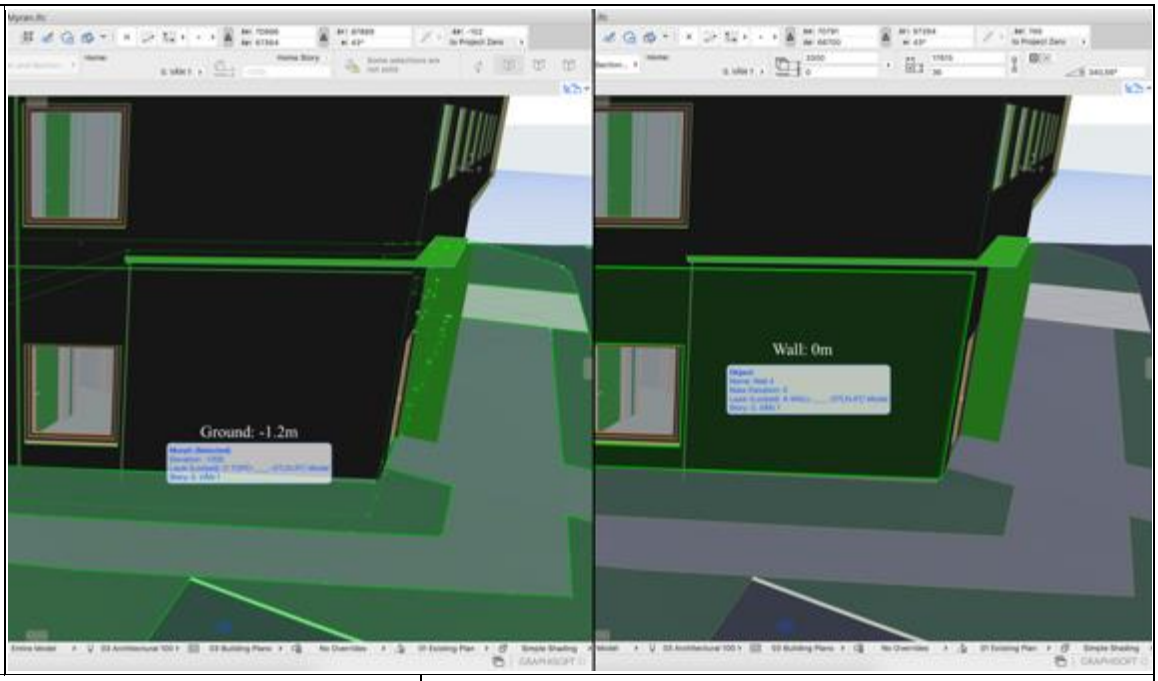
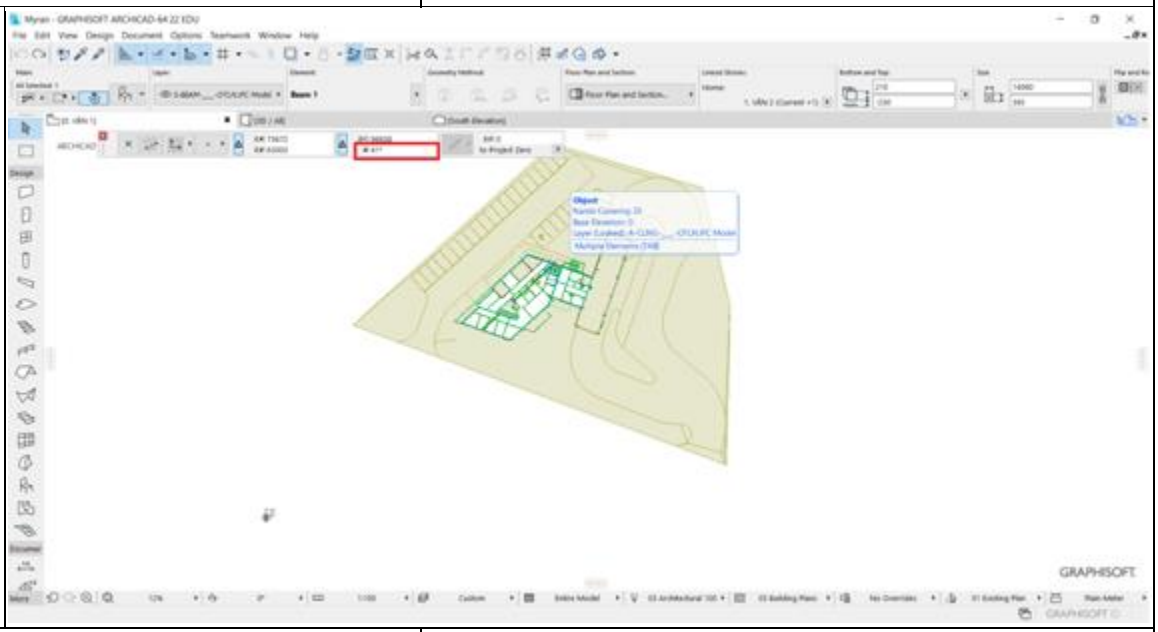
ArchiCAD

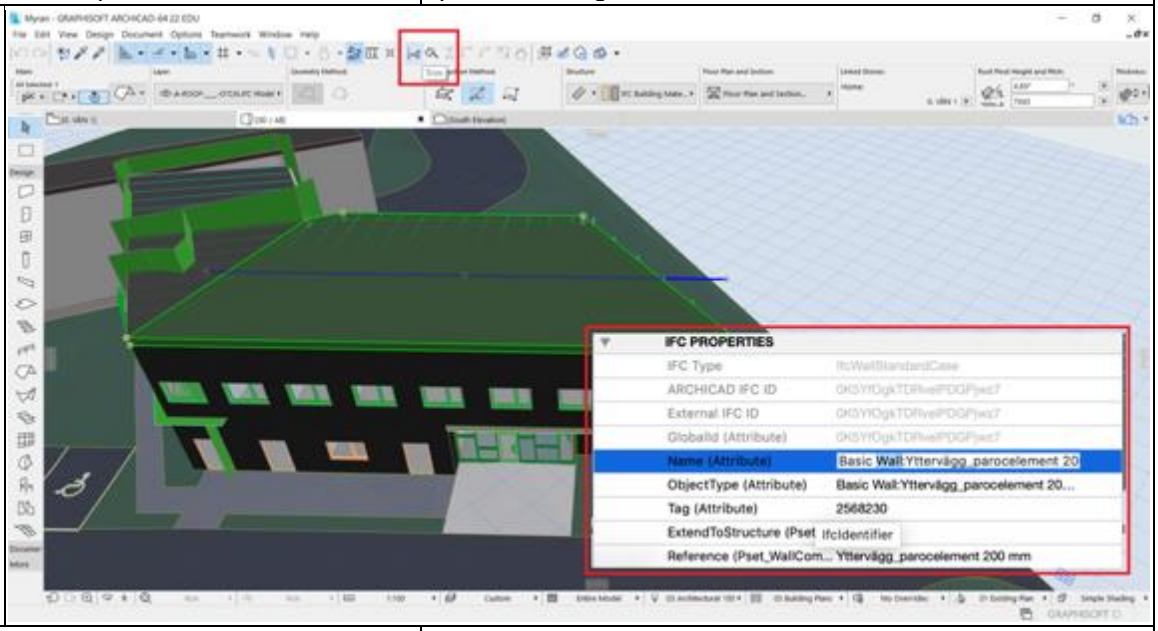
Software	Software Name [version]	**ArchiCAD [ArchiCAD 22]**		Software house		**Graphisoft**	
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	HP Pavilion Gaming Laptop 15-cx0400nd	Windows 10 Home (64-bit) - v10.0.17134 Build 17134	Intel i7-8750H @ 2.20GHz	NVIDIA GeForce GTX1050	16	1000	887
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	2013-09-20	IFC Coordination View 2.0 Import (buildingSMART)	certified in (date)	2013-04-16	IFC Coordination View 2.0 Import (buildingSMART)	

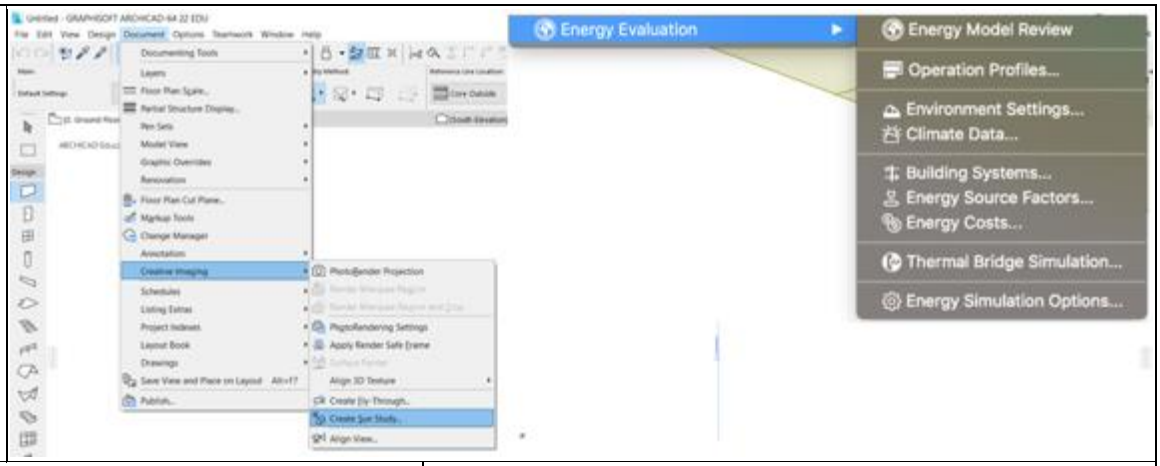
Test with Myran.ifc

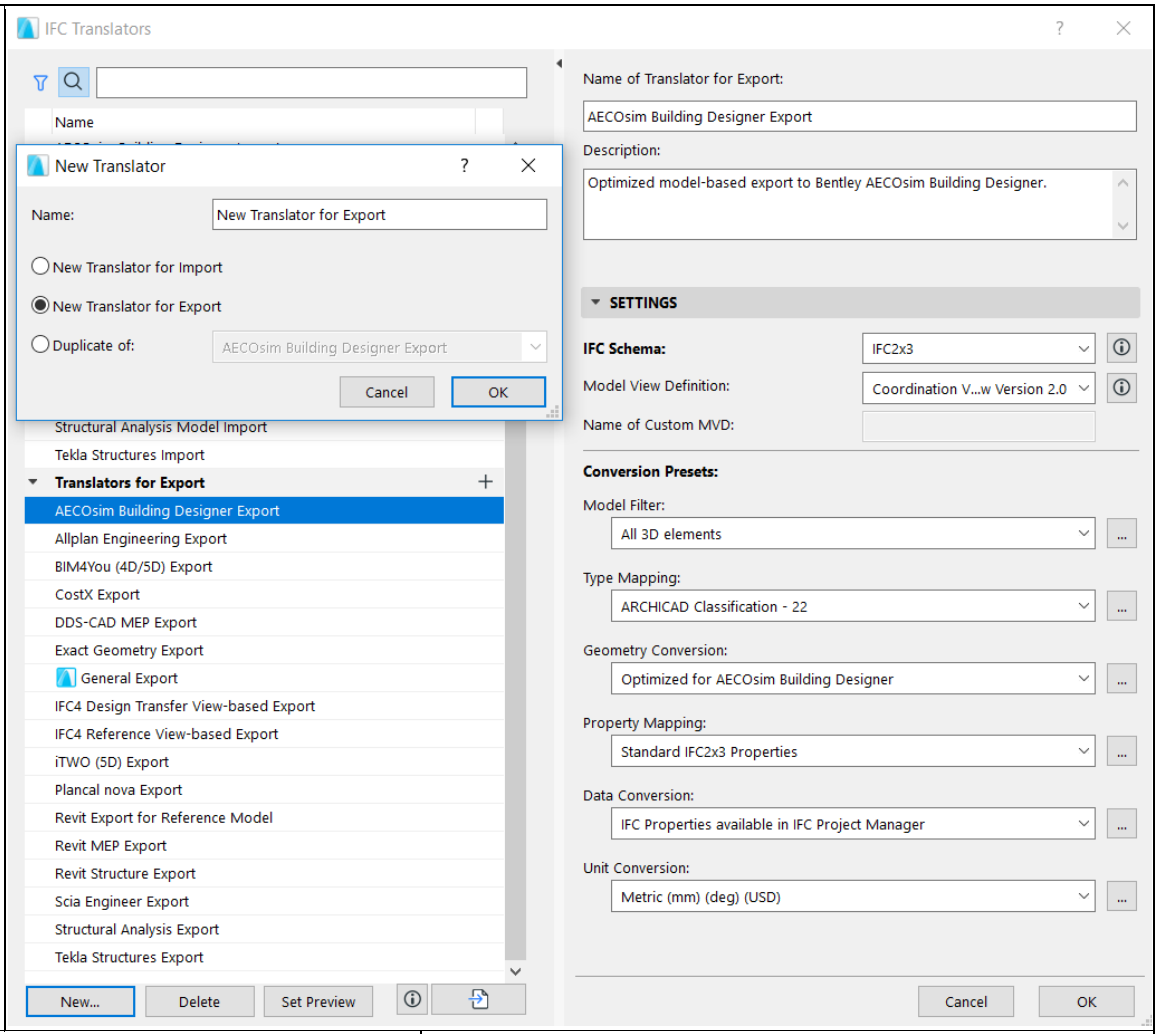
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less then a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	the software does not allow this
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	The software does not have the necessary tools to check this information
	2.2) short comments to the previous question (optional)	It just imports it without any further options. There is a coordinate tool, but this is linked to a local Cartesian reference system. We can see the project location in LON/LAT, but in the model view itself there seems to be no reference to this.
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	3.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0 metre. The bottom elements of the model are moved to 0m.

	3.1.2) Attach screenshots	
	3.1.3) What is the height reference system?	There isn't one. Altitude of sea level is given in project location information (148,2m).

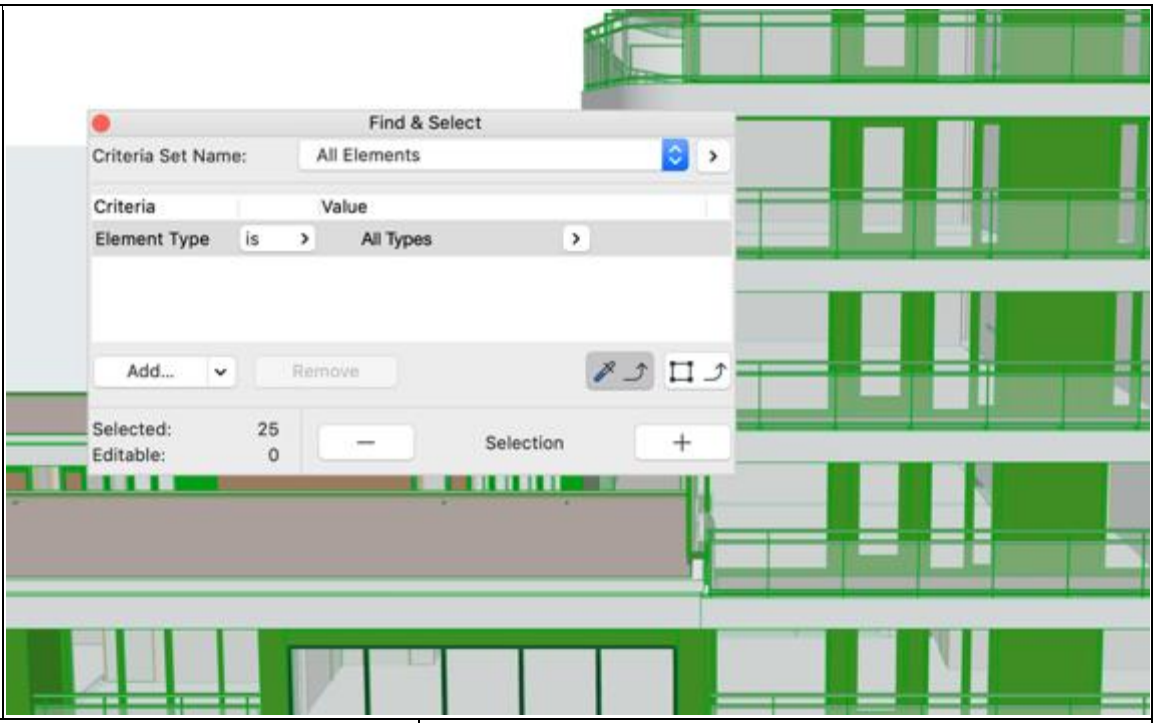
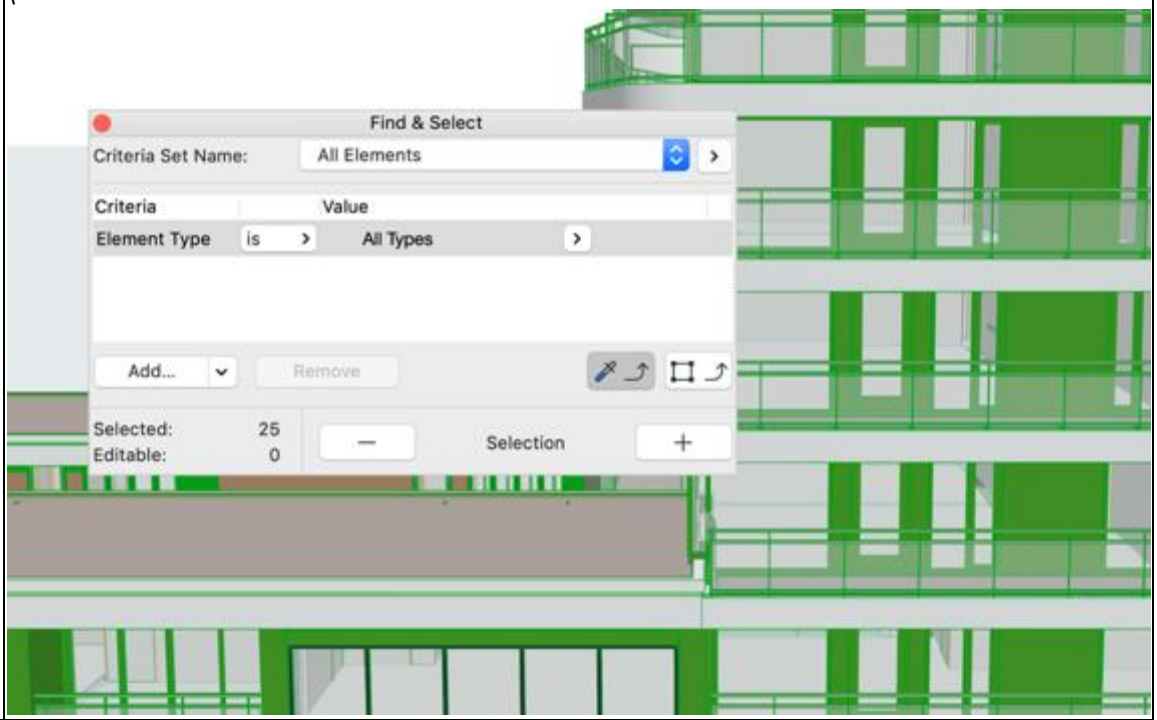
	3.1.4) Attach screenshots	
	3.2) short comments to the previous question (optional)	None of the provided information seems to match reality.
Orientation	4.1) Is the model oriented correctly with respect to the true North?	No
	4.1.1) How is the model oriented, with respect to the reference direction?	41deg
	4.1.2) Attach screenshots	
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	Yes

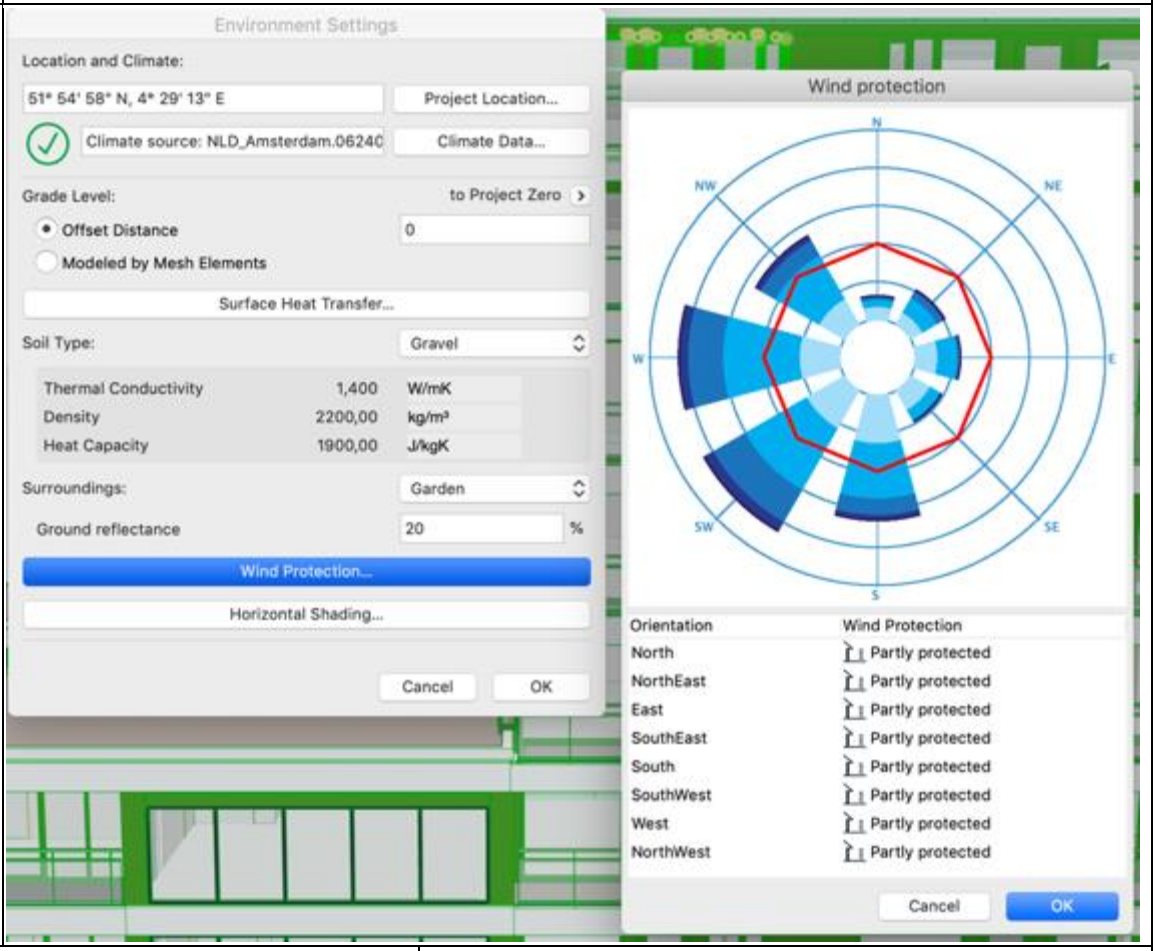
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
	7.2) short comments to the previous question (optional)	We manually checked a few elements by using the available IFC project manager in ARCHICAD.
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
	8.2) short comments to the previous question (optional)	Difficult to check in the software.
Relationships	9.1) Are the relationships between the objects retained?	Yes
	9.2) short comments to the previous question (optional)	When looking at an element, a door or window says that it is part of a wall.
Normals	11.1) Did the normals change?	Yes
	11.2) short comments to the previous question (optional)	The same face in different directions has different colours.
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	12.2) short comments to the previous question (optional)	Easily accessible through a tab at the top.
	13.1) Is it possible to view the model in 2D?	Yes
	13.2) short comments to the previous question (optional)	Same as for 3D.
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	Attributes, georeferencing, morphing tool to perform operations on geometries.
	14.1.2) Attach screenshots	
	Other	Find and Select tool
Analysis	16.1) Is it possible to analyse the objects and the model?	Yes
	16.1.1) What analysis are possible? Do you know if the results are reliable?	It is possible to create a sun study, an energy evaluation (climate data, environment costs) is also possible.

	16.1.2) Attach screenshots	
	16.1.3) Time required to perform the analysis about the model itself (type 1)	less then a minute
	16.2) short comments to the previous question (optional)	You can immediately show the results or save them as a video. Experiment conducted at default settings for the sunstudy.
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	Yes
	18.1.1) Which ones are available?	Coordination View, IFC 2x3 Coordination View (Surface Geometry), IFC 2x3 Basic FM Handover View, Concept Design BIM 2010, and more available under the translator option in the export.
	18.1.2) Is it possible to add a customised MVD to be used for exporting IFC?	Yes
	18.1.2.1) What kind of customisation is possible?	Several aspects of the different MVD translators can be customized. Completely new ones can be made as well.

	18.1.2.2) Attach screenshots and files	
	19) How long does it take for the data to be exported to IFC?	less then a minute
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	less then a minute
	How long does it take, approximately, to:Pan the model	less then a minute
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	the software does not allow this
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	the software does not allow this
Proportions	24.1) Does the model maintain its correct dimensions and proportions?	Yes
	24.2) short comments to the previous question (optional)	Everything appears to be normal.

IFC definitions	25.1) Is the eventual translation consistent with the IFC definitions?	Yes
	25.2) short comments to the previous question (optional)	We tested this manually by selecting an element (for example: Wall:21_WA_KLA_storax_rooster_41mm_2270:3225692 in ARCHICAD) and by looking up this same element in the original .ifc.
Hierarchy	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
	26.2) short comments to the previous question (optional)	We manually checked a few elements by using the available IFC project manager in ARCHICAD.
Attributes	27.1) Are the attributes present in the IFC entities retained and consistent?	Yes
	27.2) short comments to the previous question (optional)	Difficult to check in the software.
Relat	28.1) Are the relationships between the objects retained?	Yes
Geometry	29.1) Is geometry read correctly?	Yes
	29.2) short comments to the previous question (optional)	It is possible to check whether a morph is solid or not. This can be done under the design > modify morph > check solidity option. This process in not intuitive.
Normals	30.1) Did the normals change?	Yes
	30.2) short comments to the previous question (optional)	We can see changes in colour of the same surface from different directions. Gradual shadow transition looks realistic.
2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	31.2) short comments to the previous question (optional)	Via the tabs at the top you can switch between views.
	32.1) Is it possible to view the model in 2D?	Yes
	32.2) short comments to the previous question (optional)	Same as previous question about 3D.
Editing	33.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	33.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	Changing attributes is possible, as is editing of both the local reference system of the model as the global referencing of the project. Morph objects can be solidified. Trimming and splitting operations on the geometry are also possible.

	33.1.2) Attach screenshots	
Querying	34.1) Is it possible to query the model and the attributes?	Yes
	34.1.1) What kinds of query are possible?	Find and select tool (has issues).
	34.1.2) Attach screenshots	\ 
Analysis	35.1) Is it possible to analyse the objects and the model?	Yes

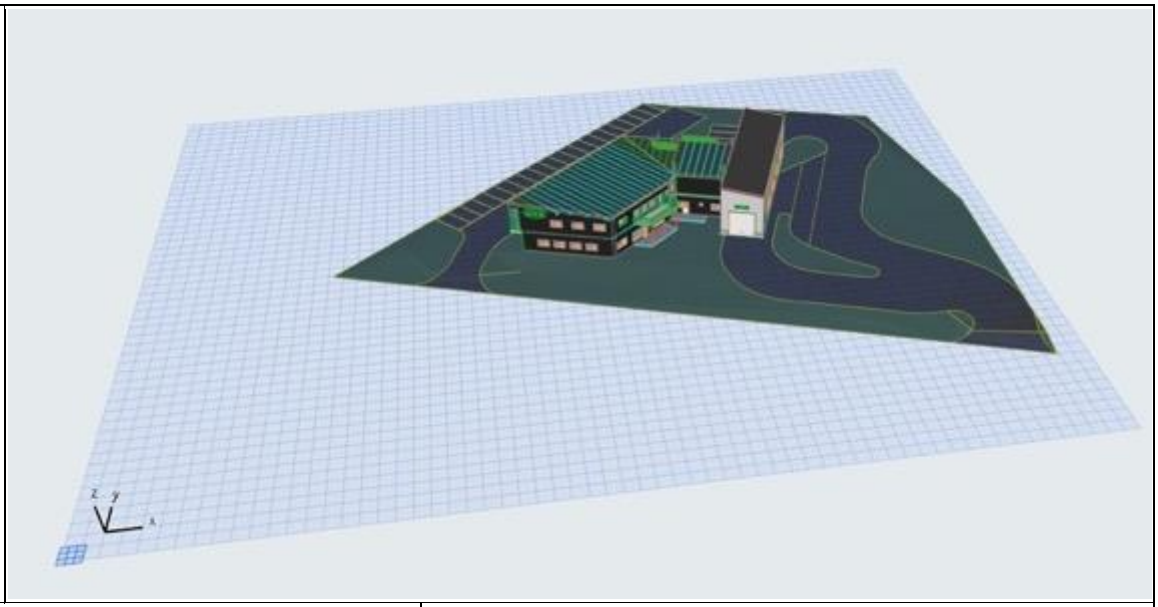
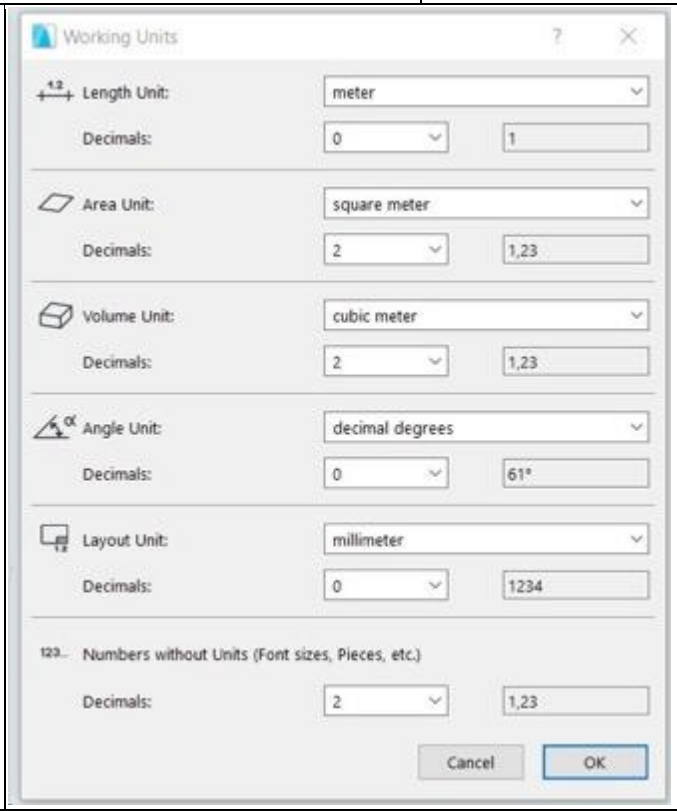
	35.1.1) What analysis are possible? Do you know if the results are reliable?	It is possible to create a sun study, an energy evaluation (climate data, environment costs) is also possible. Analysis accuracy depends on your input model. For example, energy model requires thermalblocks to properly study energy usage. If the placement of these blocks is done in a less precise way, it will affect the analysis results in a negative way. The exact accuracy and reliability are unknown.
	35.1.2) Attach screenshots	
	35.1.3) Time required to perform the analysis about the model (type 1)	1-5 minutes
	35.2) short comments to the previous question (optional)	There are many analysis options, too many to all list here. An example of a wind analysis is shown in the provided screenshot. We ran the timing on the sun study again for comparison reasons with the other datasets.
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	36) How long does it take for the data to be exported to IFC?	more than one hour
	36.1) Comments to the previous question (optional)	Really big file
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation

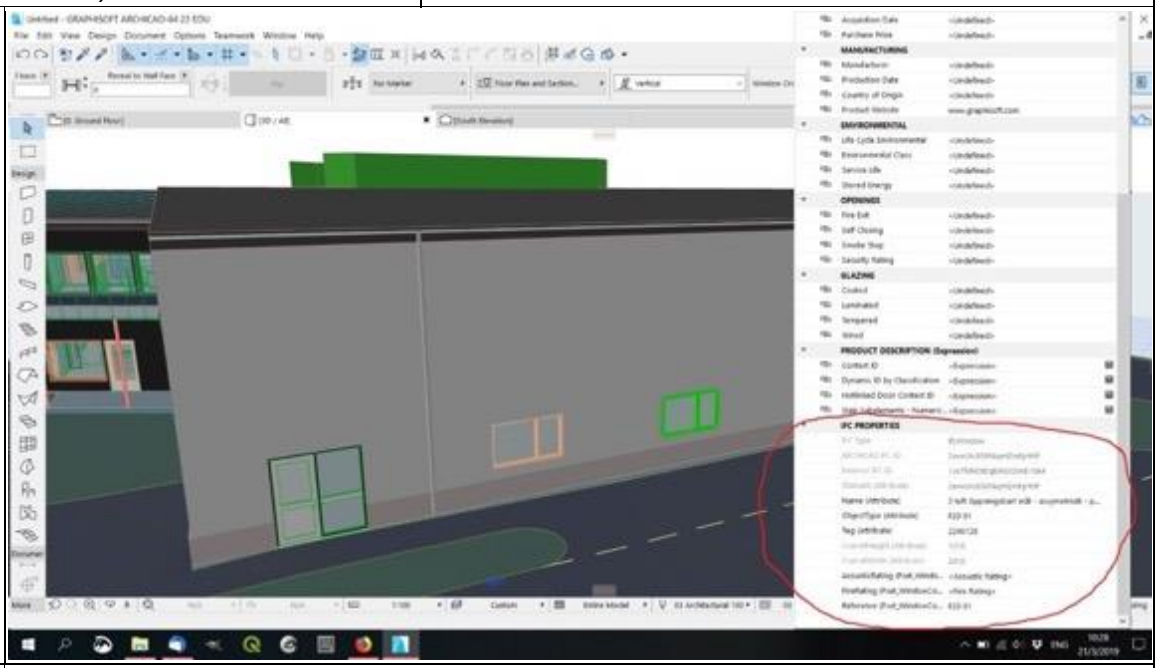
Graphisoft ArchiCAD 22 – Windows 10 Home
Proprietary
BIM
1 - Very beginner user (it is nearly the first time you use it)

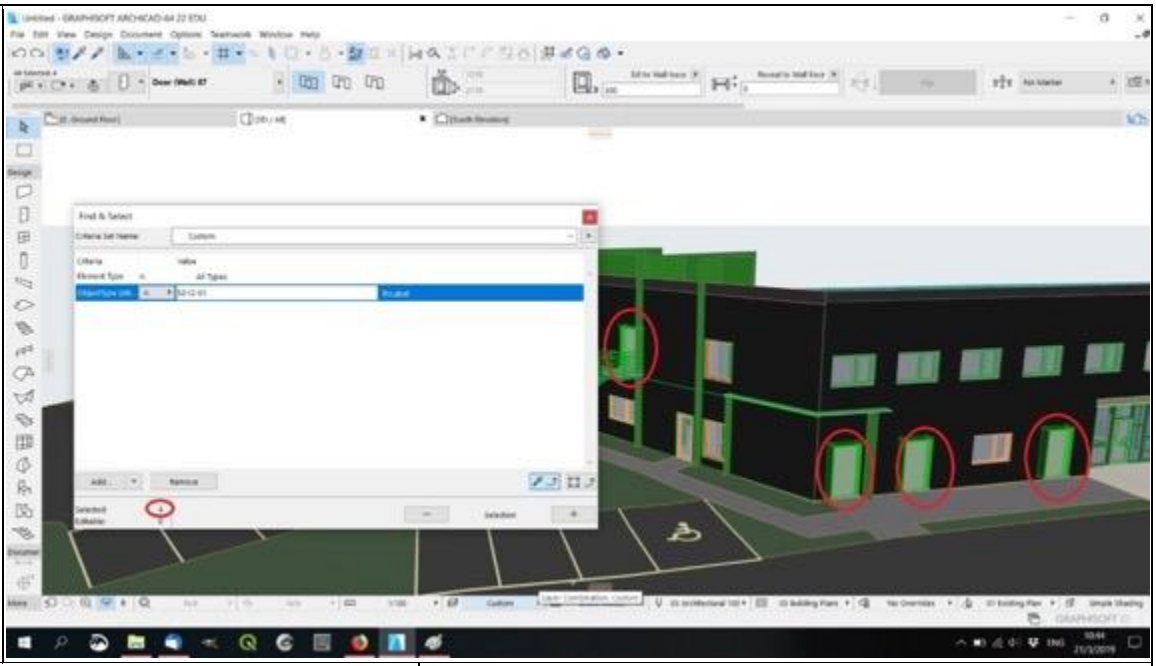
Archicad

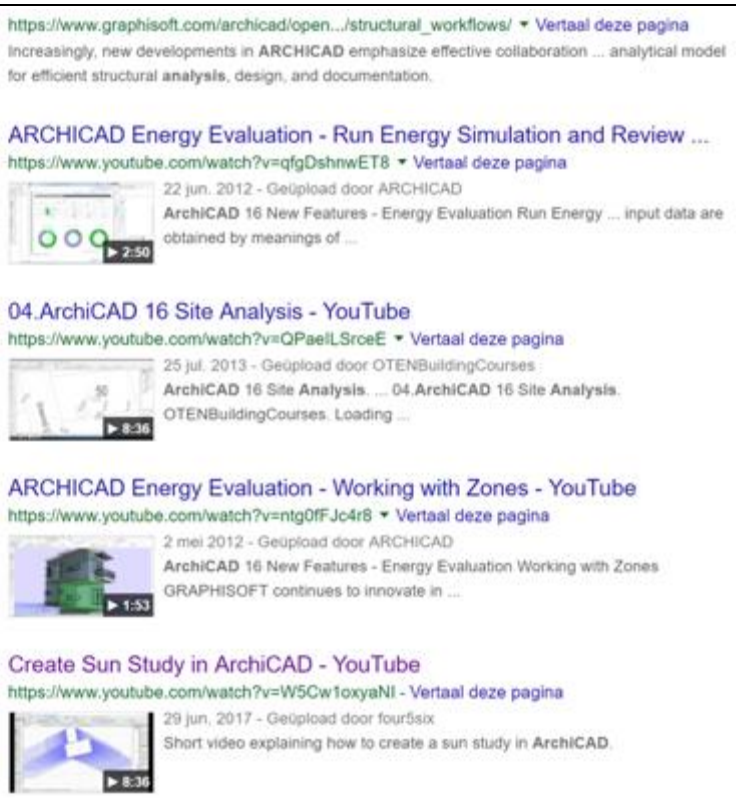
Software	Software Name [version]	**Archicad [22.0.0]**		Software house		**Graphicsoft**	
	Proprietary or open source software?			Kind of software			
	proprietary						
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	HP zbook studio G5 2018	Windows 10	Intel I7-8750H	NVIDIA Quadro-p1000	16	512	90
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	2013-09-20	CV2.0	certified in (date)	2013-04-16	CV2.0-Arch	

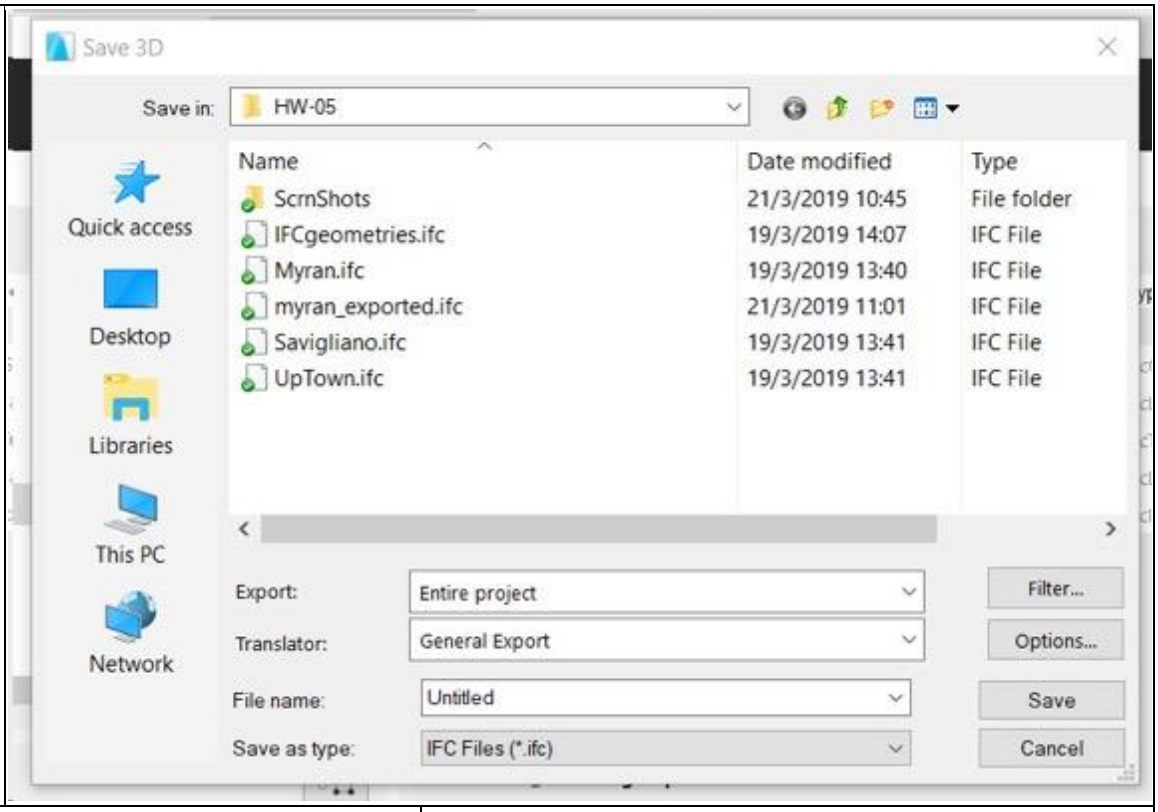
Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less then a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	the software does not allow this
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	2.1.1) Where is the origin of the model coordinate reference system as imported in the software?	It is arbitrarily set by the software itself and remains fixed for the whole life of the project (unless you relocate it)

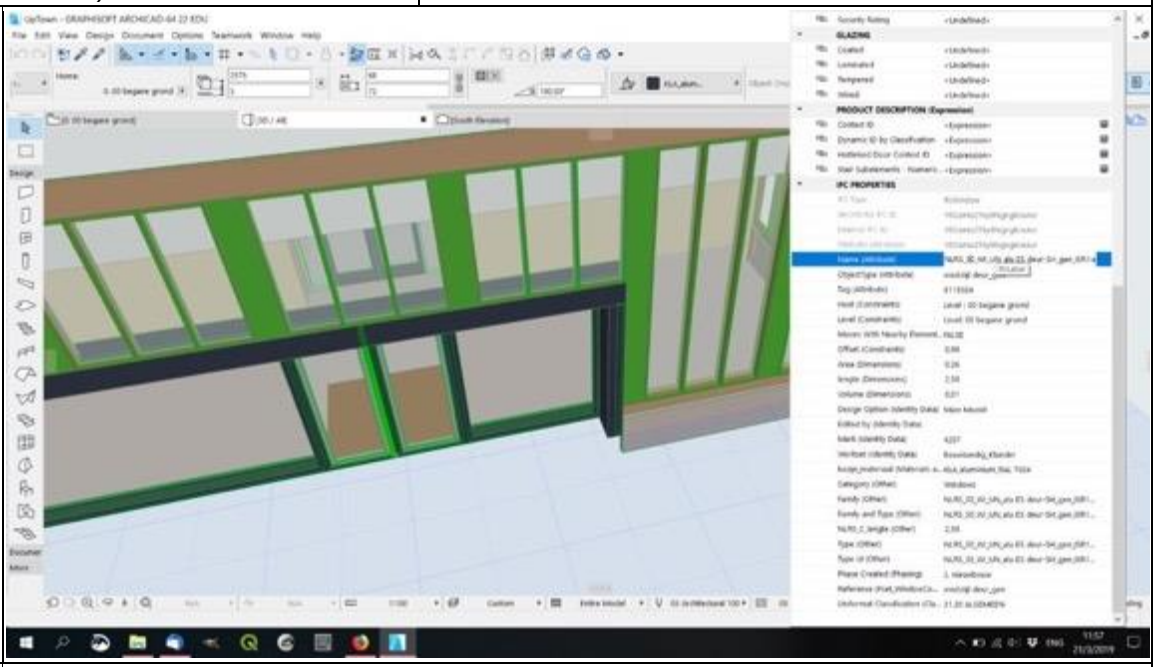
	2.1.2) Attach screenshots	
	2.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	Cartesian coordinate reference system. The measurement unit can be customised, it is now in meters.
	2.1.4) Attach screenshots	
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
Orientation	4.1) Is the model oriented correctly with respect to the true North?	The software does not have the necessary tools to determine this information

Proporti ons	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitio	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
	7.2) short comments to the previous question (optional)	It is difficult to find out, however IFC classes are present from which the information can be extracted
Attribute s	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relationship s	9.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
	9.2) short comments to the previous question (optional)	This is very difficult to check as it is very difficult to define relationships objects have documented before loading them into the software
Geometry	10.1) Is geometry read correctly?	Yes
	Other	Unclear question. Same colour for different faces directions
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	Yes
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	You can alter attribute values, but not geometries
	14.1.2) Attach screenshots	
Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	Attribute and spatial queries (clicking on elements)

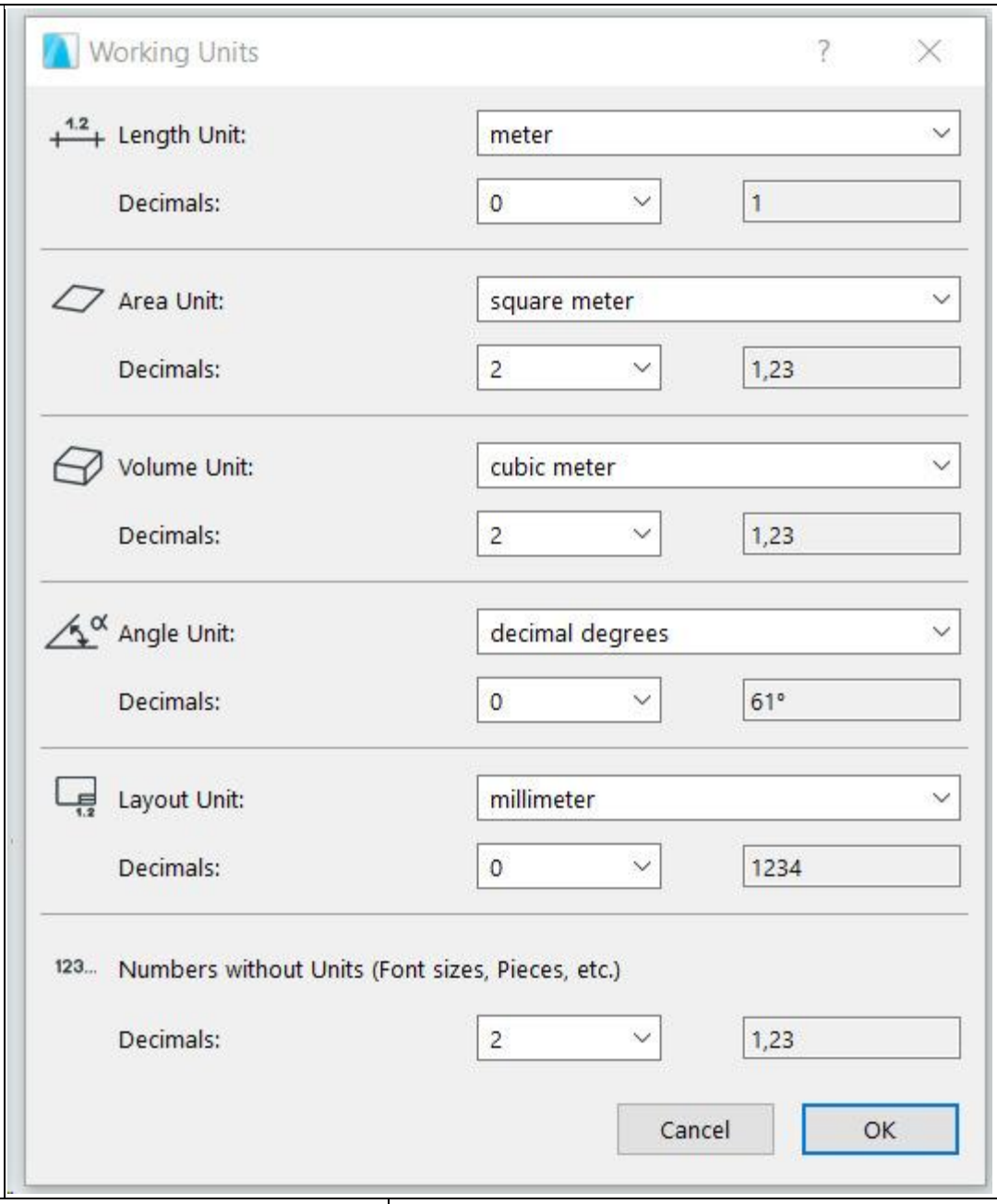
	15.1.2) Attach screenshots	
Analysis	16.1) Is it possible to analyse the objects and the model?	Yes
	16.1.1) What analysis are possible? Do you know if the results are reliable?	We found information about sunstudies and energy analysis possibilities for the software online. However, we were not able to perform these analysis ourselves.

	16.1.2) Attach screenshots	
	16.2) short comments to the previous question (optional)	As described before, we did not succeed in doing the analysis.
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	Yes
	17.1.1) Can you add a short description of the steps involved in the pre-processing?	The extent of the project to be exported needs to be specified together with the translator.

	17.1.2) Attach screenshots and files	
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	No
	18.2) short comments to the previous question (optional)	It is not possible to change the MVD
	19) How long does it take for the data to be exported to IFC?	less then a minute
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	the software does not allow this
Proportions	24.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	25.1) Is the eventual translation consistent with the IFC definitions?	Yes

Hierarchy	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	27.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relationships	28.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Geometry	29.1) Is geometry read correctly?	Yes
	Other	unclear question: same colour for different faces directions
2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	32.1) Is it possible to view the model in 2D?	Yes
Editing	33.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	33.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	You can alter attribute values, but not geometries
	33.1.2) Attach screenshots	
Querying	34.1) Is it possible to query the model and the attributes?	Yes
	34.1.1) What kinds of query are possible?	Attribute and spatial queries (clicking on elements)

	34.1.2) Attach screenshots	
Analysis	35.1) Is it possible to analyse the objects and the model?	Yes
	35.1.1) What analysis are possible? Do you know if the results are reliable?	We found information about sunstudies and energy analysis possibilities for the software online. However, we were not able to perform these analysis ourselves.

	35.1.2) Attach screenshots	
	35.2) short comments to the previous question (optional)	We could not fill in the previous question as we failed to execute an analysis
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
	36) How long does it take for the data to be exported to IFC?	more than one hour
Test with Savigliano.ifc		
	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation

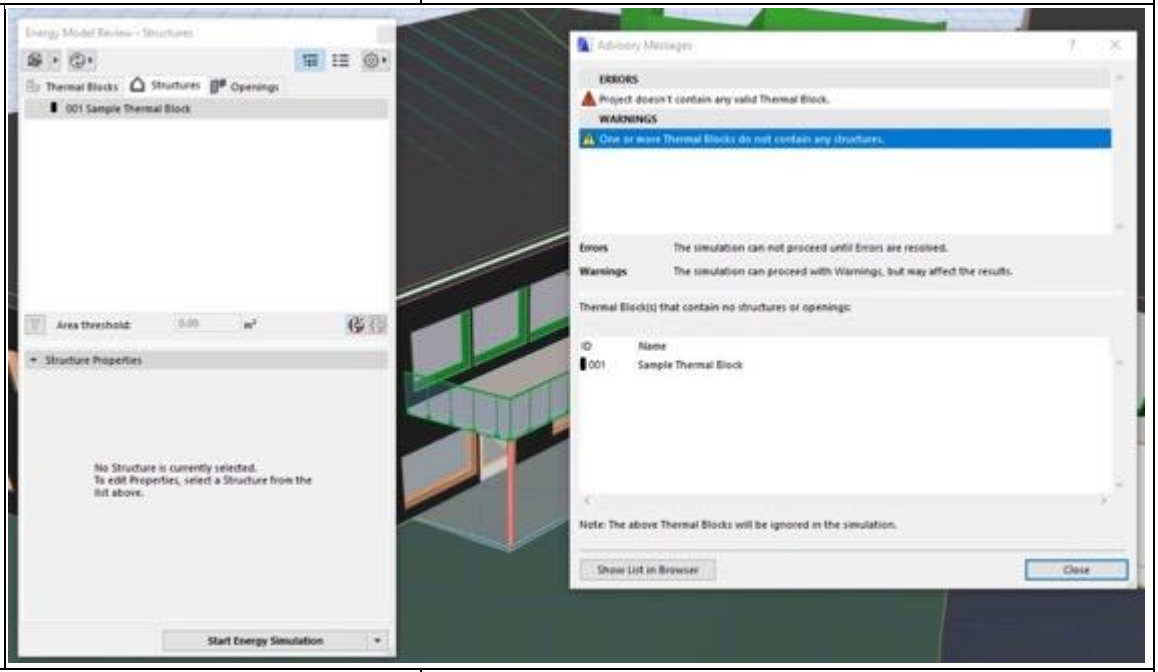
Graphisoft ArchiCAD 21 – Windows 10
Proprietary
BIM
1 - Very beginner user (it is nearly the first time you use it)

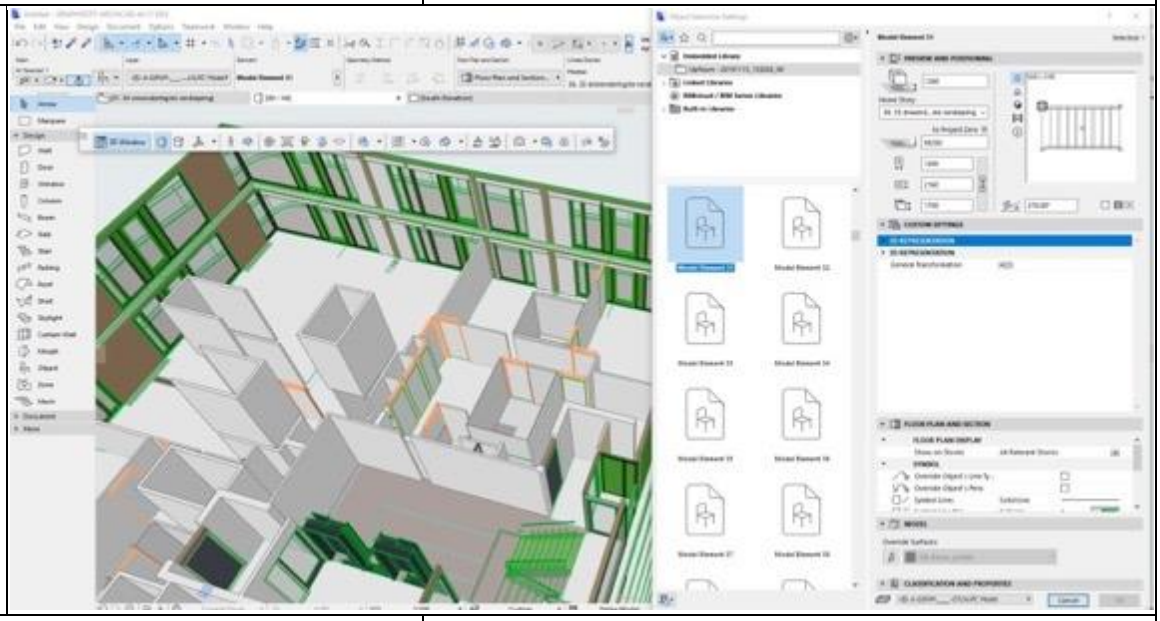
ArchiCAD

Software	Software Name [version]	**ArchiCAD [ArchiCAD 21]**		Software house		**Graphisoft**	
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Asus VivoBook Pro N552VW-FY217T 2016	Windows 10 64X	Intel Core i7-6700HQ	GeForce GTX 960M	8	256	56
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	2013-03-12	IFC Coordination View 2.0 (Certification 2.0) and the buildingSMART alliance 2013 COBie Challenge	certified in (date)	2013-03-12	IFC Coordination View 2.0 (Certification 2.0) and the buildingSMART alliance 2013 COBie Challenge	

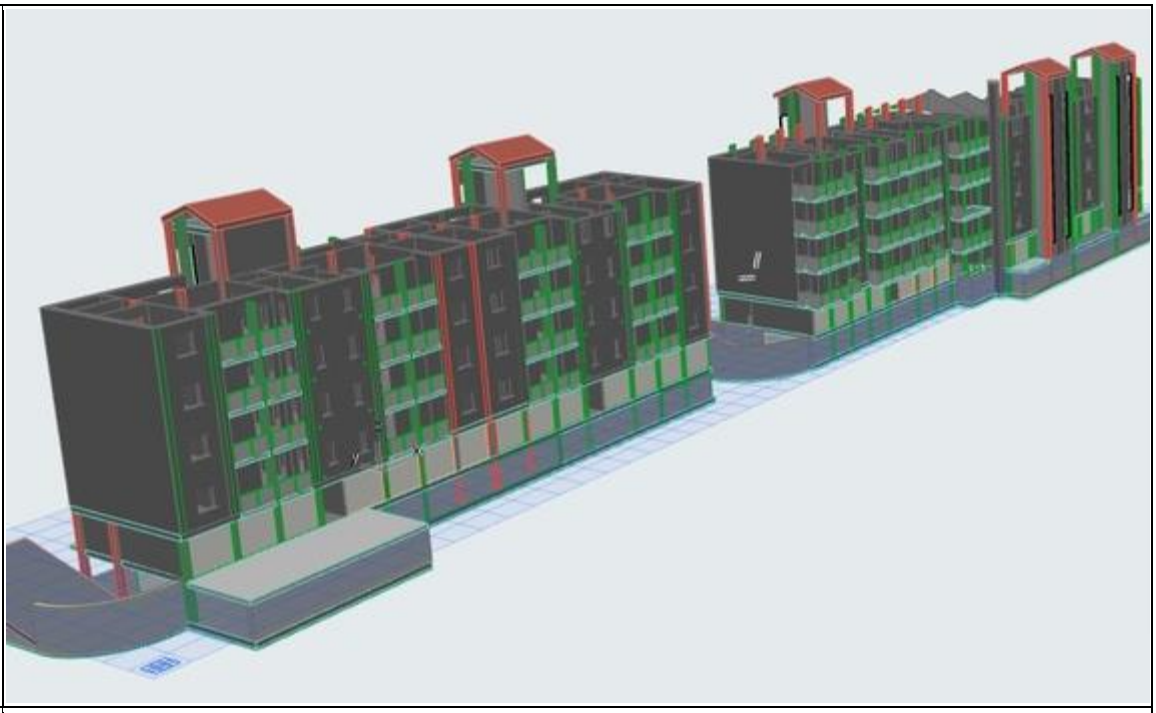
Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	Yes

Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relations	9.1) Are the relationships between the objects retained?	Yes
Geometry	10.1) Is geometry read correctly?	Yes
	10.2) short comments to the previous question (optional)	The software doesn't explicitly show this information. However, with visual inspection and adding and removing elements, I didn't find any reason to expect that the geometry was not read correctly.
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	Yes
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	No
Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	\- selecting all walls (and then hiding them or show them collectively). this can also be done to all other elements (slabs, stairs, windows and so on). - querying for an element based on its IFC id. then the attributes of the elements can be viewed.
	15.1.2) Attach screenshots	

	15.2) short comments to the previous question (optional)	Note; Archicad is software used mostly by designers. Hence querying is not the main priority (unlike navigating for example). therefore there is no specific querying tool in ArchiCAD. instead, there are multiple ways to query and these ways are integrated within the different tools, and I don't believe I checked all of them.
Analysis	16.1) Is it possible to analyse the objects and the model?	No
	16.1.1) What analysis are possible? Do you know if the results are reliable?	I couldn't perform any of the analysis that I am aware of.
	16.1.2) Attach screenshots	
	16.2) short comments to the previous question (optional)	It would be helpful if you give some examples of the expected analysis. then I can try to perform these analyses
	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities
Export	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	Yes
	18.1.2) Is it possible to add a customised MVD to be used for exporting IFC?	Yes
	18.1.2.1) What kind of customisation is possible?	additional filtiring for the element classes
	19) How long does it take for the data to be exported to IFC?	less then a minute
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	5-20 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate

	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	the software does not allow this
	Please report on any errors the software gives when importing the file.	Elements have been created and/or have changed their position on currently unseen stories
Proportions	24.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	25.1) Is the eventual translation consistent with the IFC definitions?	No
	25.1.1) What changes / inconsistencies / errors / other issues were noted?	The software was able to read and visualize all classes correctly. However, it was not able to correctly define each class; for example, a stair is presented correctly but does not have the definition and attributes of a stair.
	25.1.2) Attach screenshots	
Hierarchy	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attributes	27.1) Are the attributes present in the IFC entities retained and consistent?	No
	27.1.1) What changes / inconsistencies / errors / other issues were noted?	some objects are not recognized correctly in terms of attributes and semantics
	27.1.2) Attach screenshots	See 25.1.2
Relationships	28.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Geometry	29.1) Is geometry read correctly?	Yes
Normals	30.1) Did the normals change?	No
2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	32.1) Is it possible to view the model in 2D?	Yes
Analysis	35.1) Is it possible to analyse the objects and the model?	No

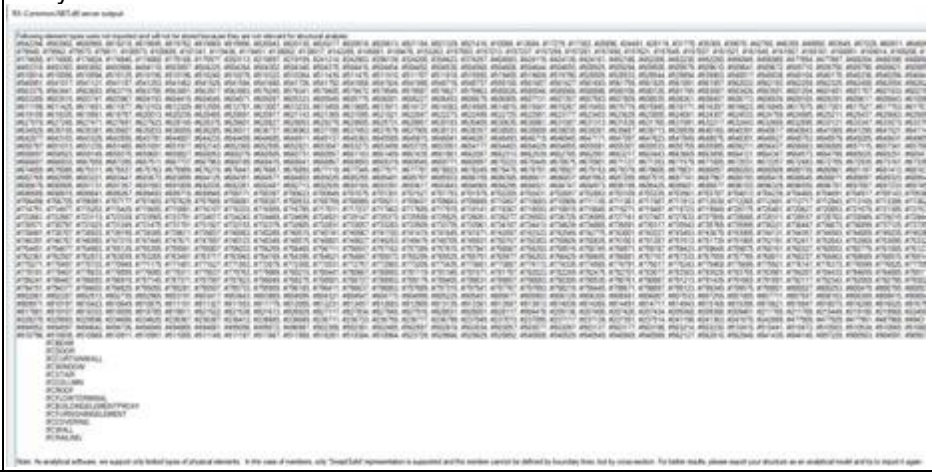
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	36) How long does it take for the data to be exported to IFC?	20 minutes-1 hour
	36.1) Comments to the previous question (optional)	Some elements could not be exported due to missing geometry
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	the software does not allow this
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
	38) Please report on any errors the software gives when importing the file.	inconsistency found during IFC file read operation / Some elements could not be imported during to missing or incorrect geometry
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	Yes
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	Yes
Orientation	42.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	43.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	44.1) Is the eventual translation consistent with the IFC definitions?	No
	44.1.1) What changes / inconsistencies / errors / other issues were noted?	Some classes/layers are missing, most notably are the roofs and windows

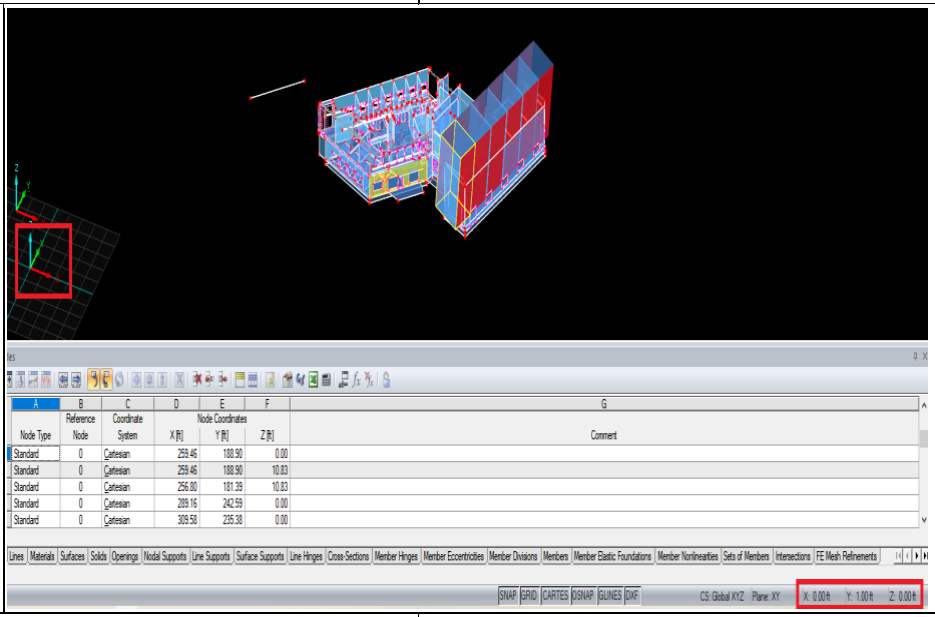
	44.1.2) Attach screenshots	
	Other	if an entity is not missing then its attributes are retained
Rel atio nshi	47.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	55) How long does it take for the data to be exported to IFC?	less than a minute

Dlubal RFEM

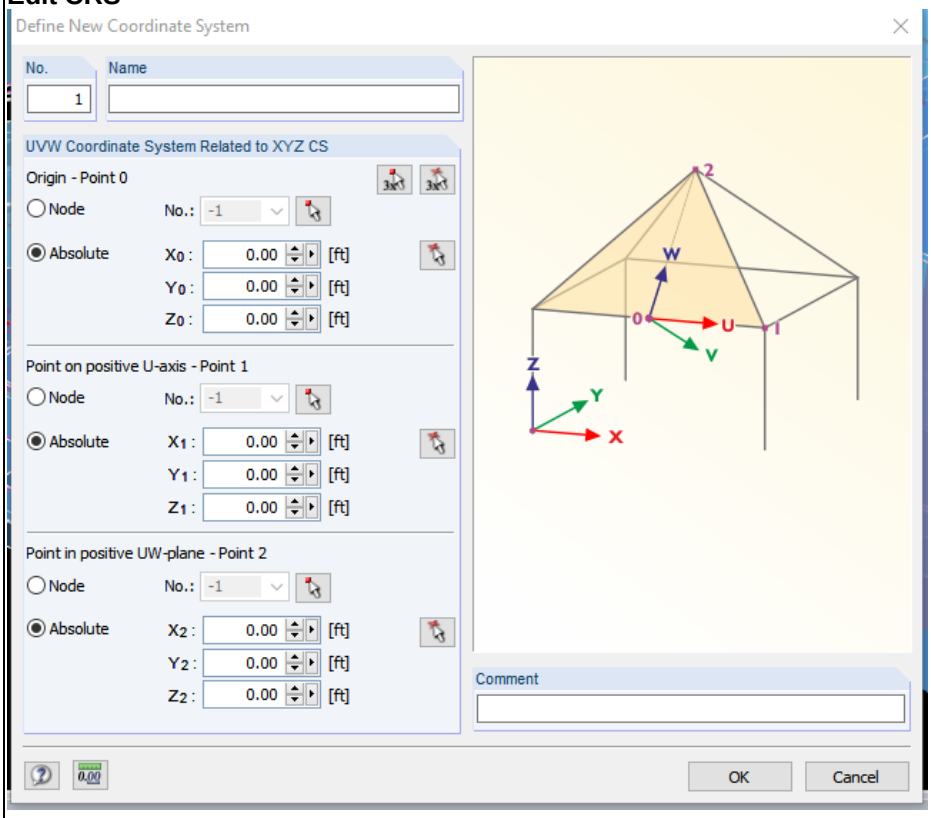
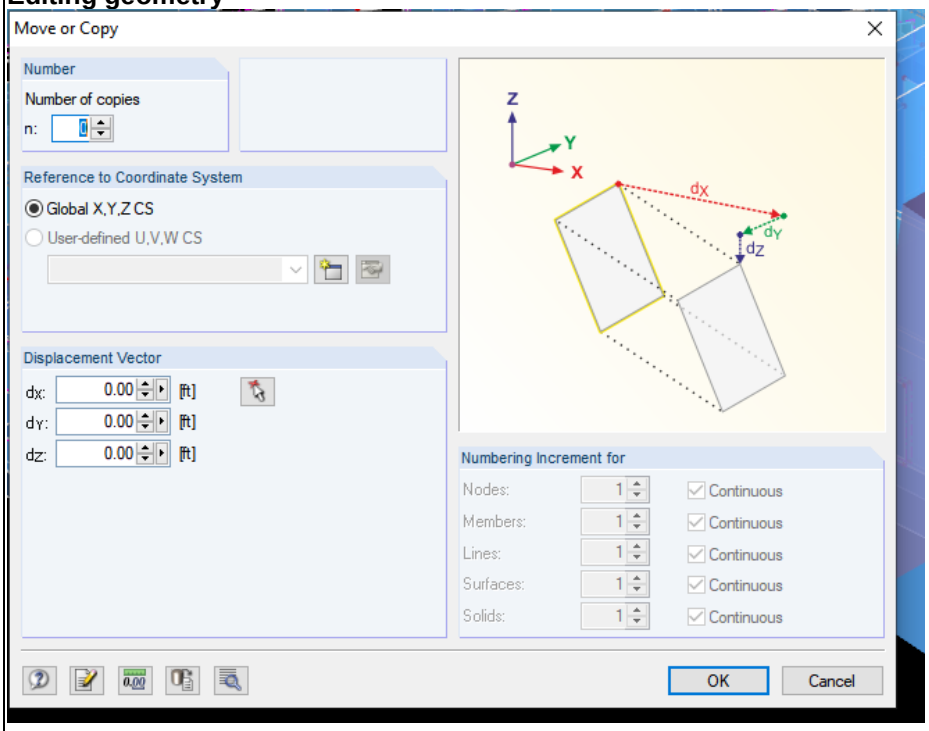
Software	Software Name [version]	**RFEM [5.12]**		Software house		**Dlubal**	
	Proprietary or open source software?			Kind of software			
	proprietary			Other (finite element analysis software)			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Lenovo Thinkpad P1 Gen 2 (2019)	Windows 10 Home 64-bit	Intel i7-9750H @ 2.60GHz	Nvidia Quadro T1000	16 GB	512 GB	60 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	13-11-2013	CV 2.0	not certified			

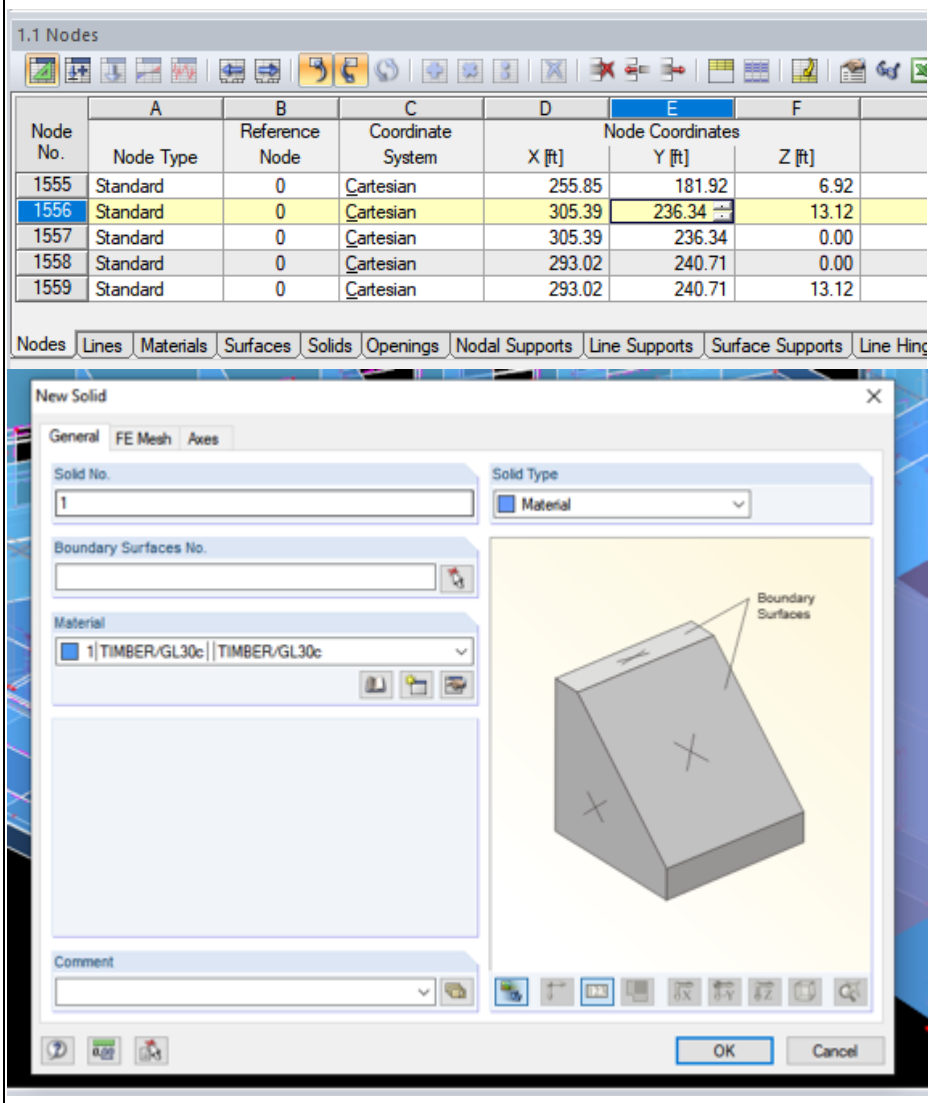
Test with Myran.ifc

Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	less than a minute
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
	Please report on any errors the software gives when importing the file.	Many elements were not imported because they were said to be “not relevant for structural analysis”. 

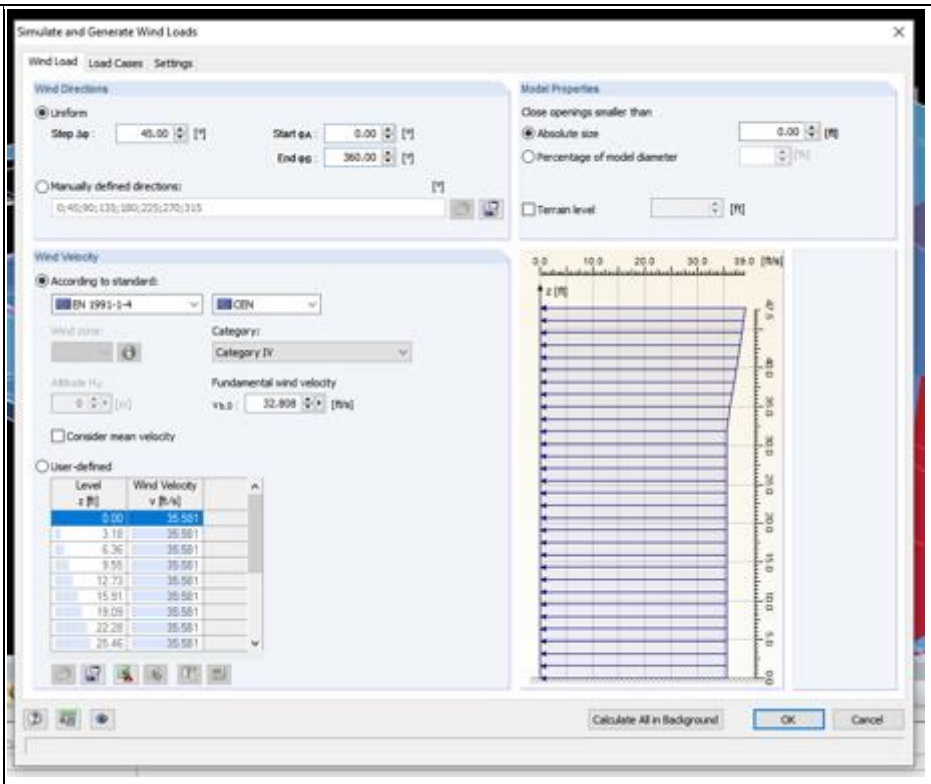
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	2.1.1) Where is the origin of the model coordinate reference system as imported in the software?	At the blue reference point
	2.1.2) Attach screenshots	
	2.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	Local right-handed coordinate system with feet as unit of measurement
	2.1.4) Attach screenshots	See screenshot from 2.1.2
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	3.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0
	3.1.2) Attach screenshots	See figure from 2.1.2
	3.1.3) What is the height reference system?	Local in feet
	3.1.4) Attach screenshots	See figure from 2.1.2
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	The software does not have the necessary tools to determine this information
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	The software does not have the necessary tools to determine this information
Relationships	9.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information

Geo	10.1) Is geometry read correctly?	Yes
Nor	11.1) Did the normals change?	No
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	No
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	You can create a user defined coordinate system. Move, mirror, rotate geometry, edit nodes or create new nodes, lines, solids etc.. The attributes can’t be seen and thus also not edited.

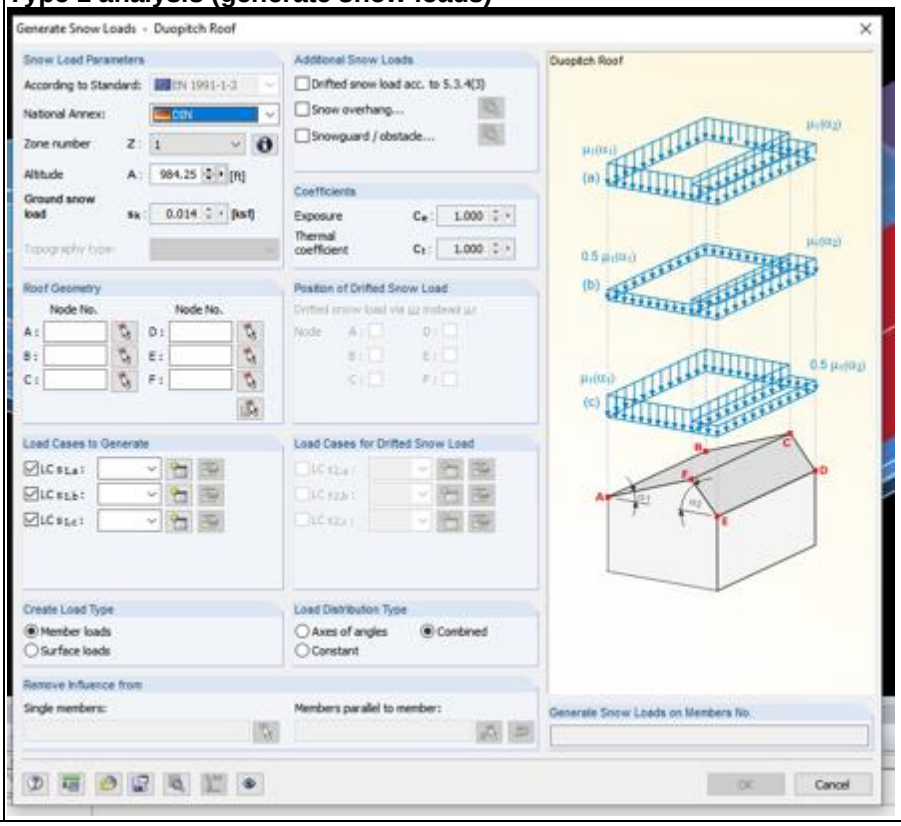
	14.1.2) Attach screenshots	**Edit CRS**  **Editing geometry** 



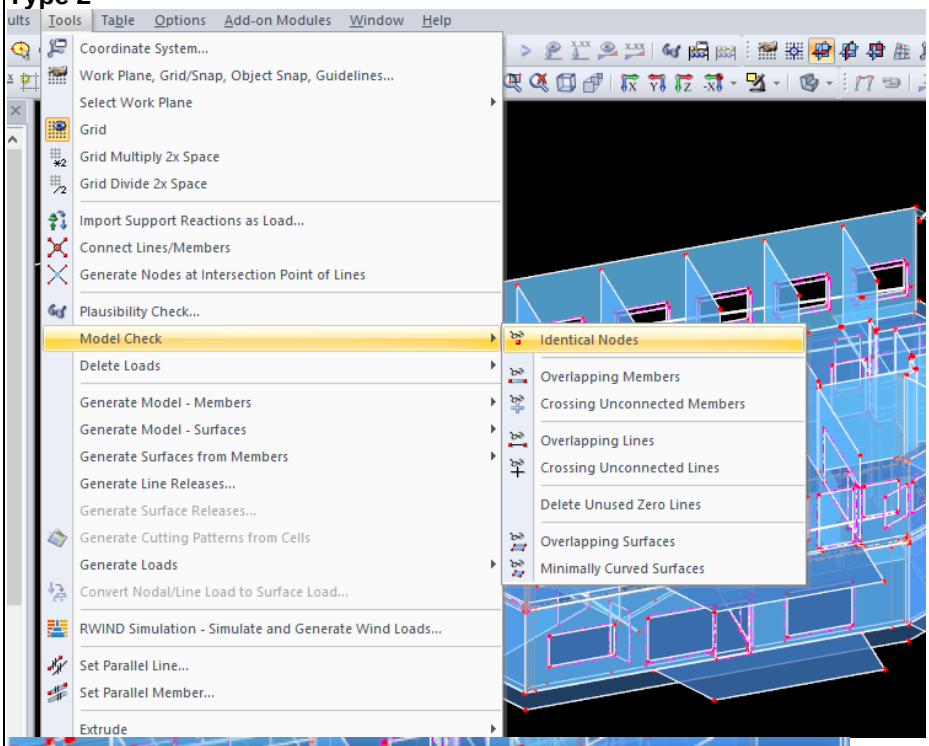
Q ue	15.1) Is it possible to query the model and the attributes?	No
Analysis	16.1) Is it possible to analyse the objects and the model?	Yes, both analysis about the model and its performances are possible (type 1 and 2)
	16.1.1) What analysis are possible? Do you know if the results are reliable?	Wind load analysis, snow load analysis, model geometry checks. I don't know if it's reliable.
	16.1.2) Attach screenshots	**Type 1 analysis (simulate and generate wind loads)**

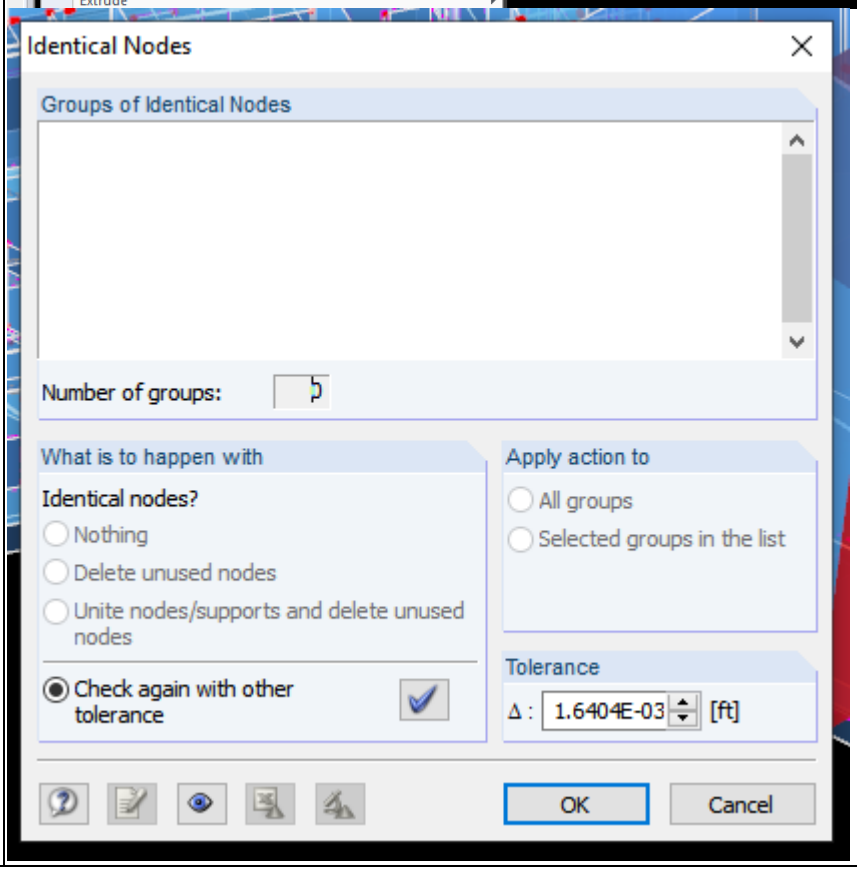


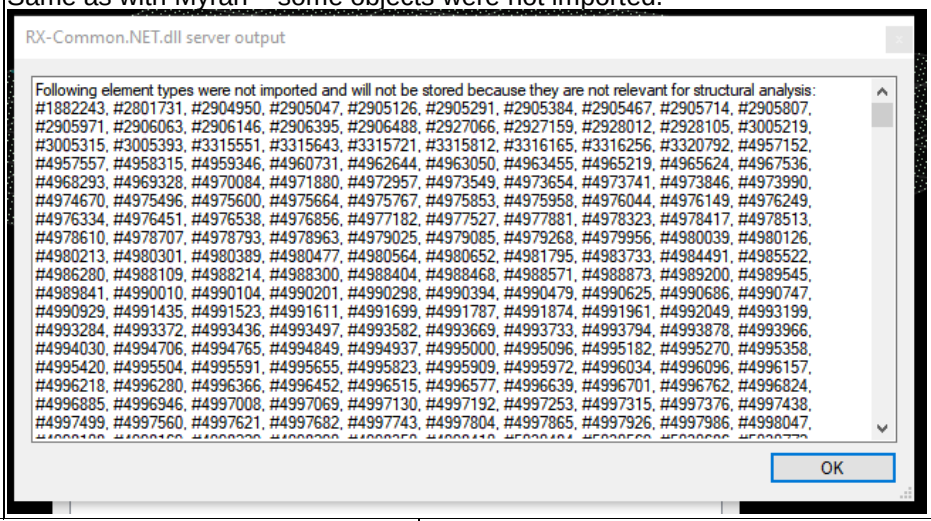
Type 1 analysis (generate snow loads)

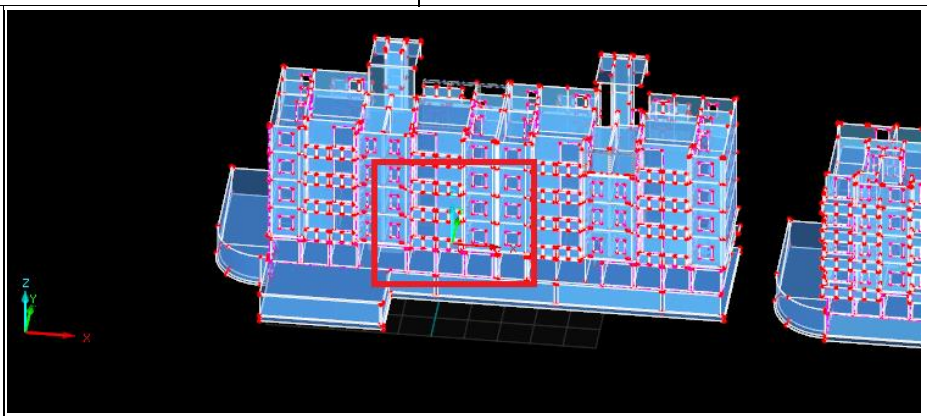


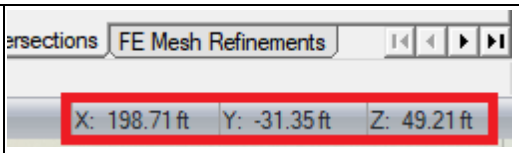
Type 2


ults
Tools
Table
Options
Add-on Modules
Window
Help
Coordinate System...
Work Plane, Grid/Snap, Object Snap, Guidelines...
Select Work Plane
Grid
Grid Multiply 2x Space
Grid Divide 2x Space
Import Support Reactions as Load...
Connect Lines/Members
Generate Nodes at Intersection Point of Lines
Plausibility Check...
Model Check
Delete Loads
Generate Model - Members
Generate Model - Surfaces
Generate Surfaces from Members
Generate Line Releases...
Generate Surface Releases...
Generate Cutting Patterns from Cells
Generate Loads
Convert Nodal/Line Load to Surface Load...
RWIND Simulation - Simulate and Generate Wind Loads...
Set Parallel Line...
Set Parallel Member...
Extrude
Identical Nodes
Overlapping Members
Crossing Unconnected Members
Overlapping Lines
Crossing Unconnected Lines
Delete Unused Zero Lines
Overlapping Surfaces
Minimally Curved Surfaces


Identical Nodes
Groups of Identical Nodes
Number of groups:
What is to happen with
Identical nodes?
Nothing
Delete unused nodes
Unite nodes/supports and delete unused nodes
Check again with other tolerance
Apply action to
All groups
Selected groups in the list
Tolerance
Δ : 1.6404E-03 [ft]
OK
Cancel

	16.1.3) Time required to perform the analysis about the model itself (type 1)	It's almost immediate
	16.1.3) Time required to perform the analysis about the model performances (type2)	It's almost immediate
	16.2) short comments to the previous question (optional)	Not sure if anything happened with type 2 analysis, as I didn't see anything changing
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
Export	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
Export	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	No
	19) How long does it take for the data to be exported to IFC?	less than a minute
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	5-20 minutes
Performance	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
Performance	How long does it take, approximately, to:Pan the model	it's almost immediate
Performance	How long does it take, approximately, to:Rotate the model	it's almost immediate
Performance	How long does it take, approximately, to:Query an object	it's almost immediate
Performance	Please report on any errors the software gives when importing the file.	Same as with Myran – some objects were not imported. 
Pro porti	24.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC defi	25.1) Is the eventual translation consistent with the IFC definitions?	The software does not have the necessary tools to determine this information
Hier arch	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information

Attribute	27.1) Are the attributes present in the IFC entities retained and consistent?	The software does not have the necessary tools to determine this information
Relations	28.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Geo	29.1) Is geometry read correctly?	Yes
No	30.1) Did the normals change?	No
2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	32.1) Is it possible to view the model in 2D?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	36) How long does it take for the data to be exported to IFC?	less than a minute
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
	38) Please report on any errors the software gives when importing the file.	Same as for Myran and UpTown
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	40.1.1) Where is the origin of the model coordinate reference system as imported in the software?	At the blue reference point
	40.1.2) Attach screenshots	
	40.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	Local right-handed with feet as unit of measurement

	40.1.4) Attach screenshots	 Also see screenshot of 40.1.2
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
Orientation	42.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	43.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	44.1) Is the eventual translation consistent with the IFC definitions?	The software does not have the necessary tools to determine this information
Hierarchy	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
Attributes	46.1) Are the attributes present in the IFC entities retained and consistent?	The software does not have the necessary tools to determine this information
Relations	47.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Geometry	48.1) Is geometry read correctly?	Yes
Normals	49.1) Did the normals change?	Yes
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	36) How long does it take for the data to be exported to IFC?	less than a minute

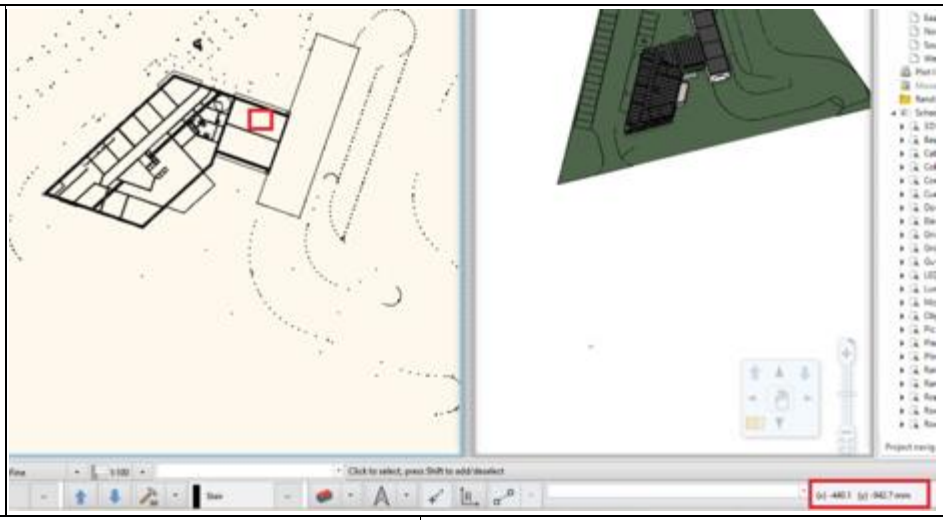
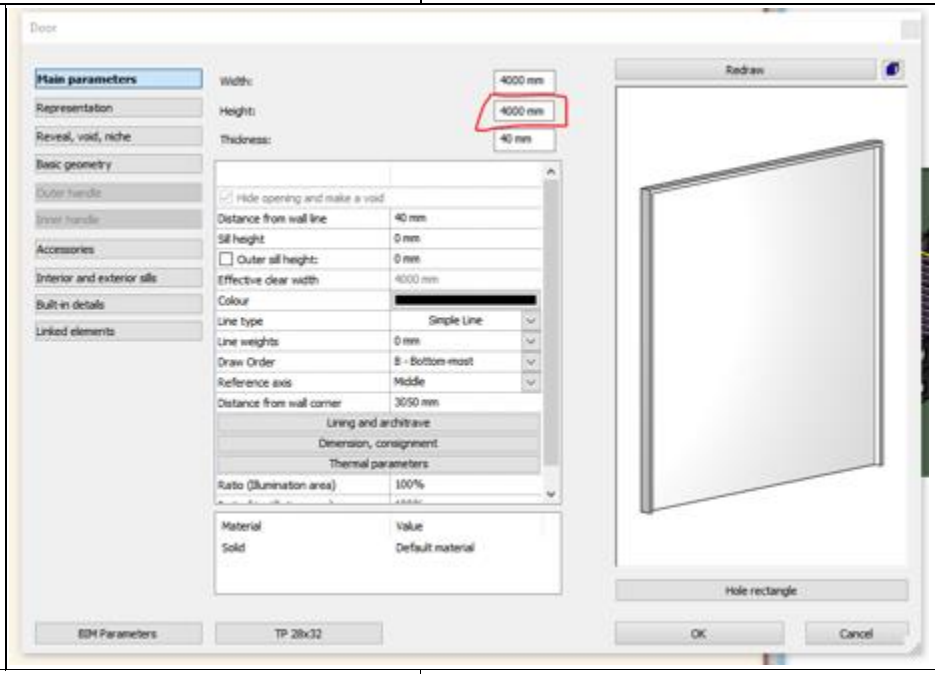
ARCHLine.XP – Windows 10 Home
Proprietary
BIM
1 - Very beginner user (it is nearly the first time you use it)

ARCHLine.XP

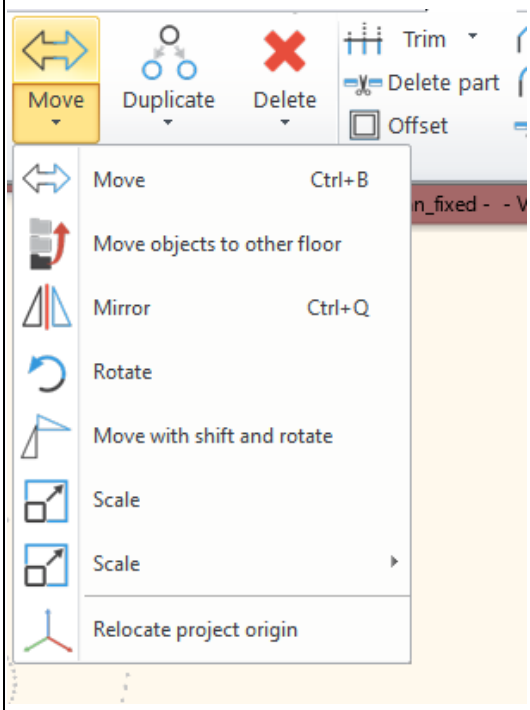
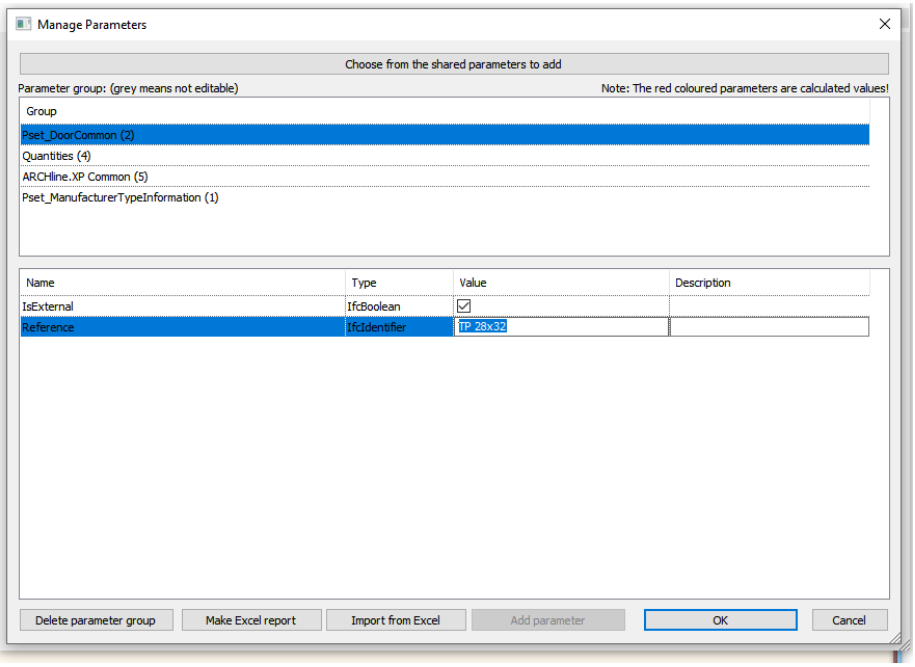
Software	Software Name [version]	**ARCHLine.XP [2019]**		Software house		**CadLine Ltd**	
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Lenovo Thinkpad P1 Gen 2 (2019)	Windows 10 Home 64-bit	Intel i7-9750H @ 2.60GHz	Nvidia Quadro T1000	16 GB	512 GB	60 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	23-06-2015	CV 2.0	certified in (date)	23-06-2015	CV2.0-Arch	

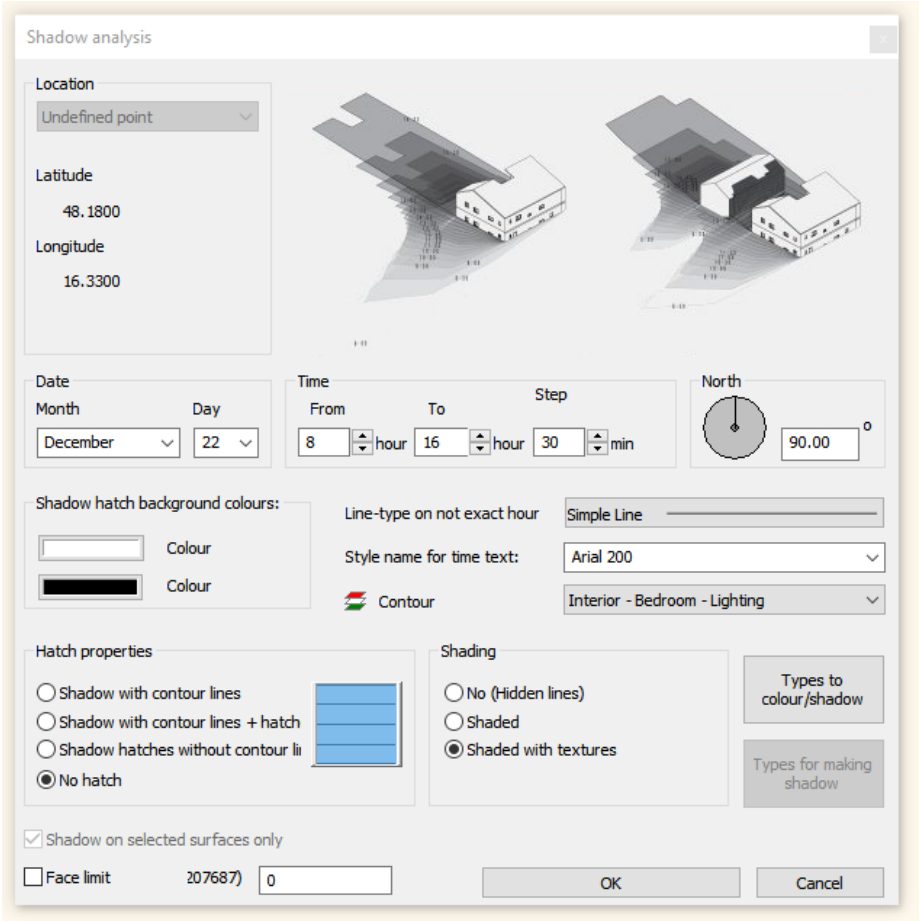
Test with Myran.ifc

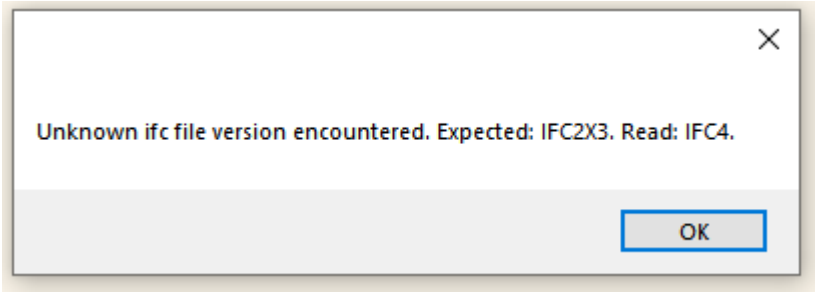
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	less than a minute
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
	Please report on any errors the software gives when importing the file.	
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	2.1.1) Where is the origin of the model coordinate reference system as imported in the software?	See the screenshot

	2.1.2) Attach screenshots	
	2.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	Local right-handed coordinate system with milimetres as unit of measurement
	2.1.4) Attach screenshots	See screenshot from 2.1.2
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	3.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	Can't check it because height is not shown with mouse cursor, only when you click an object. But since the height of the origin is supposed to be 148m, you can see in the screenshot (showing properties of the garage door) that objects are placed way lower than that.
	3.1.2) Attach screenshots	
	3.1.3) What is the height reference system?	Local in mm
	3.1.4) Attach screenshots	See figure from 2.1.2

Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relationships	9.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Geometry	10.1) Is geometry read correctly?	Yes
Normals	11.1) Did the normals change?	No
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	Yes
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	Attributes and geometry can be edited

	14.1.2) Attach screenshots	**Edit geometry**  **Edit attributes** 

Query	15.1) Is it possible to query the model and the attributes?	No
Analysis	16.1) Is it possible to analyse the objects and the model?	Yes, analysis about the modelled building performances (energy, noise, shadows...) are possible (type 2)
	16.1.1) What analysis are possible? Do you know if the results are reliable?	Shadow analysis is possible.
	16.1.2) Attach screenshots	
	16.1.3) Time required to perform the analysis about the model itself (type 2)	less than a minute
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	No
	19) How long does it take for the data to be exported to IFC?	less than a minute
Test with UpTown.ifc		
Perform	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	more than one hour

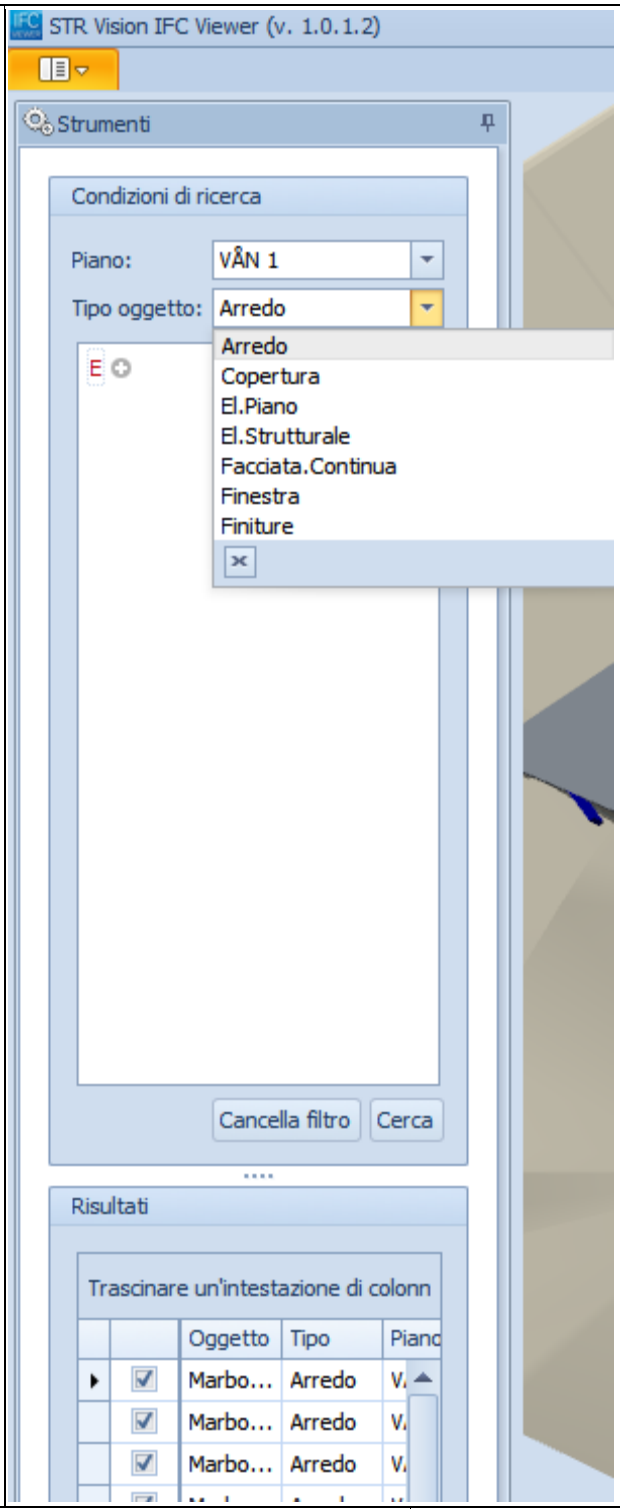
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	less than a minute
	How long does it take, approximately, to:Query an object	less than a minute
Proporti	24.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC defi	25.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarch	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attribute	27.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relatio	28.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
Ge	29.1) Is geometry read correctly?	Yes
No	30.1) Did the normals change?	No
2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	32.1) Is it possible to view the model in 2D?	Yes
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	36) How long does it take for the data to be exported to IFC?	more than one hour
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation
	Please report on any errors the software gives when importing the file.	

STR Vision IFC Viewer

Software	Software Name [version]	**STR Vision IFC Viewer [v. 1.0.1.2]**		Software house		**TeamSystem**	
	Proprietary or open source software?			Kind of software			
	proprietary			3D Viewer			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Lenovo Thinkpad P1 Gen 2 (2019)	Windows 10 Home 64-bit	Intel i7-9750H @ 2.60GHz	Nvidia Quadro T1000	16 GB	512 GB	60 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified						

Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	The software does not have the necessary tools to determine this information
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	The software does not have the necessary tools to determine this information
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	The software does not have the necessary tools to determine this information
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relat	9.1) Are the relationships between the objects retained?	Yes
Geo	10.1) Is geometry read correctly?	Yes
Norm	11.1) Did the normals change?	No
2D/3D	12.1) Is it possible to view the model in 3D?	Yes

	13.1) Is it possible to view the model in 2D?	No
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	No
Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	You can search by object type

	15.1.2) Attach screenshots	
Annotation	16.1) Is it possible to analyse the objects and the model?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2

Test with UpTown.ifc		
Perform	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation
Test with Savigliano.ifc		
Perform	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation

RDF IFC Viewer 1.01 – Windows 10 Home

Open source

3D viewer

1 - Very beginner user (it is nearly the first time you use it)

RDF IFC Viewer

Software	Software Name [version]	**RDF IFC Viewer [1.01]**		Software house		**RDF**	
	Proprietary or open source software?			Kind of software			
	open source			3D viewer			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Lenovo Thinkpad P1 Gen 2 (2019)	Windows 10 Home 64-bit	Intel i7-9750H @ 2.60GHz	Nvidia Quadro T1000	16 GB	512 GB	220 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			

Test with Myran.ifc

Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it's almost immediate
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	The software does not have the necessary tools to check this information
	2.2) short comments to the previous question (optional)	Coordinates can't be seen in the software
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	The software does not have the necessary tools for checking it
	3.2) short comments to the previous question (optional)	Coordinates can't be seen in the software
Orientation	4.1) Is the model oriented correctly with respect to the true North?	The software does not have the necessary tools to determine this information
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	The software does not have the necessary tools to determine this information
	5.2) short comments to the previous question (optional)	Visually it seems correct, but the software has no measurement tools
IFC definition	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes

RDF IFC Viewer 1.01 – Windows 10 Home

Open source
3D viewer
1 - Very beginner user (it is nearly the first time you use it)

Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relati	9.1) Are the relationships between the objects retained?	Yes
Geo	10.1) Is geometry read correctly?	Yes
Normals	11.1) Did the normals change?	No
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	No
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	No
Query	15.1) Is it possible to query the model and the attributes?	No
Analy	16.1) Is it possible to analyse the objects and the model?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	17.1) Are any pre-processing or setting changes needed in the software to enable a consistent export?	No
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	No
	19) How long does it take for the data to be exported to IFC?	it's almost immediate
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	it's almost immediate
Proportions	24.1) Does the model maintain its correct dimensions and proportions?	The software does not have the necessary tools to determine this information
IFC definitions	25.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	27.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relati	28.1) Are the relationships between the objects retained?	Yes
Geo	29.1) Is geometry read correctly?	Yes
Normals	30.1) Did the normals change?	No
2D/3D	31.1) Is it possible to view the model in 3D?	Yes

	32.1) Is it possible to view the model in 2D?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	36) How long does it take for the data to be exported to IFC?	it's almost immediate
	36.1) Comments to the previous question (optional)	I think the export is not real export (because there are no editing functionalities), but just saving the original file
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	The software does not have the necessary tools to check this information
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	The software does not have the necessary tools for checking it
Orientation	42.1) Is the model oriented correctly with respect to the true North?	The software does not have the necessary tools to determine this information
Proportions	43.1) Does the model maintain its correct dimensions and proportions?	The software does not have the necessary tools to determine this information
IFC definitions	44.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	46.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relation	47.1) Are the relationships between the objects retained?	Yes
Geometry	48.1) Is geometry read correctly?	Yes
Normals	49.1) Did the normals change?	No
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	No

RDF IFC Viewer 1.01 – Windows 10 Home

Open source
3D viewer
1 - Very beginner user (it is nearly the first time you use it)

Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	55) How long does it take for the data to be exported to IFC?	it's almost immediate
	55.1) Comment to the previous question (optional)	I think it's not really exporting but rather saving the original file

Autodesk Infraworks 2020 – Windows 10 Home

Proprietary

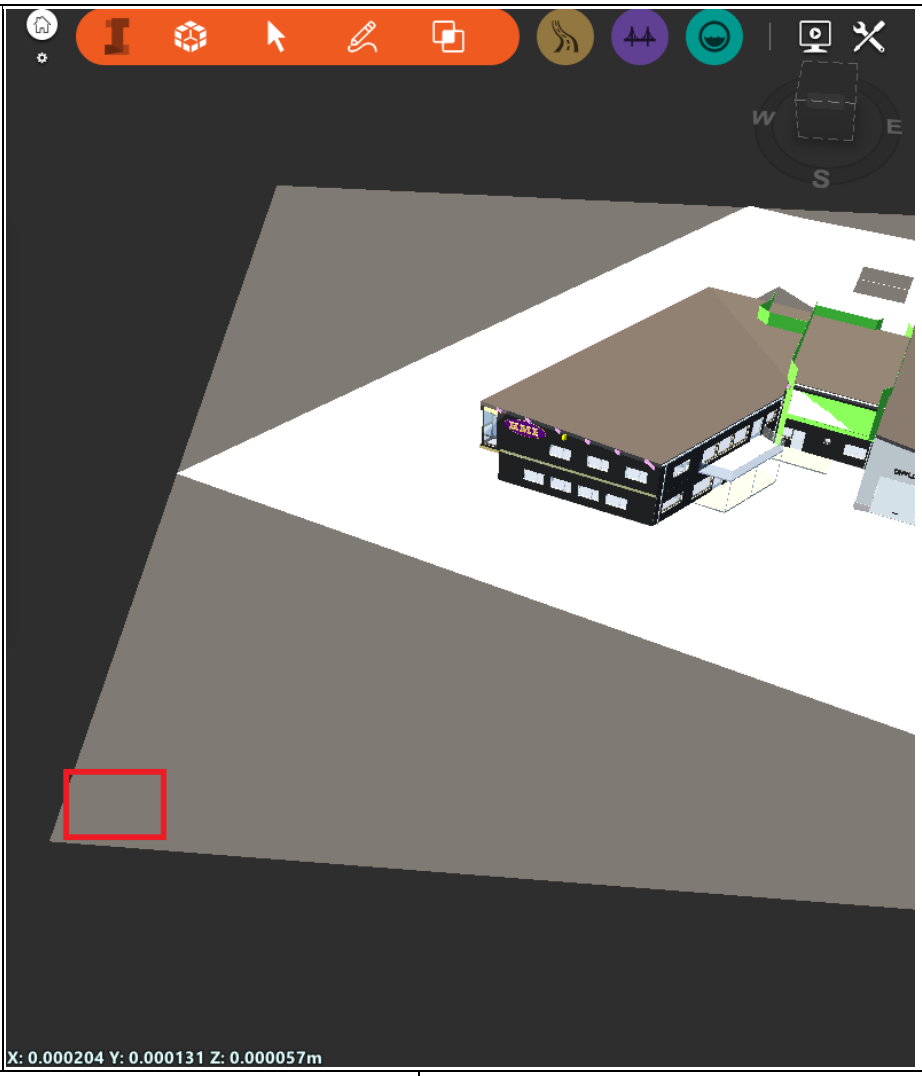
Infrastructure design

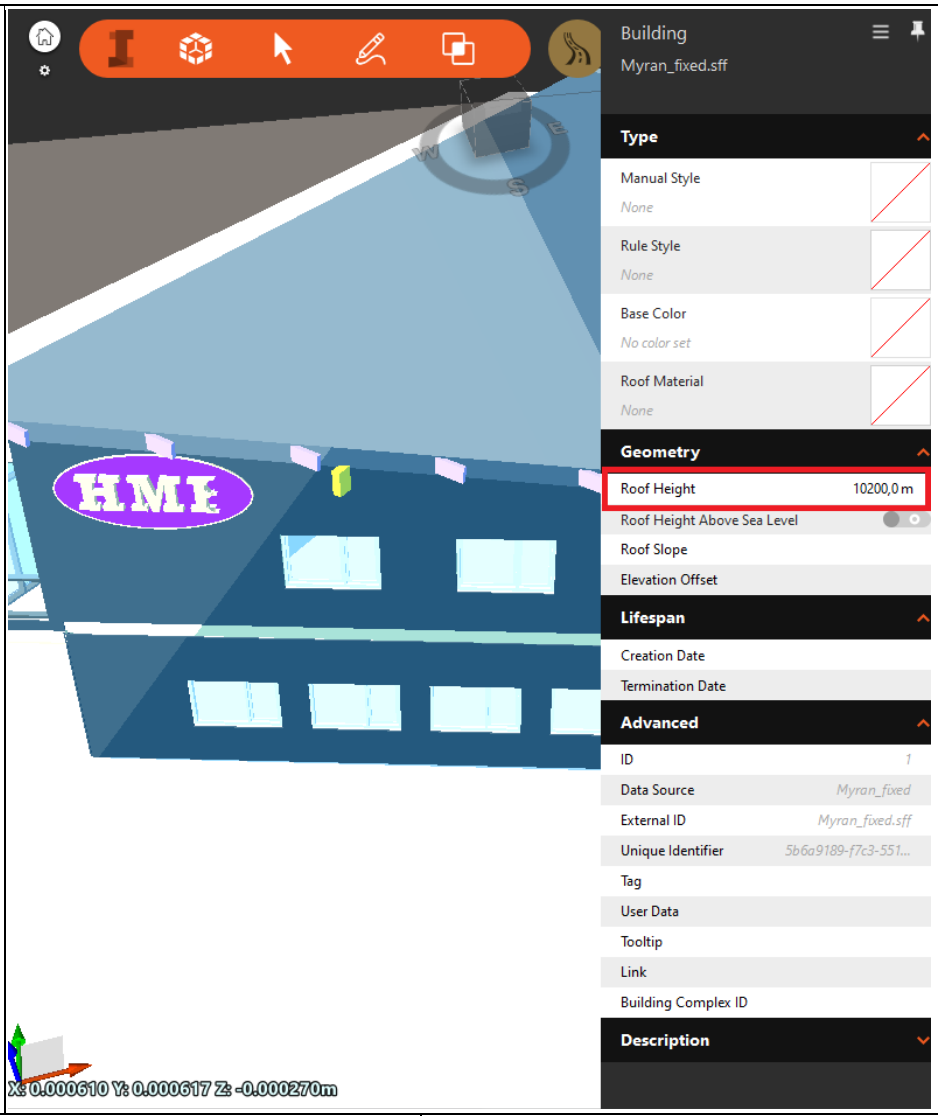
1 - Very beginner user (it is nearly the first time you use it)

Infraworks

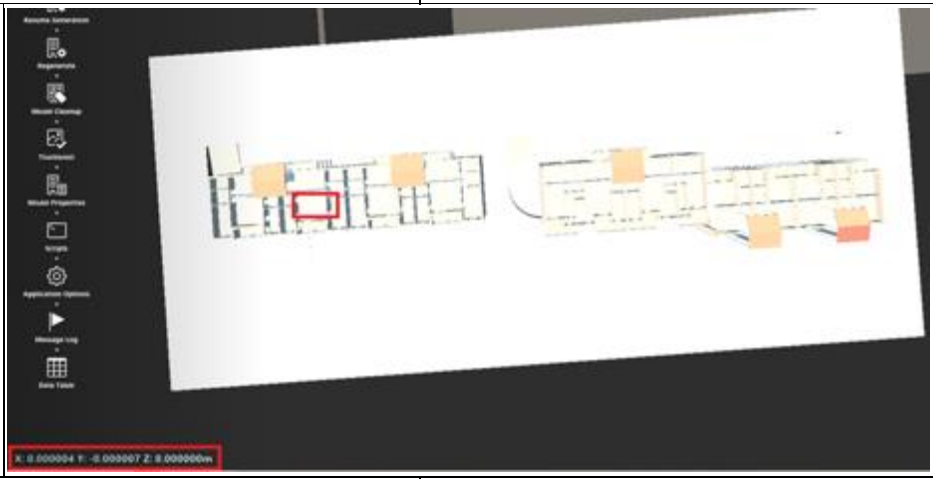
Software	Software Name [version]	**Autodesk Infraworks [2020]**		Software house		**Autodesk**	
	Proprietary or open source software?			Kind of software			
	proprietary			Infrastructure design			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Lenovo Thinkpad P1 Gen 2 (2019)	Windows 10 Home 64-bit	Intel i7-9750H @ 2.60GHz	Nvidia Quadro T1000	16 GB	512 GB	220 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			

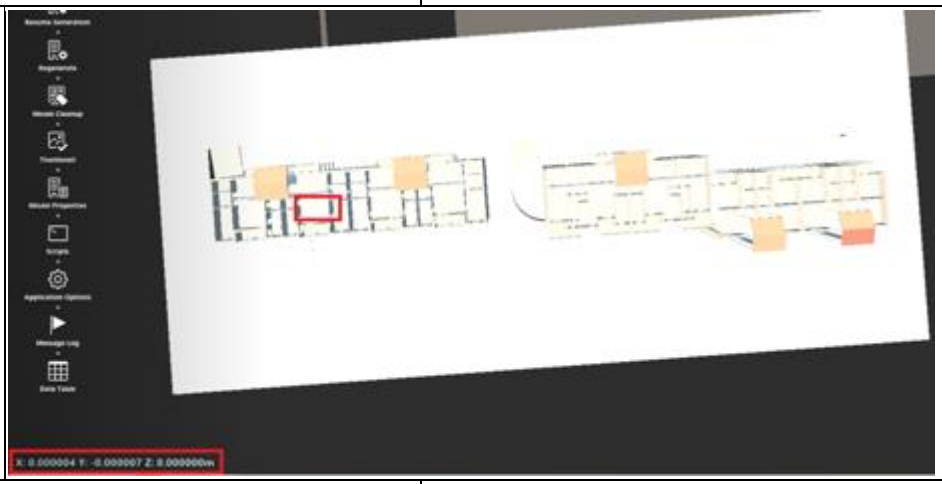
Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	the software does not allow this
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	2.1.1) Where is the origin of the model coordinate reference system as imported in the software?	At the blue reference point

	2.1.2) Attach screenshots	
	2.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	Local in metres
	2.1.4) Attach screenshots	See 2.1.2
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	3.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0
	3.1.3) What is the height reference system?	Local in metres

	3.1.4) Attach screenshots	
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	The software does not have the necessary tools for checking it
	6.2) short comments to the previous question (optional)	Can't check single objects
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools to determine this information
	7.2) short comments to the previous question (optional)	Can't check single objects
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	The software does not have the necessary tools to determine this information

Relationships	9.1) Are the relationships between the objects retained?	The software does not have the necessary tools to determine this information
	9.2) short comments to the previous question (optional)	Can't check single objects
Geometry	10.1) Is geometry read correctly?	Yes
Normals	11.1) Did the normals change?	No
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	No
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	No
Query	15.1) Is it possible to query the model and the attributes?	No
Analysis	16.1) Is it possible to analyse the objects and the model?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	the software does not allow this
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	the software does not allow this
Proportions	24.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	25.1) Is the eventual translation consistent with the IFC definitions?	The software does not have the necessary tools for checking it
Hierarchy	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools for checking it
Attributes	27.1) Are the attributes present in the IFC entities retained and consistent?	The software does not have the necessary tools for checking it
Relationships	28.1) Are the relationships between the objects retained?	The software does not have the necessary tools for checking it
Geometry	29.1) Is geometry read correctly?	Yes
Normals	30.1) Did the normals change?	No
2D/3D	31.1) Is it possible to view the model in 3D?	Yes

	32.1) Is it possible to view the model in 2D?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	36) How long does it take for the data to be exported to IFC?	The software cannot export to IFC, therefore skip the phase 2
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it's almost immediate
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	the software does not allow this
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	40.1.1) Where is the origin of the model coordinate reference system as imported in the software?	At the blue reference point
	40.1.2) Attach screenshots	
	40.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	Local, seems to be in decimetres (when comparing measurement tool to change of coordinates when you move the mouse)
	40.1.4) Attach screenshots	See 40.1.2
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No

	41.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0
	41.1.2) Attach screenshots	
	41.1.3) What is the height reference system?	Local in metres
	41.1.4) Attach screenshots	See 41.1.2
Orientation	42.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	43.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	44.1) Is the eventual translation consistent with the IFC definitions?	The software does not have the necessary tools for checking it
Hierarchy	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	The software does not have the necessary tools for checking it
Attributes	46.1) Are the attributes present in the IFC entities retained and consistent?	The software does not have the necessary tools for checking it
Relationships	47.1) Are the relationships between the objects retained?	The software does not have the necessary tools for checking it
Geometry	48.1) Is geometry read correctly?	Yes
Normals	49.1) Did the normals change?	No
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2

bimspot beta – Windows 10 Home
Proprietary
BIM
1 - Very beginner user (it is nearly the first time you use it)

bimspot

Software	Software Name [version]	**bimspot [beta]**		Software house			
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Lenovo Thinkpad P1 Gen 2 (2019)	Windows 10 Home 64-bit	Intel i7-9750H @ 2.60GHz	Nvidia Quadro T1000	16 GB	512 GB	220 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			
Test with Myran.ifc							
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model			it crashes without completing the operation			
Test with UpTown.ifc							
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model			it crashes without completing the operation			
Test with Savigliano.ifc							
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model			it crashes without completing the operation			

DDS-CAD x64 build 23/9-2019 – Windows 10 Home
Proprietary
BIM
1 - Very beginner user (it is nearly the first time you use it)

DDS-CAD

Software	Software Name [version]	**DDS-CAD [x64 build 23/9-2019]**		Software house		**Nemetschek**	
	Proprietary or open source software?			Kind of software			
	proprietary			BIM			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Lenovo Thinkpad P1 Gen 2 (2019)	Windows 10 Home 64-bit	Intel i7-9750H @ 2.60GHz	Nvidia Quadro T1000	16 GB	512 GB	135 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certification in progress		MEP Reference Exchange	certification in progress		MEP Reference Exchange	

Test with Myran.ifc

Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it's almost immediate
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	The software does not have the necessary tools to check this information
	2.2) short comments to the previous question (optional)	The software does not have the possibility to inspect coordinates
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	The software does not have the necessary tools for checking it
	3.2) short comments to the previous question (optional)	The software does not have the possibility to inspect coordinates
Orientation	4.1) Is the model oriented correctly with respect to the true North?	The software does not have the necessary tools to determine this information

	4.2) short comments to the previous question (optional)	The software does not have the possibility to inspect coordinates
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
	7.2) short comments to the previous question (optional)	The objects are contained within the correct storey
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	The software does not have the necessary tools to determine this information
	8.2) short comments to the previous question (optional)	Even though it should be possible to check the attributes, I can't see them because of a bug in the software. The "properties pop-up" won't show.
Relationships	9.1) Are the relationships between the objects retained?	Yes
Geometry	10.1) Is geometry read correctly?	Yes
Normals	11.1) Did the normals change?	No
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	No
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	No
Queries	15.1) Is it possible to query the model and the attributes?	No
Analysis	16.1) Is it possible to analyse the objects and the model?	No

Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	it's almost immediate
Proportions	24.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	25.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
	26.2) short comments to the previous question (optional)	The objects are classified under the correct storeys
Attributes	27.1) Are the attributes present in the IFC entities retained and consistent?	Bugged
	27.2) short comments to the previous question (optional)	The software has a bug which causes me to be unable to inspect object properties
Relations	28.1) Are the relationships between the objects retained?	Yes
Geometry	29.1) Is geometry read correctly?	Yes
Normals	30.1) Did the normals change?	No
2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	32.1) Is it possible to view the model in 2D?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation

Blender 2.81a – Windows 10 Home

Open source

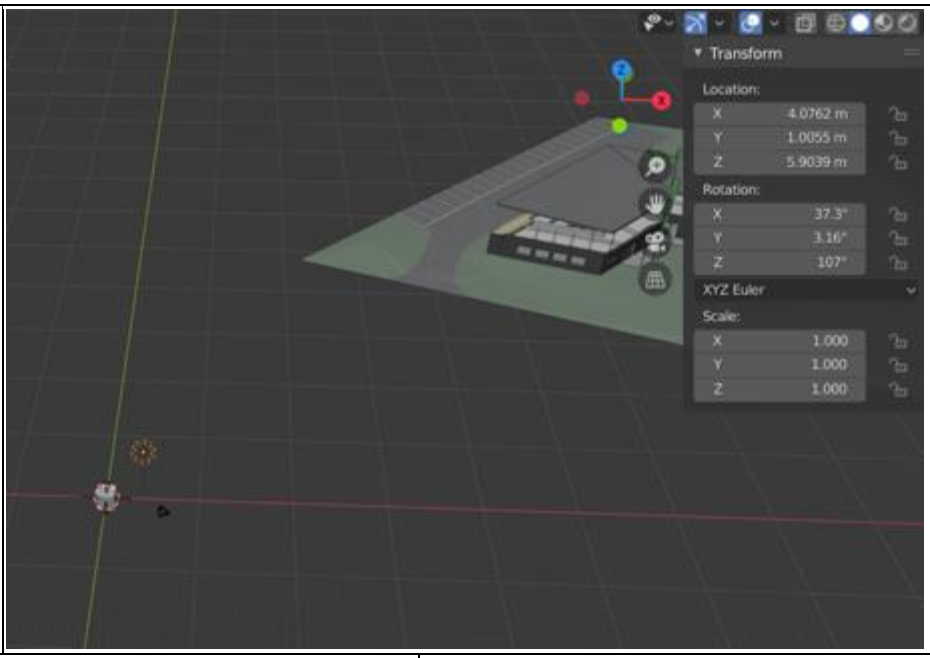
3D creation suite

1 - Very beginner user (it is nearly the first time you use it)

Blender

Software	Software Name [version]	**Blender [2.81a]**		Software house		**Bricsys**	
	Proprietary or open source software?			Kind of software			
	open source			3D creation suite			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Lenovo Thinkpad P1 Gen 2 (2019)	Windows 10 Home 64-bit	Intel i7-9750H @ 2.60GHz	Nvidia Quadro T1000	16 GB	512 GB	135 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	not certified			not certified			

Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	2.1.1) Where is the origin of the model coordinate reference system as imported in the software?	The origin of the model as a whole is at (0, 0, 0). The coordinates of the reference point are approximately (4, 1, 6).

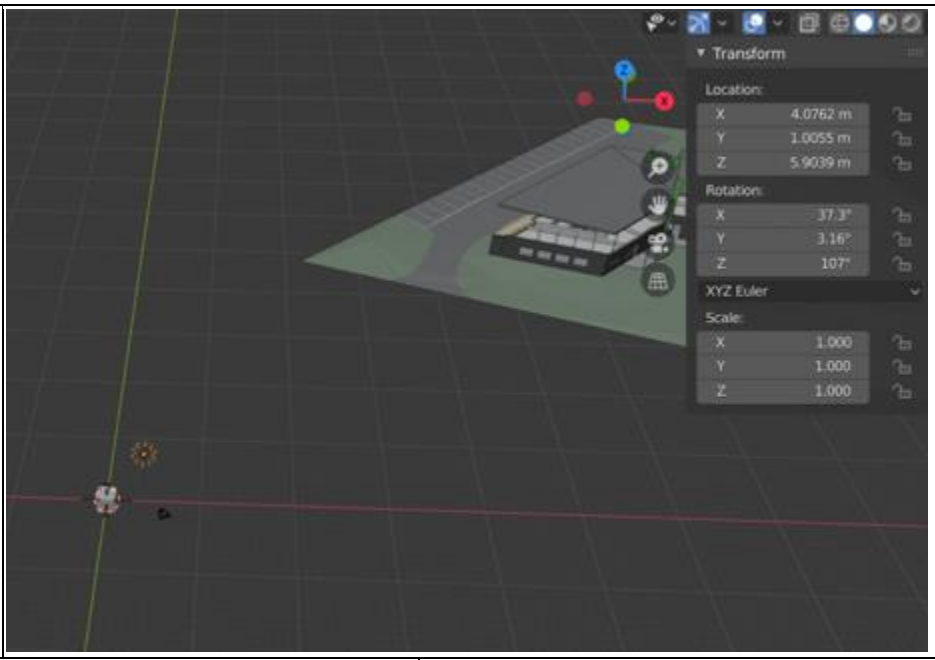
	2.1.2) Attach screenshots	
	2.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	Local right-handed, in metres
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	3.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	For the whole model it's 0, for the reference point it's 5,9m
	3.1.2) Attach screenshots	See 2.1.2
	3.1.3) What is the height reference system?	Local in metres

Blender 2.81a – Windows 10 Home

Open source

3D creation suite

1 - Very beginner user (it is nearly the first time you use it)

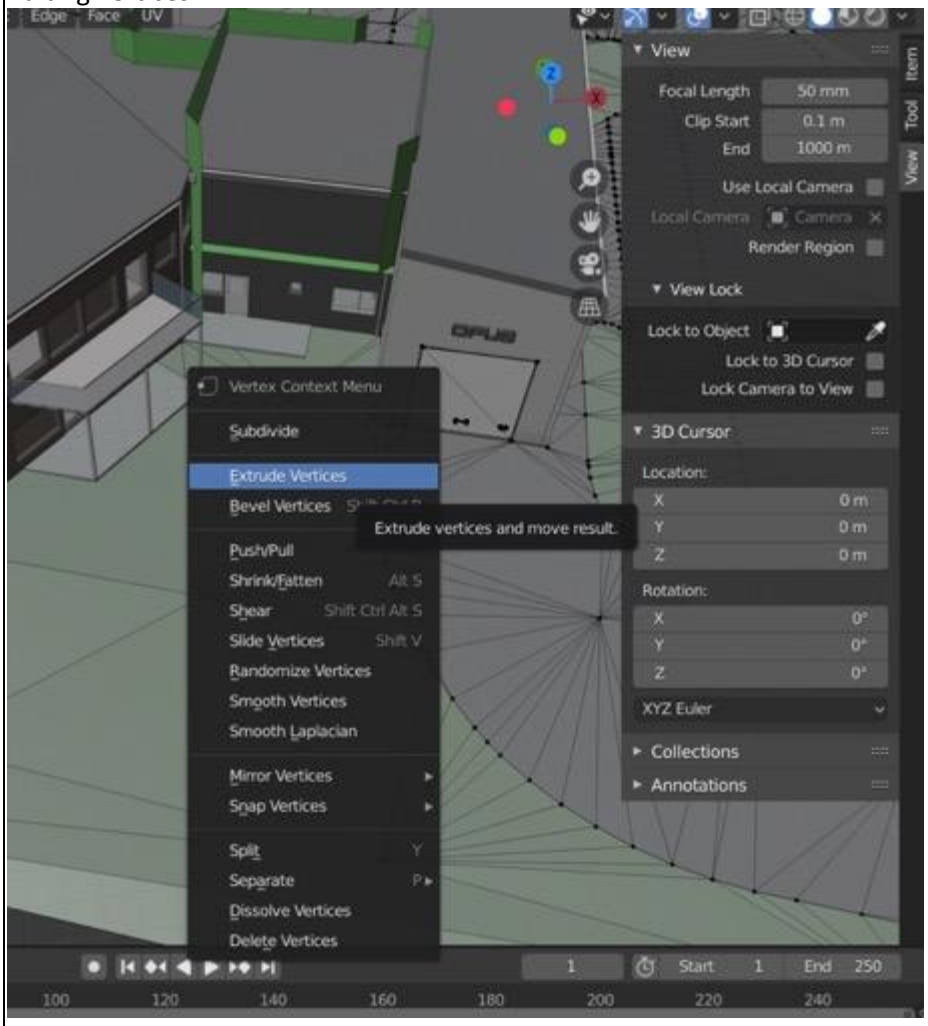
	3.1.4) Attach screenshots	
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	The software does not have the necessary tools for checking it
	6.2) short comments to the previous question (optional)	Object types are not explicitly shown. You can only see the given names of objects, but not the actual IFC definition.
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
	7.2) short comments to the previous question (optional)	You can see in a tree how all objects are related to each other, including hierarchy.
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	The software does not have the necessary tools to determine this information
	8.2) short comments to the previous question (optional)	Custom properties are empty
Relationships	9.1) Are the relationships between the objects retained?	Yes
	9.2) short comments to the previous question (optional)	You can see in a tree how all objects are related to each other, including hierarchy.
Geometry	10.1) Is geometry read correctly?	Yes
Normals	11.1) Did the normals change?	No
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	No
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes

Blender 2.81a – Windows 10 Home

Open source

3D creation suite

1 - Very beginner user (it is nearly the first time you use it)

	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	You can edit attributes and geometry (move, rotate, scale, edit vertices).
	14.1.2) Attach screenshots	Editing vertices  Rotating object

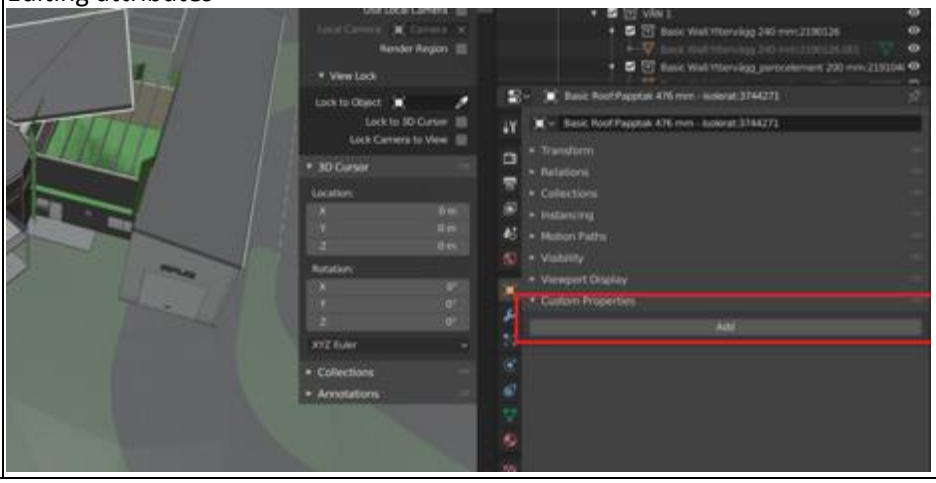
Blender 2.81a – Windows 10 Home

Open source

3D creation suite

1 - Very beginner user (it is nearly the first time you use it)

Editing attributes

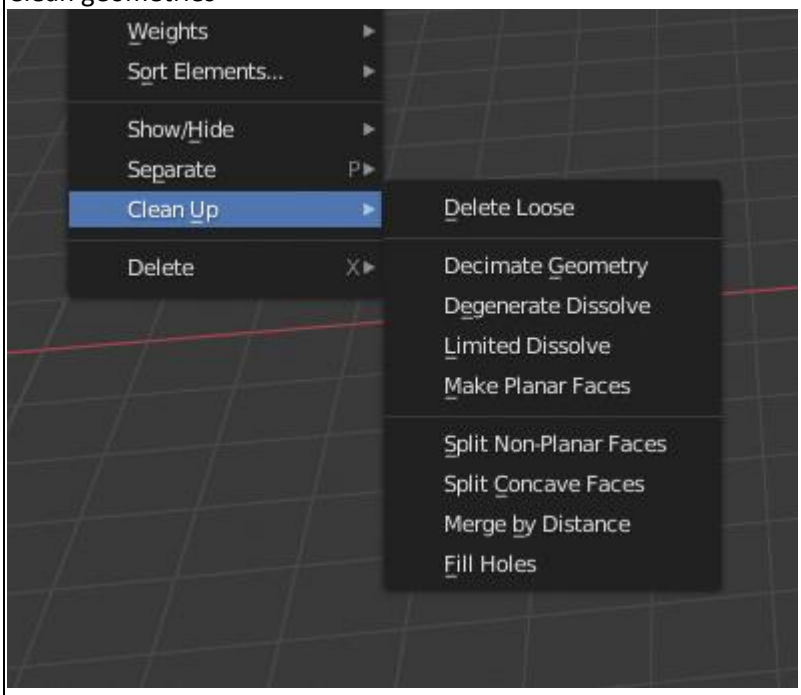
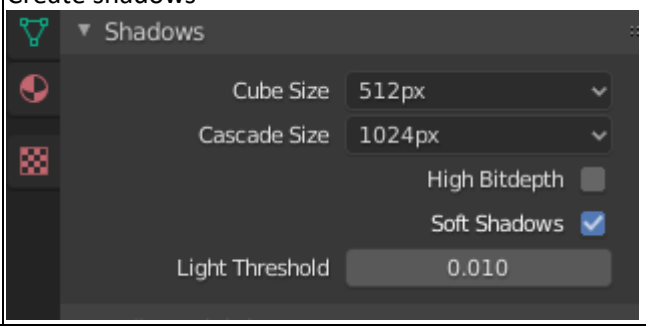


Blender 2.81a – Windows 10 Home

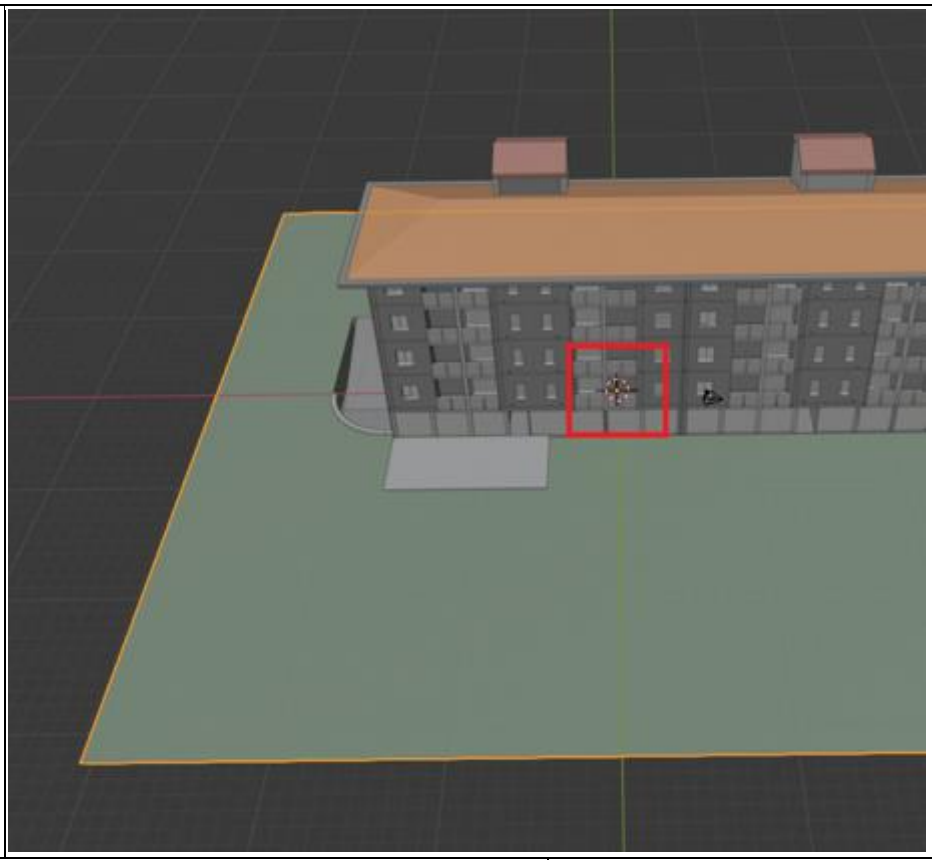
Open source

3D creation suite

1 - Very beginner user (it is nearly the first time you use it)

Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	Any query (spatial and on attributes), but you have to write it in Python (https://blender.stackexchange.com/questions/122878/selecting-objects-with-the-same-property-values-without-python)
Analysis	16.1) Is it possible to analyse the objects and the model?	Yes, analysis about the model validity and features (geometry, semantics, schema validity...) are possible (type 1)
	16.1.1) What analysis are possible? Do you know if the results are reliable?	You can clean the geometries. It is also possible to create (visual) shadows, but I don't think that counts as actual shadow analysis.
	16.1.2) Attach screenshots	Clean geometries  Create shadows 

	16.1.3) Time required to perform the analysis about the model itself (type 1)	it's almost immediate
	16.1.3) Time required to perform the analysis about the model performances (type2)	No analysis of type 2 are possible
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	it crashes without completing the operation
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	5-20 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
	38) Please report on any errors the software gives when importing the file.	5-20 minutes
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	40.1.1) Where is the origin of the model coordinate reference system as imported in the software?	The origin of the model as a whole is at (0, 0, 0), which starts at the reference point.

	40.1.2) Attach screenshots	
	40.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	Local in metres
	40.2) short comments to the previous question (optional)	(same as for Myran so no screenshot)
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	41.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0 (at reference point/origin of model)
	41.1.2) Attach screenshots	
	41.1.3) What is the height reference system?	Local in metres
	41.1.4) Attach screenshots	See 41.1.2
Orientation	42.1) Is the model oriented correctly with respect to the true North?	Yes

Blender 2.81a – Windows 10 Home

Open source

3D creation suite

1 - Very beginner user (it is nearly the first time you use it)

Pr	43.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	44.1) Is the eventual translation consistent with the IFC definitions?	The software does not have the necessary tools for checking it
	44.2) short comments to the previous question (optional)	Object classification is not shown
Hi er ar	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	46.1) Are the attributes present in the IFC entities retained and consistent?	No
	46.1.1) What changes / inconsistencies / errors / other issues were noted?	Same as Myran: custom properties are just empty
	46.2) short comments to the previous question (optional)	No
R el ati	47.1) Are the relationships between the objects retained?	Yes
Geo metr y	48.1) Is geometry read correctly?	Yes
Nor mals	49.1) Did the normals change?	No
2D/3 D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	No
Expo rt	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2

Solibri Anywhere 9.10.4.13 – Windows 10 Home

Proprietary

3D viewer

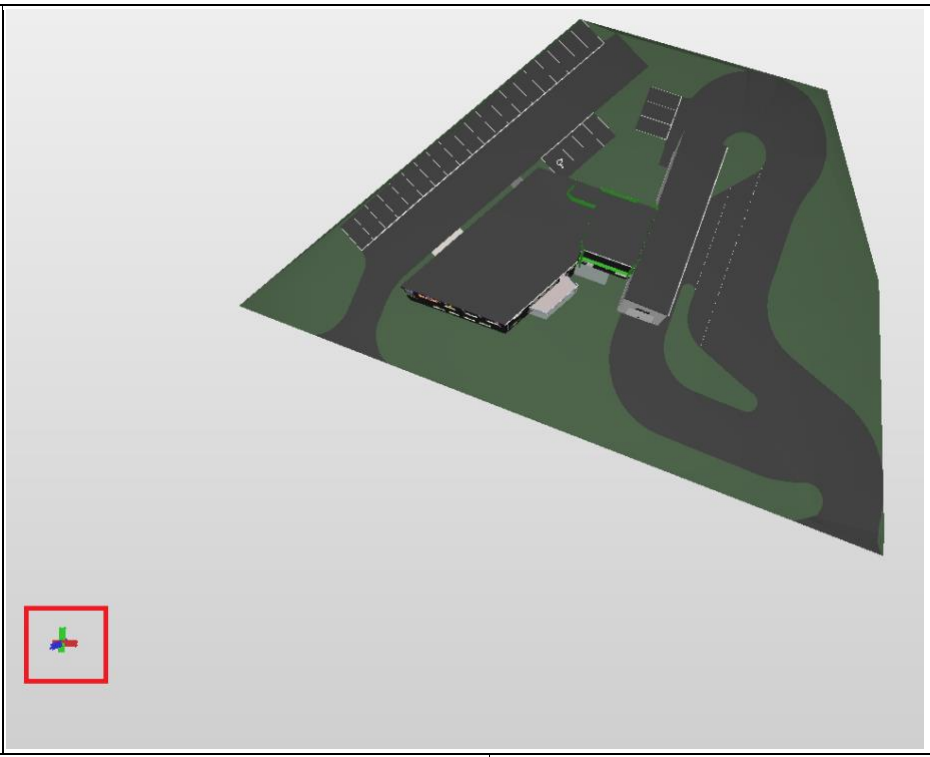
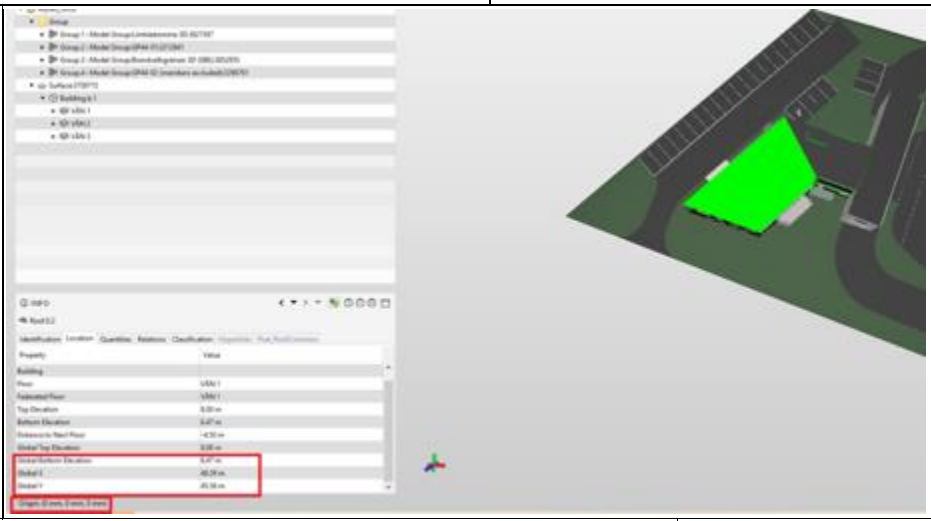
1 - Very beginner user (it is nearly the first time you use it)

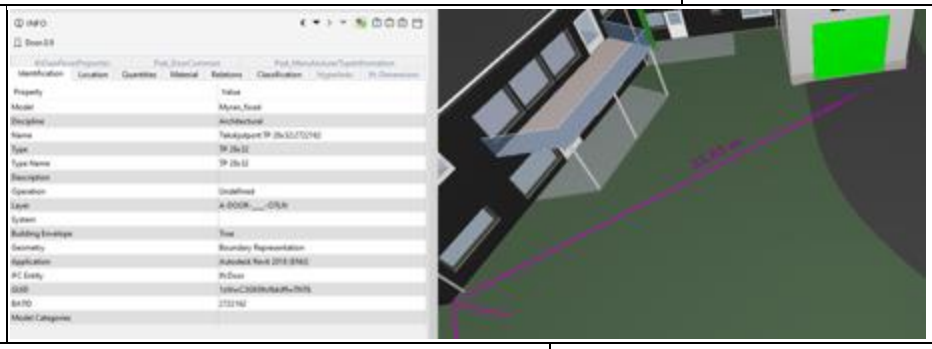
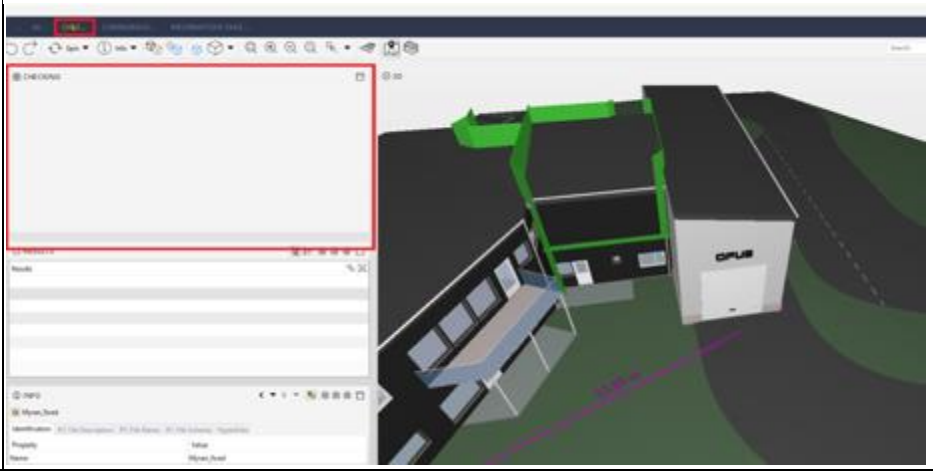
Solibri Anywhere

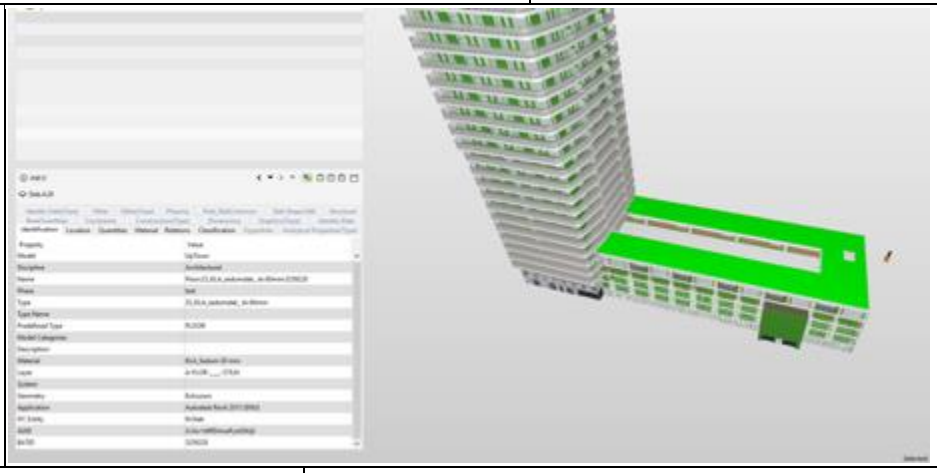
Software	Software Name [version]	**Solibri Anywhere [9.10.4.13]**		Software house			
	Proprietary or open source software?			Kind of software			
	proprietary			3D viewer			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Lenovo Thinkpad P1 Gen 2 (2019)	Windows 10 Home 64-bit	Intel i7-9750H @ 2.60GHz	Nvidia Quadro T1000	16 GB	512 GB	130 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	2013-10-30	CV 2.0	not certified			

Test with Myran.ifc

Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
Georefere ncing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	2.1.1) Where is the origin of the model coordinate reference system as imported in the software?	Seems to be at the reference point

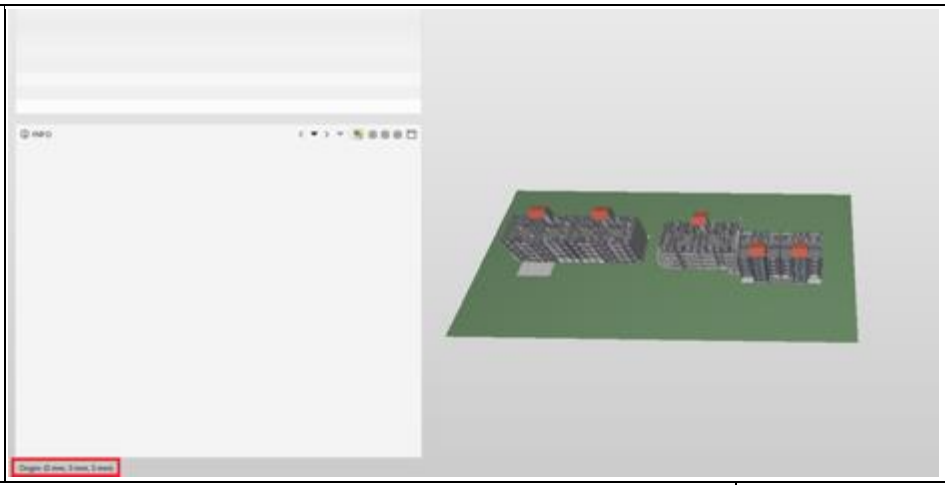
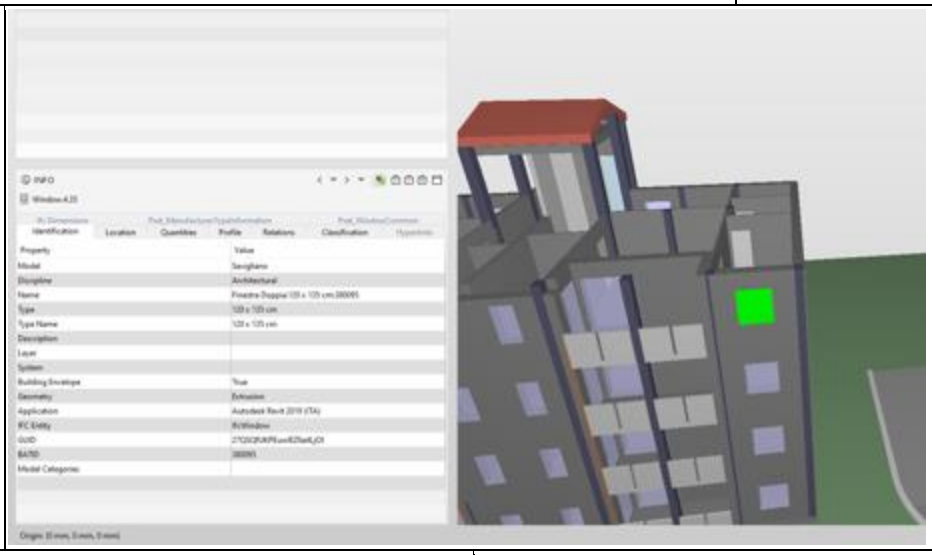
	2.1.2) Attach screenshots	
	2.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	Local right-handed in metres or milimetres, unclear because software doesn't allow proper check
	2.1.4) Attach screenshots	
	2.2) short comments to the previous question (optional)	
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	3.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0
	3.1.2) Attach screenshots	See 2.1.4
	3.1.3) What is the height reference system?	Local in metres or milimetres

Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
Properties	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	No
	8.1.1) What changes / inconsistencies / errors / other issues were noted?	Only reference is retained, other attributes are not
	8.1.2) Attach screenshots	
Relations	9.1) Are the relationships between the objects retained?	Yes
Geometry	10.1) Is geometry read correctly?	Yes
Normals	11.1) Did the normals change?	No
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	No
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	No
Quantities	15.1) Is it possible to query the model and the attributes?	No
Analysis	16.1) Is it possible to analyse the objects and the model?	Yes, analysis about the model validity and features (geometry, semantics, schema validity...) are possible (type 1)
	16.1.1) What analysis are possible? Do you know if the results are reliable?	It should be able to do a model validity check. However, I can't perform it, even when following guidelines. In the "checking" box, the model does not show up.
	16.1.2) Attach screenshots	

	16.1.3) Time required to perform the analysis about the model itself (type 1)	No analysis of type 1 are possible
	16.1.3) Time required to perform the analysis about the model performances (type2)	No analysis of type 2 are possible
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	it's almost immediate
Proportions	24.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC	25.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	27.1) Are the attributes present in the IFC entities retained and consistent?	No
	27.1.1) What changes / inconsistencies / errors / other issues were noted?	Only the reference attribute is kept
	27.1.2) Attach screenshots	
Relationships	28.1) Are the relationships between the objects retained?	Yes
Geometry	29.1) Is geometry read correctly?	Yes
Normals	30.1) Did the normals change?	No

2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	32.1) Is it possible to view the model in 2D?	No
Editing	33.1) Is it possible to edit the model (attributes, geometry, other)?	The answers are the same I gave during the test with Myran.ifc
Querying	34.1) Is it possible to query the model and the attributes?	The answers are the same I gave during the test with Myran.ifc
Analysis	35.1) Is it possible to analyse the objects and the model?	The answers are the same I gave during the test with Myran.ifc
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2

Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	it's almost immediate
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	40.1.1) Where is the origin of the model coordinate reference system as imported in the software?	At the reference point
	40.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	Can't show it on a screenshot because it's inside the building
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	41.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0
	41.1.2) Attach screenshots	
	41.1.3) What is the height reference system?	Local in metres or milimetres (similarly to Myran)

	41.1.4) Attach screenshots	
Orientation	42.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	43.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	44.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	45.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	46.1) Are the attributes present in the IFC entities retained and consistent?	No
	46.1.1) What changes / inconsistencies / errors / other issues were noted?	No, only "reference" is there
	46.1.2) Attach screenshots	
Relations	47.1) Are the relationships between the objects retained?	Yes
Geometry	48.1) Is geometry read correctly?	Yes
Normals	49.1) Did the normals change?	No
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	No

Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2

BricsCAD Ultimate V20 – Windows 10 Home

Proprietary

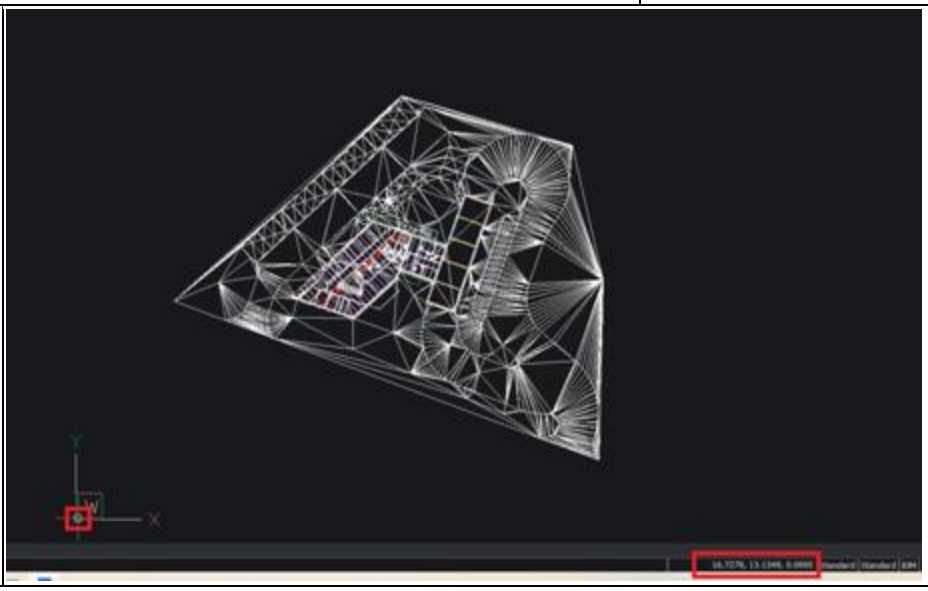
CAD

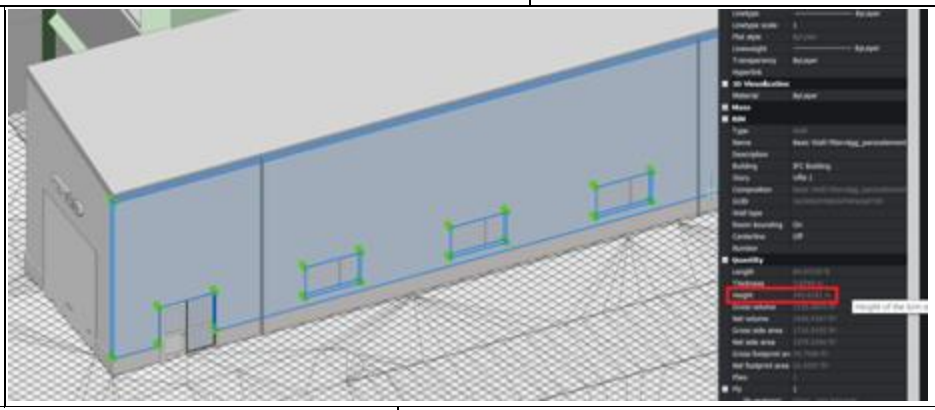
1 - Very beginner user (it is nearly the first time you use it)

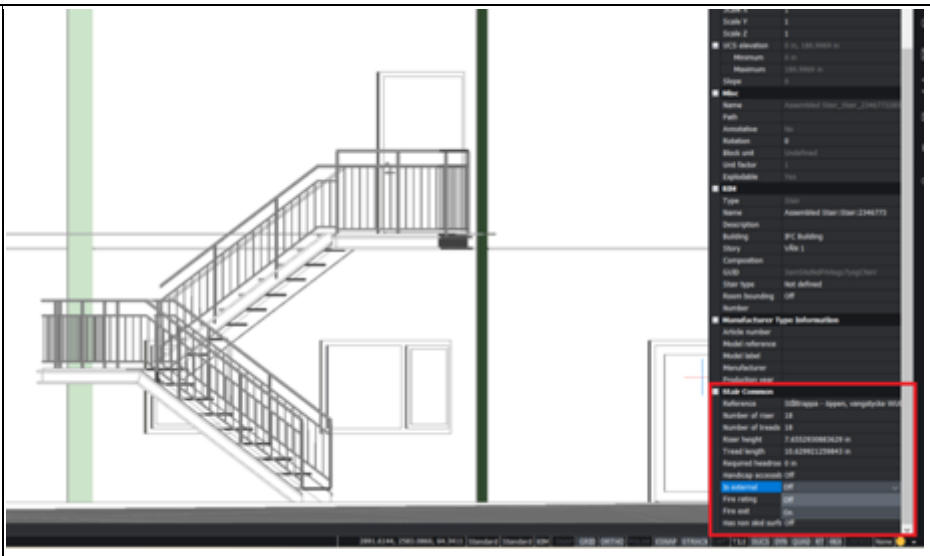
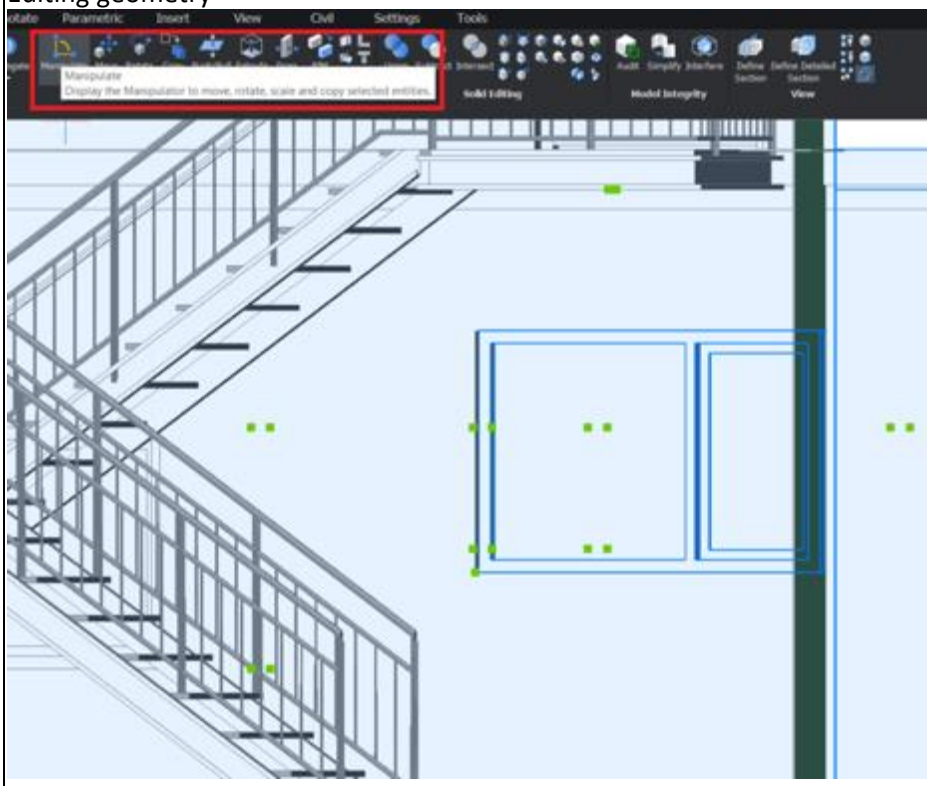
BricsCAD Ultimate

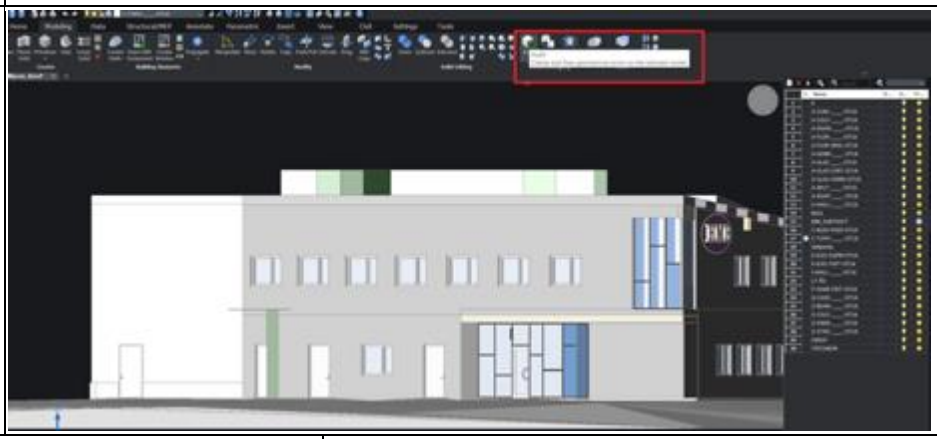
Software	Software Name [version]	**BricsCAD Ultimate [V20]**		Software house		**Bricsys**	
	Proprietary or open source software?			Kind of software			
	proprietary			CAD			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Lenovo Thinkpad P1 Gen 2 (2019)	Windows 10 Home 64-bit	Intel i7-9750H @ 2.60GHz	Nvidia Quadro T1000	16 GB	512 GB	107 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	2017-10-11	CV 2.0	certified in (date)	2016-10-14	CV2.0-Arch	

Test with Myran.ifc

Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	less than a minute
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	2.1.1) Where is the origin of the model coordinate reference system as imported in the software?	At the reference point (0, 0, 0)
	2.1.2) Attach screenshots	

	2.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	Local right-handed in inches
	2.1.4) Attach screenshots	See 2.1.2
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	3.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0
	3.1.2) Attach screenshots	See 2.1.2
	3.1.3) What is the height reference system?	Local in inches
	3.1.4) Attach screenshots	
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
Hierarchy	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
	7.2) short comments to the previous question (optional)	They're contained in the correct storeys at least
Attributes	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relations	9.1) Are the relationships between the objects retained?	Yes
Geometry	10.1) Is geometry read correctly?	Yes
Normals	11.1) Did the normals change?	No
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	No
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	Yes
	14.1.1) What editing is possible (attributes, geometry, georeferencing, please add details)?	You can edit attributes and geometry (scale, move, rotate)
	14.1.2) Attach screenshots	Editing attributes

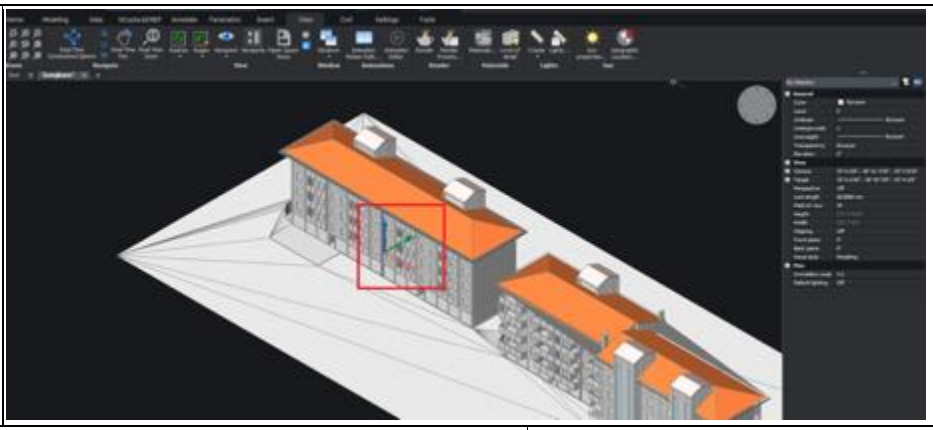
		 Editing geometry 
Query	15.1) Is it possible to query the model and the attributes?	No
Analysis	16.1) Is it possible to analyse the objects and the model?	Yes, analysis about the model validity and features (geometry, semantics, schema validity...) are possible (type 1)

	16.1.1) What analysis are possible? Do you know if the results are reliable?	You can check the integrity of the model
	16.1.2) Attach screenshots	
	16.1.3) Time required to perform the analysis about the model itself (type 1)	it crashes without completing the operation
	16.1.3) Time required to perform the analysis about the model performances (type2)	No analysis of type 2 are possible
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	17.2) short comments to the previous question (optional)	Apparently need a license for export
	18.1) Is it possible to choose the IFC model view definition (MVD) to be used when exporting the data?	No
	19) How long does it take for the data to be exported to IFC?	less than a minute
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	20 minutes-1 hour
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	the software does not allow this
Proporti ons	24.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	25.1) Is the eventual translation consistent with the IFC definitions?	Yes

Hierarchy	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
Attributes	27.1) Are the attributes present in the IFC entities retained and consistent?	Yes
Relati	28.1) Are the relationships between the objects retained?	Yes
Geometry Norma	29.1) Is geometry read correctly?	Yes
	30.1) Did the normals change?	No
2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	32.1) Is it possible to view the model in 2D?	Yes
Editing	33.1) Is it possible to edit the model (attributes, geometry, other)?	The answers are the same I gave during the test with Myran.ifc
Querying	34.1) Is it possible to query the model and the attributes?	The answers are the same I gave during the test with Myran.ifc
Analysis	35.1) Is it possible to analyse the objects and the model?	The answers are the same I gave during the test with Myran.ifc
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	36) How long does it take for the data to be exported to IFC?	it crashes without completing the operation

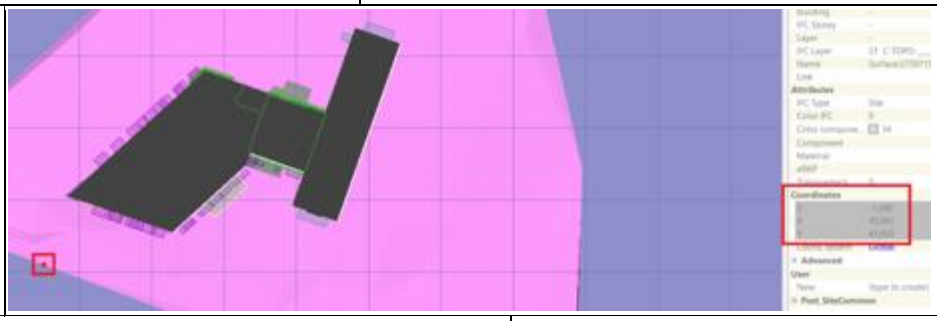
Test with Savigliano.ifc

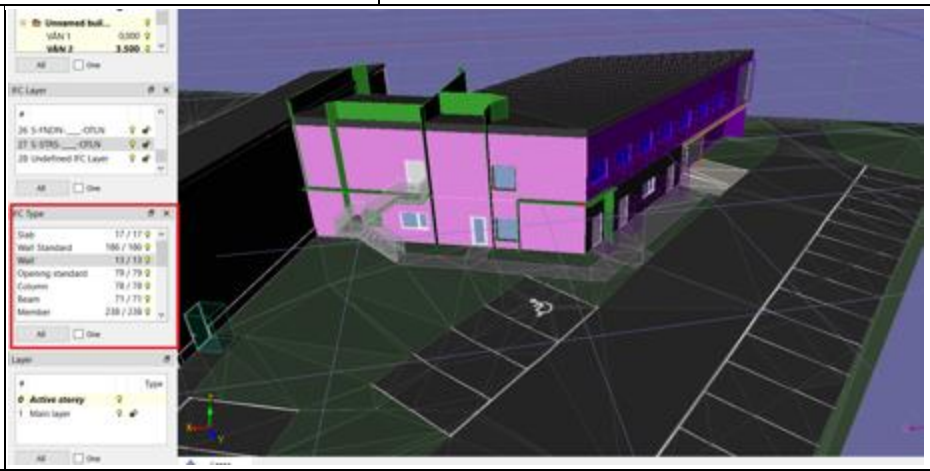
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	40.1.1) Where is the origin of the model coordinate reference system as imported in the software?	At the reference point

	40.1.2) Attach screenshots	
	40.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	Local right-handed in inches
	40.2) short comments to the previous question (optional)	Also see Myran screenshots
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
Height	41.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0
Height	41.1.3) What is the height reference system?	Also see Myran screenshots
Ori	42.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	43.1) Does the model maintain its correct dimensions and proportions?	Yes
IFC definitions	44.1) Is the eventual translation consistent with the IFC definitions?	Yes
Relations	47.1) Are the relationships between the objects retained?	Yes
Geometry Normals	48.1) Is geometry read correctly?	Yes
Geometry Normals	49.1) Did the normals change?	No
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
2D/3D	51.1) Is it possible to view the model in 2D?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
Export	55) How long does it take for the data to be exported to IFC?	less than a minute

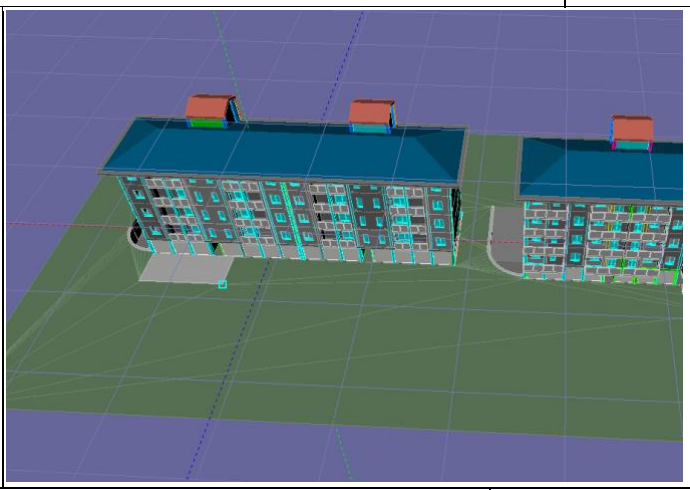
Lexocad

Software	Software Name [version]	**Lexocad [v26]**		Software house		**Cadwork**	
	Proprietary or open source software?			Kind of software			
	proprietary			CAD			
Computer	Model and year	Operating system	CPU	GPU	Memory (RAM)	Hard drive capacity	Hard drive free space
	Lenovo Thinkpad P1 Gen 2 (2019)	Windows 10 Home 64-bit	Intel i7-9750H @ 2.60GHz	Nvidia Quadro T1000	16 GB	512 GB	76 GB
Certification	IFC import certification status	Import certification date	Import certification program	IFC export certification status	Export certification date	Export certification program	
	certified in (date)	2016-10-04	CV 2.0	certification in progress		CV2.0-Arch	

Test with Myran.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate
	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferencing	2.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	2.1.1) Where is the origin of the model coordinate reference system as imported in the software?	It's not possible to see the origin, because I can only see coordinates of objects. However, it seems to be at the reference point.
	2.1.2) Attach screenshots	
	2.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	Local, in metres

	2.1.4) Attach screenshots	See 2.1.2
	2.2) short comments to the previous question (optional)	In the settings of the software it is indicated that unit of measurement is metres
Height	3.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	3.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	Can't check it, but it's probably 0
	3.1.3) What is the height reference system?	Local
Orientation	4.1) Is the model oriented correctly with respect to the true North?	Yes
Proportions	5.1) Does the model maintain its correct dimensions and proportions?	Yes
Semantics	6.1) Is the eventual translation consistent with the IFC definitions?	Yes
	7.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
	8.1) Are the attributes present in the IFC entities retained and consistent?	Yes
	9.1) Are the relationships between the objects retained?	Yes
Geometry	10.1) Is geometry read correctly?	Yes
	11.1) Did the normals change?	No
2D/3D	12.1) Is it possible to view the model in 3D?	Yes
	13.1) Is it possible to view the model in 2D?	No
Editing	14.1) Is it possible to edit the model (attributes, geometry, other)?	No
Querying	15.1) Is it possible to query the model and the attributes?	Yes
	15.1.1) What kinds of query are possible?	Only on object type
	15.1.2) Attach screenshots	
Analysis	16.1) Is it possible to analyse the objects and the model?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2

	17.2) short comments to the previous question (optional)	Apparently need a license for export
Test with UpTown.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	5-20 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	less than a minute
	How long does it take, approximately, to:Pan the model	less than a minute
	How long does it take, approximately, to:Rotate the model	1-5 minutes
	How long does it take, approximately, to:Query an object	less than a minute
	How long does it take, approximately, to:Inspect the objects linked to the queried one (Element 3) through a relationship	less than a minute
Proportions	24.1) Does the model maintain its correct dimensions and proportions?	Yes
Semantics	25.1) Is the eventual translation consistent with the IFC definitions?	Yes
	26.1) Are the hierarchical relationships consistent with the IFC hierarchy?	Yes
	27.1) Are the attributes present in the IFC entities retained and consistent?	Yes
	28.1) Are the relationships between the objects retained?	Yes
Geometry Norm	29.1) Is geometry read correctly?	Yes
	30.1) Did the normals change?	No
2D/3D	31.1) Is it possible to view the model in 3D?	Yes
	32.1) Is it possible to view the model in 2D?	Yes
Editing	33.1) Is it possible to edit the model (attributes, geometry, other)?	The answers are the same I gave during the test with Myran.ifc
Querying	34.1) Is it possible to query the model and the attributes?	The answers are the same I gave during the test with Myran.ifc
Analysis	35.1) Is it possible to analyse the objects and the model?	The answers are the same I gave during the test with Myran.ifc
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software cannot export to IFC, therefore skip the phase 2
	36) How long does it take for the data to be exported to IFC?	20 minutes-1 hour
Test with Savigliano.ifc		
Performance	How long does it take, approximately, to:Import (and visualise if the software allows it) the model	1-5 minutes
	How long does it take, approximately, to:Zoom into the model to see more detail	it's almost immediate
	How long does it take, approximately, to:Pan the model	it's almost immediate

	How long does it take, approximately, to:Rotate the model	it's almost immediate
	How long does it take, approximately, to:Query an object	it's almost immediate
	How long does it take, approximately, to:Inspect the objects linked to the queried one through a relationship	the software does not allow this
Georeferencing	40.1) Are the world (projected) coordinates taken into account when locating the model in the software's coordinate reference system?	No
	40.1.1) Where is the origin of the model coordinate reference system as imported in the software?	At the reference point
	40.1.2) Attach screenshots	
	40.1.3) What is the coordinate reference system and projection and what unit of measure is used for the representation?	Local in metres
	40.2) short comments to the previous question (optional)	Screenshot would be similar to the one for Myran
Height	41.1) Are the "real-world" elevation values (heights) considered when locating the model in the software (z)?	No
	41.1.1) What is the elevation value of the origin of the model coordinate reference system as imported in the software?	0
	41.1.3) What is the height reference system?	Screenshot would be similar to the one for Myran
Orientation	42.1) Is the model oriented correctly with respect to the true North?	Yes
Pr d	43.1) Does the model maintain its correct dimensions and proportions?	Yes
IF C d	44.1) Is the eventual translation consistent with the IFC definitions?	Yes
R el ati	47.1) Are the relationships between the objects retained?	Yes
Geometry Norm	48.1) Is geometry read correctly?	Yes
	49.1) Did the normals change?	No
2D/3D	50.1) Is it possible to view the model in 3D?	Yes
	51.1) Is it possible to view the model in 2D?	No
Export	You arrived at the end of the phase 1: "Import and manage the file in the software".Now choose:	The software has also export abilities to IFC
	55) How long does it take for the data to be exported to IFC?	less than a minute

Lexocad v26 – Windows 10 Home

Proprietary

CAD

1 - Very beginner user (it is nearly the first time you use it)