

1. Visualizations in BIMVision (before conversion)

UpTown – Dataset

- ▶ LOD 300 enriched dataset
- ▶ Detailed geometrical information results in slow performance
- ▶ Figure 1.3.1 showing element's hierarchy and properties while Figure 1.3.2 detailed 3D structure

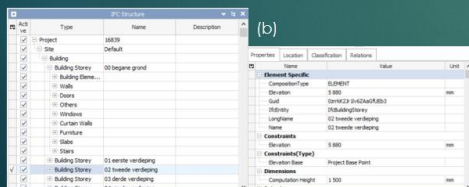


Figure 1.3.1 (a)

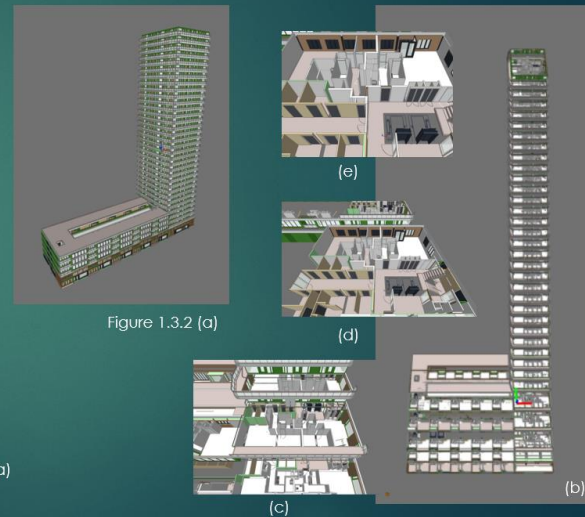


Figure 1.3.2 (a)

(d)

(c)

Visualizations: BIMVision

2. Conversion through FME Quick Translator

a. Visualization in FME Data Inspector

UpTown – Experiment

IFC to CityGML

- ▶ Geometry visualization issues
- ▶ Many features aren't transformed, specifically interiors
- ▶ Solid geometries weren't processed

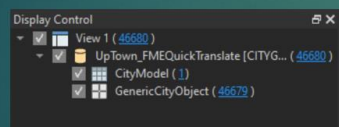


Figure 2.3.1

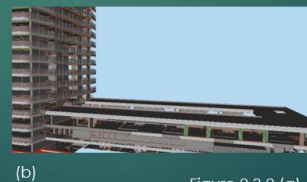
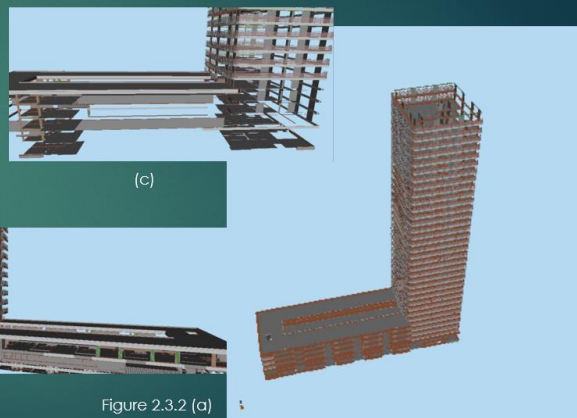


Figure 2.3.2 (a)



(c)

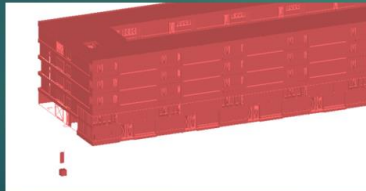
Visualizations: FME Data Inspector
Conversion tool: FME Quick Translator

b. Visualization in FZK Viewer

UpTown – Experiment (contd.)

IFC to CityGML

- ▶ More geometries are rendered compared to FME Data Inspector
- ▶ Software gets unresponsive towards retrieving detail geometrical information

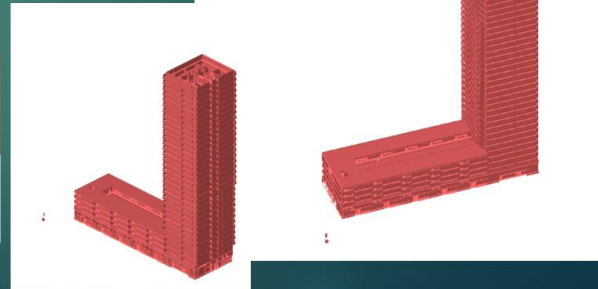


(b)

(c)



(d)



Visualizations: FZKViewer
Conversion tool: FME Quick Translator

Figure 2.3.3 (a)

c. Translation Errors (logs from FME Quick Translator)

```
Emptying factory pipeline
CityGML Writer: Unable to convert the coordinate system 'IFC_COORDSYS_0' to an EPSG code. No coordinate system will be set on this feature's geometry.
Processing on a solid has failed. The solid may be too complex, not closed, or not orientable.
... Last line repeated 4 times ...
Error encountered while copying traits to generated solids. Some solid components may be missing traits, appearances, measures or attributes
... Last line repeated 2 times ...
Processing on a solid has failed. The solid may be too complex, not closed, or not orientable.
... Last line repeated 5 times ...
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
Logging limit reached for the preceding message. Further instances of this message will not be logged
Processing on a solid has failed. The solid may be too complex, not closed, or not orientable.
... Last line repeated 41 times ...
<CityGMLWriter> - registered 38414 messages of type: CityGML Writer: Unable to convert the coordinate system 'IFC_COORDSYS_0' to an EPSG code. No coordinate system will be set on this feature's geometry.
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Features Read Summary
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```

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Log
612 Errors 217 Warnings Information
22 The 'xml-enclosed-surface' geometry builder can only accept "surface" geometries, but the geometry given was:
23 ++++++
24 Feature Type: ''
25 Attribute(string): 'fme_geometry' has value 'fme_aggregate'
26 Attribute(string): 'fme_type' has value 'fme_solid'
27 Coordinate System: ''
28 Geometry Type: IFMEBRepSolid
29 Name(UTF-16LE): 'solidMember'
30 Number of Geometry Traits: 2
31 GeometryTrait(encoded: UTF-16LE): 'citygml_lod_name' has value 'solidMember'
32 GeometryTrait(encoded: UTF-16LE): 'gml_geometry' has value 'Solid'
33 Front Appearance Reference: '<inherited_or_default_appearance>'
34 Back Appearance Reference: '<inherited_or_default_appearance>'
35 Outer Surface:
36 Geometry Type: IFMECompositeSurface
Log Table View
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FME Configuration: Destination coordinate system set to input coordinate system 'IFC_COORDSYS_0'
No matching transformation specification found for feature:
+++++
Feature Type: 'IfcTypeObject'
Attribute(encoded: UTF-8)      : 'GlobalId' has value 'lpIIKdb6LBPOhDGYwgWkNf'
Attribute(encoded: UTF-8)      : 'Name' has value 'nulpunt'
Attribute(encoded: UTF-8)      : 'PredefinedType' has value 'NOTDEFINED'
Attribute(encoded: UTF-8)      : 'Tag' has value '463952'
Attribute(string)              : 'fme_geometry' has value 'fme_aggregate'
Attribute(string)              : 'fme_type' has value 'fme_collection'
Attribute(64 bit unsigned integer): 'ifc_instance_name' has value '18664'
Attribute(string)              : 'ifc_type' has value 'ifc_collection'
Attribute(string)              : 'ifc_type_name' has value 'IfcBuildingElementProxyType'
Attribute(encoded: UTF-8)      : 'ifc_unique_id' has value 'lpIIKdb6LBPOhDGYwgWkNf_18664'
Coordinate System: 'IFC_COORDSYS_0'
Geometry Type: IFMEAggregate
Name(UTF-8): 'IfcBuildingElementProxyType'
Front Appearance Reference: '<inherited_or_default_appearance>'
Back Appearance Reference: '<inherited_or_default_appearance>'
Number of Geometries: 2
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d. Discussion

FZK software gets unresponsive (very often crashes) while skewing or zooming the converted UpTown CityGML file. It can be interpreted that same transformed dataset is visualized differently across the software Figure 2.3.2 and 2.3.3, that support CityGML dataset. Also, FME Quick Translator is more oriented towards geometrical transformation and less semantic details, no hierarchy is kept for the elements and all object are transformed as *GenericCityObject*, Figure 2.3.1. Translation errors states that FME doesn't support all geometries and feature types transformations.