

6) Attach other screenshots or files that you consider useful

1. Visualizations in BIMVision (before conversion)

IFCGeometries – Dataset

IFC 2X3

- ▶ Multiple geometries types: simple, complex and composite
- ▶ Small dataset size
- ▶ Better understanding of software's capability of handling different geometry types

Figure 1.4.2 (a)

(b)

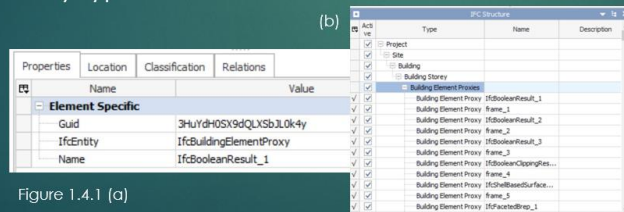


Figure 1.4.1 (a)

Visualizations: BIMVision

2. Conversion through FME Quick Translator

a. Visualization in FME Data Inspector and FZK Viewer

IFCGeometries – Experiment

IFC 2X3 to CityGML

- ▶ Complex geometries aren't transformed
- ▶ IFC reader in FME Quick Translator doesn't support all geometries
- ▶ All elements are translated as *GenericCityObject*

Figure 2.4.3

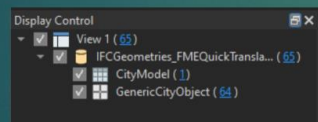


Figure 2.4.1

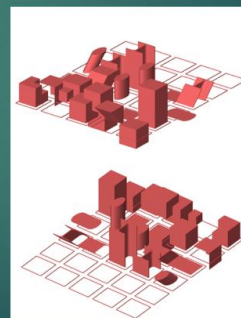
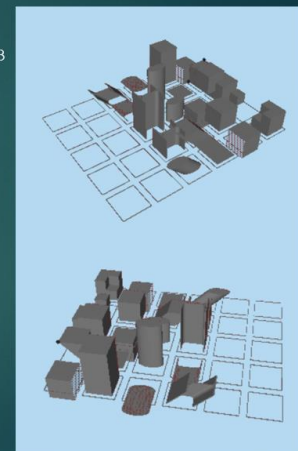


Figure 2.4.2



Visualizations: FME Data Inspector and FZKViewer (Red geometries)
Conversion tool: FME Quick translator

IFCGeometries – Experiment (contd.)

IFC 2X3 to CityGML

- ▶ *IfcRevolvedAreaSolid*, *IfcSweptDiskSolid* and *IfcExtrudedAreaSolid* weren't transformed
- ▶ Geometry normal are rendered differently across softwares
- ▶ Height of the transformed geometries are changed Fig 2.4.4

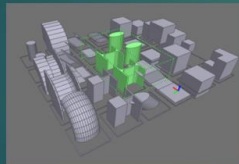
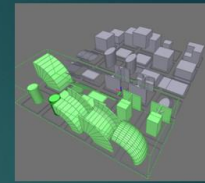


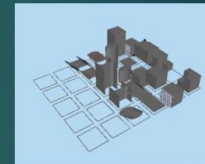
Figure 2.4.4

✓	✓	Building Element Proxy	IfcExtrudedAreaSolid...
✓	✓	Building Element Proxy	frame_21
✓	✓	Building Element Proxy	IfcExtrudedAreaSolid...
✓	✓	Building Element Proxy	frame_22
✓	✓	Building Element Proxy	IfcExtrudedAreaSolid...
✓	✓	Building Element Proxy	frame_23
✓	✓	Building Element Proxy	IfcExtrudedAreaSolid...
✓	✓	Building Element Proxy	frame_24
✓	✓	Building Element Proxy	IfcRevolvedAreaSolid_1
✓	✓	Building Element Proxy	frame_25
✓	✓	Building Element Proxy	IfcRevolvedAreaSolid_2
✓	✓	Building Element Proxy	frame_26
✓	✓	Building Element Proxy	IfcRevolvedAreaSolid_3
✓	✓	Building Element Proxy	frame_27
✓	✓	Building Element Proxy	IfcRevolvedAreaSolid_4
✓	✓	Building Element Proxy	frame_28
✓	✓	Building Element Proxy	IfcSweptDiskSolid_1
✓	✓	Building Element Proxy	frame_29
✓	✓	Building Element Proxy	IfcSweptDiskSolid_2
✓	✓	Building Element Proxy	frame_30

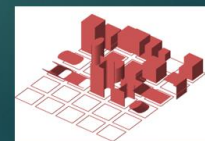
Figure 2.4.5



(a)
Figure 2.4.6



(b)



(c)

Visualizations: BIM Vision, FME Data Inspector and FZKViewer
Conversion tool: FME Quick Translator

b. Translation Errors (logs from FME Quick Translator)

```
Predefined coordinate system 'NonEarth_Meter' () matches dataset coordinate system.
The IFC reader does not support the following type: 'IfcRevolvedAreaSolid'. All instances of this type will be skipped
The IFC reader does not support the following type: 'IfcSweptDiskSolid'. All instances of this type will be skipped
IFC: 64 objects read
FME Configuration: Source coordinate system for reader IFC[IFC] set to 'NonEarth_Meter' as read from input data
Coordinate System: 'NonEarth_Meter' parameters: CS_NAME='NonEarth_Meter' PROJ='NORTH' QUAD='1' UNIT='METER'
FME Configuration: Destination coordinate system set to input coordinate system 'NonEarth_Meter'
Emptying factory pipeline
CityGML Writer: Unable to convert the coordinate system 'NonEarth_Meter' to an EPSG code. No coordinate system will be set on this feature's geometry.
Error encountered while copying traits to generated solids. Some solid components may be missing traits, appearances, measures or attributes
CityGMLWriter: - registered 51 messages of type: CityGML Writer: Unable to convert the coordinate system 'NonEarth_Meter' to an EPSG code. No coordinate system will be set on this feature's geometry.

=====
Features Read Summary
=====
```

c. Discussion

IFC reader if FME Quick Translator doesn't support all geometries and thus complex geometries, like *IfcRevolvedAreaSolid*, *IfcSweptDiskSolid* and *IfcExtrudedAreaSolid* were not transformed. They are selected in Figure 2.4.5 and highlighted in Figure 2.4.6 (a). This show that geometrical interpretation of software still have room for improvement in reading as well as converting complex geometries.

In Figure 2.4.6 (b) and (c), we see difference of geometry rendering across software, FME Data Inspector and FZK Viewer, respectively. It is also to be noted that converted geometries in the center of area (third and fourth row) has different height compared with original highlighted in Figure 2.4.4. Thus during the conversion process the actual dimension of the geometry were not transformed in their correct measurements.