6) Attach other screenshots or files that you consider useful

1. Visualizations in BIMVision (before conversion)

Myran – Dataset
IFC

- Detailed geometric and semantic information
- LOD 300 with building interior
- Architectural model of BIM

Figure 1.1.1

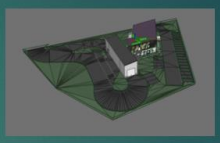
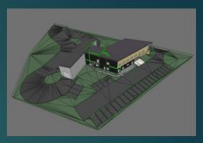
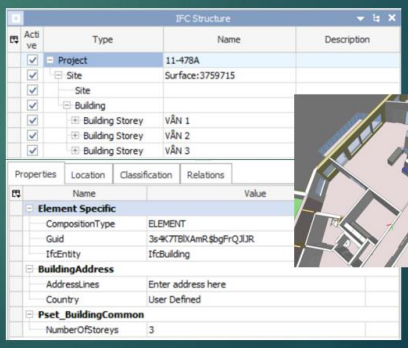


Figure 1.1.2 (a)



(b)



(c)

Figure 1.1.3

Visualizations: BIMVision

a. *Data Issues*

Myran – Dataset Issues
IFC

- Roof of first floor is attached with second floor and vice versa
- Third story building elements are only roof structure (Beams and Plumbing)
- Analysis on second and third storey requires explicit hitch

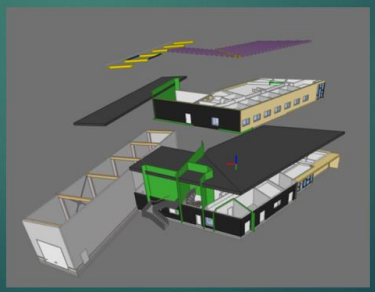
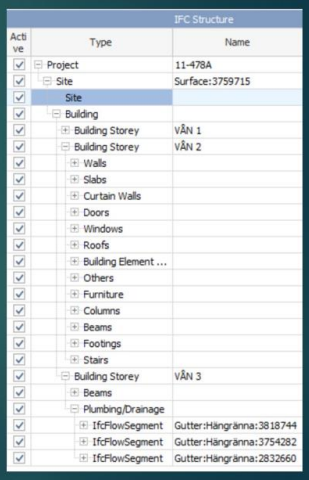


Figure 1.1.4

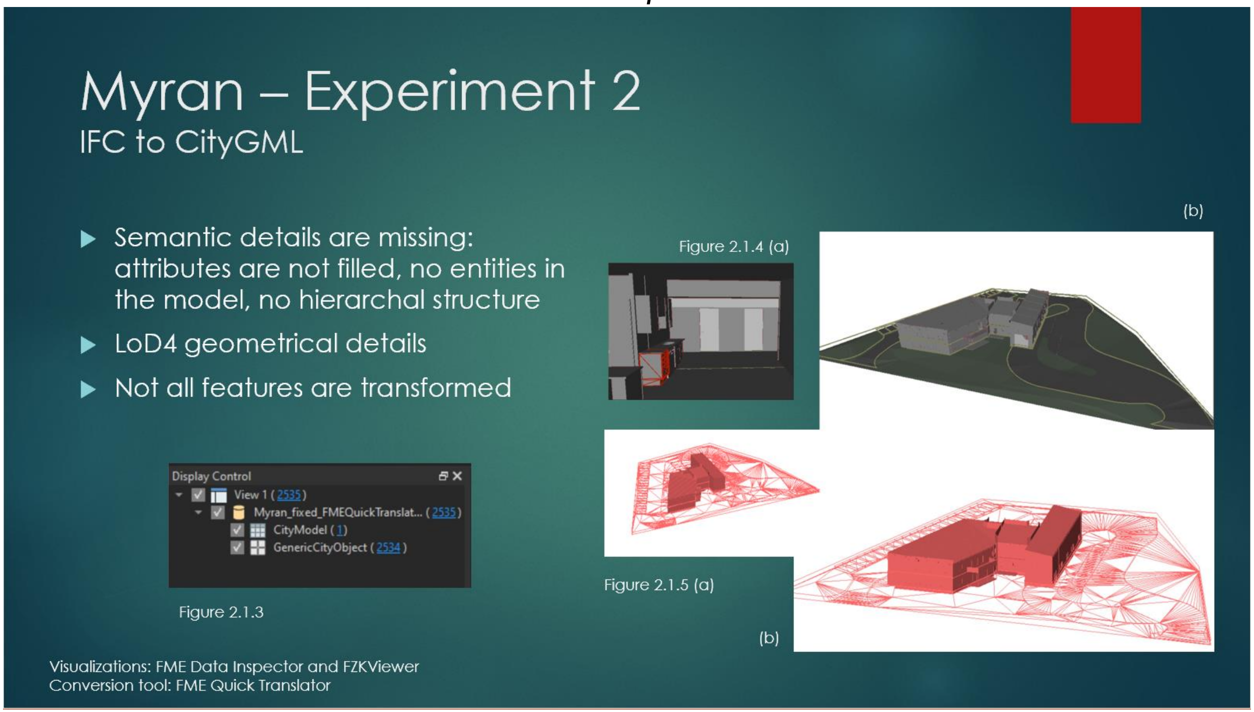
Figure 1.1.5



Visualizations: BIMVision

2. Conversion through FME Quick Translator

a. Visualization in FME Data Inspector and FZK Viewer



b. Translation Errors (logs from FME Quick Translator)

```
Reading source feature # 2500
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.
Error encountered while copying traits to generated solids. Some solid components may be missing traits, appearances, measures or attributes
... Last line repeated 4 times ...
Logging limit reached for the preceding message. Further instances of this message will not be logged
<CityGMLWriter> -  registered 1888 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.
=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-=-
                         Features Read Summary
```

```
No matching transformation specification found for feature:
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Feature Type: `IfcTypeObject'
Attribute(encoded: UTF-8)         : `ConstructionType' has value `NOTDEFINED'
Attribute(encoded: UTF-8)         : `GlobalId' has value `1J_hyp6oDEIglkvBpTDwSI'
Attribute(encoded: UTF-8)         : `Name' has value `D10-01'
Attribute(encoded: UTF-8)         : `OperationType' has value `NOTDEFINED'
Attribute(boolean)                : `ParameterTakesPrecedence' has value `No'
Attribute(boolean)                : `Sizeable' has value `No'
Attribute(encoded: UTF-8)         : `Tag' has value `2153616'
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 `10048'
Attribute(string)                 : `ifc_type' has value `ifc_collection'
Attribute(string)                 : `ifc_type_name' has value `IfcDoorStyle'
Attribute(encoded: UTF-8)         : `ifc_unique_id' has value `1J_hyp6oDEIglkvBpTDwSI_10048'
Coordinate System: `IFC_COORDSYS_0'
Geometry Type: IFMEAggregate
Name(UTF-8): `IfcDoorStyle'
Front Appearance Reference: `<inherited_or_default_appearance>'
Back Appearance Reference: `<inherited_or_default_appearance>'
Number of Geometries: 2
--------------------------------------
Geometry Number: 0
```

c. Discussion

Transformation process transforms many features but not all objects are transformed, as shown in translation log. However, the transformed geometries have detail of LoD4 for CityGML as in Figure 2.1.4 (a). There is lack of semantics in terms of hierarchy, filling attributes and entity types, Figure 2.1.3. Reverse conversion from converted file, i.e. Myran CityGML, to IFC for this experiment is also not possible as there no hierarchy or semantics kept in translated file.

Issues with given dataset are also observed in section 6.1 (a). Figure 1.1.4 and 1.1.5, respectively, shows that building elements with correct semantics have incorrect relation in representation and hierarchy. This results to difficult analysis of the data as further modifications are required for correct study. Furthermore, few building elements are considered as separate and thus placed in different storey level. These issues highlights the fact that data from architectural perspective is also inconsistent and larger dataset would’ve similar issues but hard to track because of size. Automation or customized methodology is required for such data validation at large scale.