

Description and usage - SGP 3.0 Solid LOD1/2

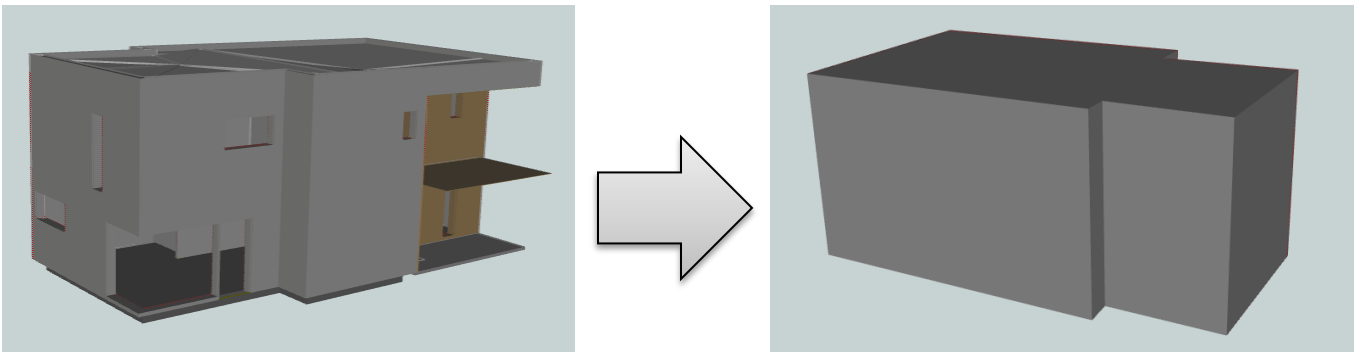
This document describes the use of the script converting a BIM (building information model) in IFC format to SGP 3.0(Svensk Geoprocess) in the GitHub repository *Testbed_BIM_GIS*. The scripts are developed in the software FME (Feature Manipulation Engine) version 2017.1.

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History

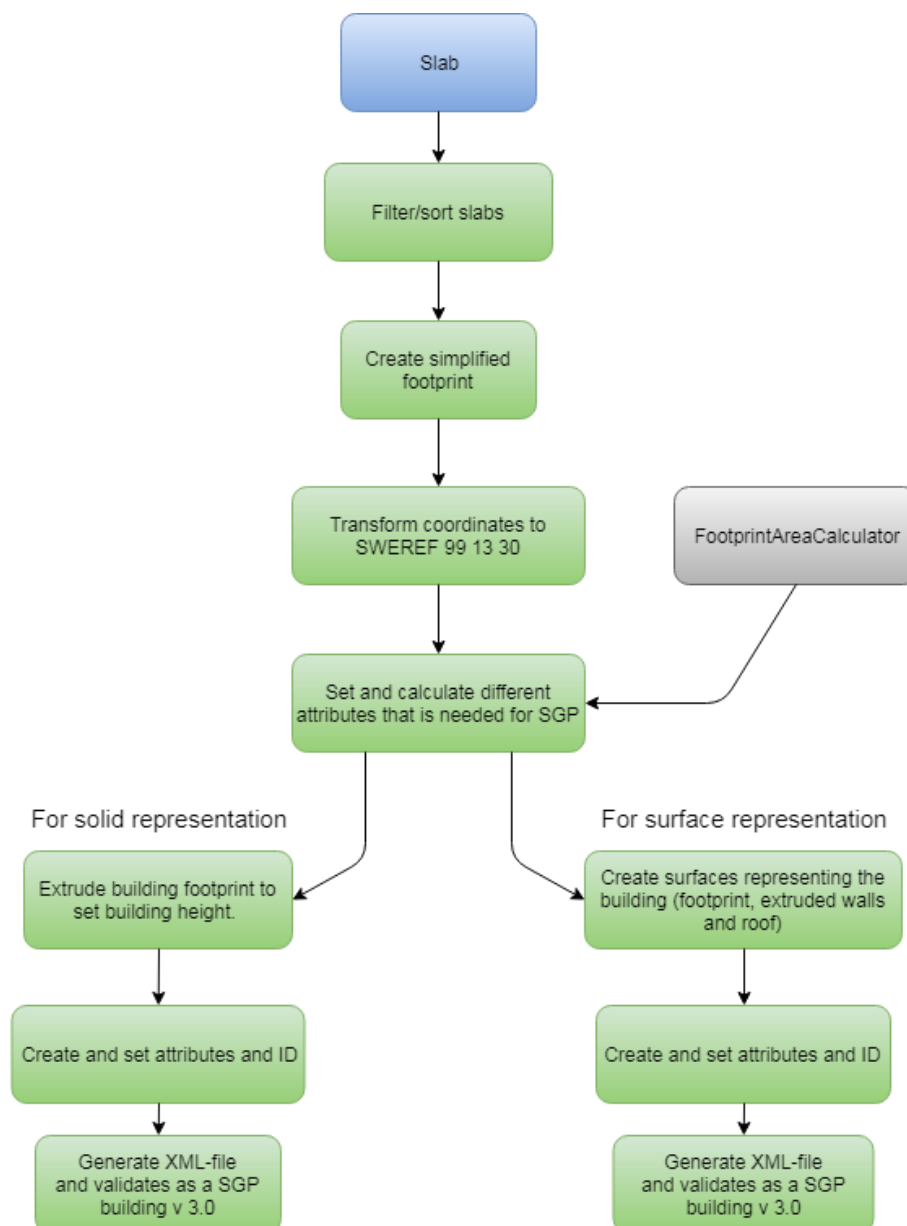
| Version | Date | Comments | Person |
|---------|-----------|--|-------------------|
| 1.0 | 2018-07-4 | First version of this document that describes the script | Josefine Axelsson |
| | | | |
| | | | |

Convert a BIM in IFC to SGP 3.0 Solid LOD1/2

The difference between a LOD 1 and a LOD2 solid of the test model *KTHDemohouse* are attributes set in the transformer *XMLTemplater_4*. Due *KTHDemohouse* flat roof, there is no visual difference between LOD1 and LOD2.

Description

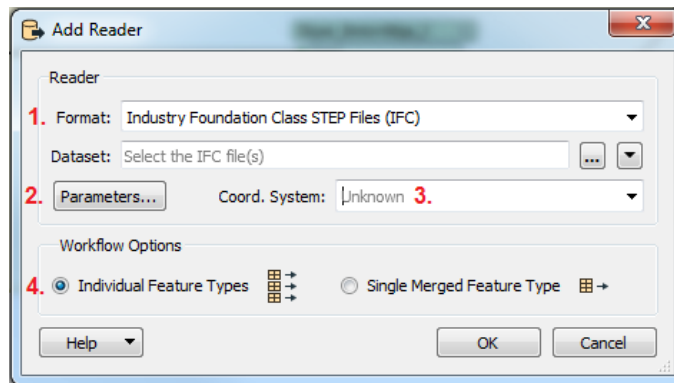
This script converts a BIM to SGP 3.0 LOD 1. From the footprint of the bottom floor a solid is created by extruding the area to the building height. The custom transformer *FootprintAreaCalculator* calculates the area and the area is stored in the SGP/XML file as an attribute.



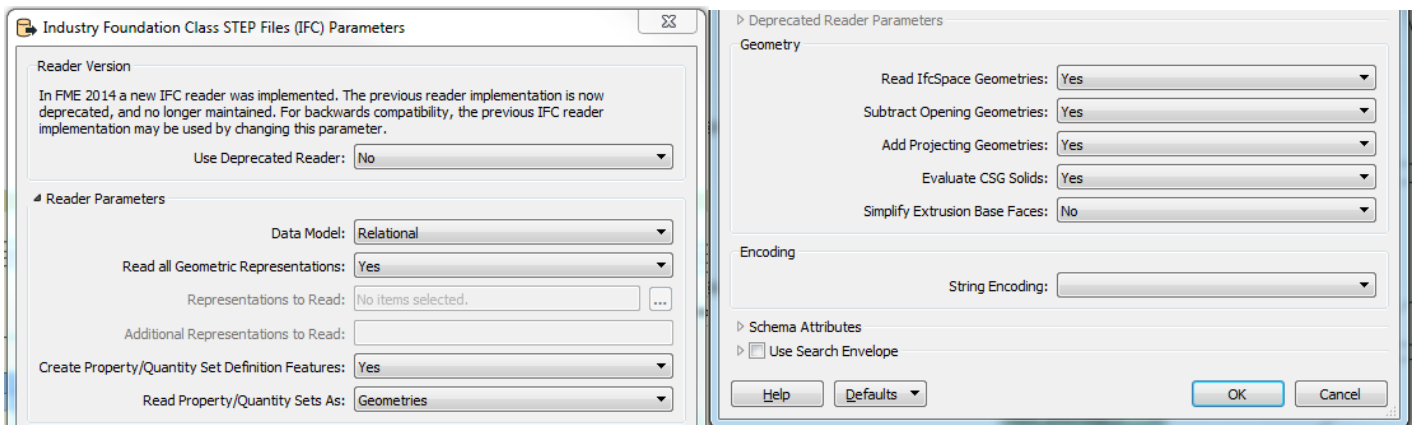
StoreyIndexFinder

Find/sort *IfcSlab* objects based on the building storey.

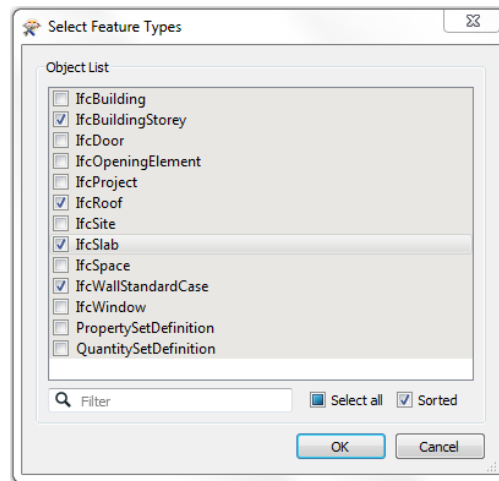
Usage



1. The IFC model is read to the program with a *Reader* choosing the file format *Industry Foundation Class STEP Files (IFC)*.
2. Reader parameters are chosen as the shown in figure below.

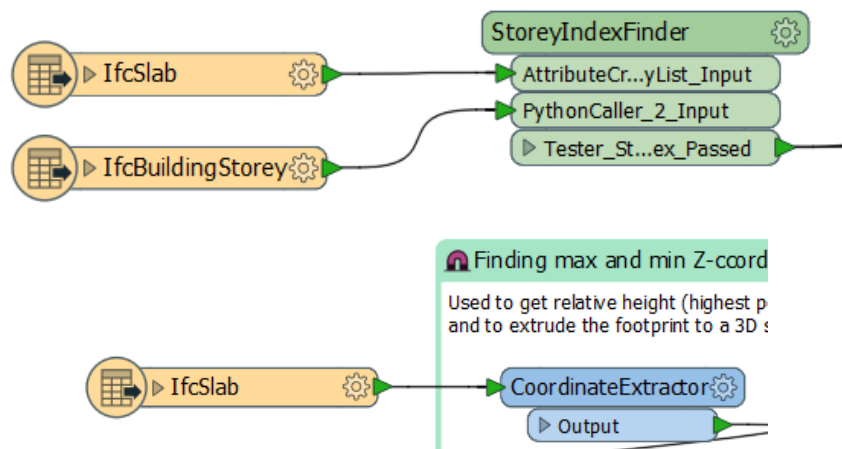


3. Coordinate system is not needed to be set.
4. To be able to handle different element *Individual Feature Types* is chosen.
5. Chose elements/features. Elements *IfcSlab*, *IfcBuildingStorey* and elements representing walls and (if existing) roof element.



Connecting element and transformers

IfcSlab and *IfcBuildingStorey* are connected to *StoreyIndexFinder*. *IfcSlab* is also connected to a *CoordinateExtractor*.



IfcSlab and *IfcBuildingstorey* are also connected to *FootprintAreaCalculator*. To calculate the footprint area wall elements are needed (*IfcWall/IfcStandardWallCase*) and if the model contains a roof element *IfcRoof* is connected as well (connections to *FootprintAreaCalculator* is described in Description and usage – Building footprint area).

Parameters

To be able to create a valid SGP v3.0 building some parameters is required. Public parameters that are compulsory and is set manually (from Lantmäteriet):

- uttagDatum
- namnDatamängd
- dimension
- koordinatsystemPlan
- koordinatsystemPlanIdentifier

The parameters can be set in the main script in the navigation tree under *User Parameters > Published Parameters*.

- Published Parameters (22)
 - [uttagDatum] Välj datum för uttag av datamängd ur lager : 20180702100300
 - [DestDataset_TEXTLINE] Destination Text File : C:\Users\JOSEFI~1\AppData\Local\Temp\wb_template
 - [namnDatamängd] Skriv in namn på datamängd : KTH demo
 - [dimension] Välj dimension : 3
 - [koordinatsystemPlan] Välj koordinatsystem i plan : EPSG:3008
 - [koordinatsystemPlanIdentifier] Välj identifier för koordinatsystem i plan : urn:ogc:def:crs:EPSG::3008
 - [byggnadNamn]: KTH demo
 - [byggnadAndamal]: verksamhet
 - [status]: planerad
 - [byggnadNummer]: 201
 - [bygglovAtgardTyp]: nybyggnad
 - [bygglovStatusTyp]: slutbesked
 - [atgardAr_bygglovstatus]: 2016-05-01T14:07:00+00:00
 - [beslutsdatum_bygglovStatus]: 2016-05-01T14:07:00+00:00
 - [decimalPlaces] Decimal Places : 2
 - [ofriGrund]: false
 - [id_datamangd_versionId]: 1
 - [id_byggnad_versionId]: 1
 - [coClassID]: 1HeRFbeBDBIuMgfcpc1nk_
 - [coClassKod]: BV
 - [SourceDataset_IFC] Source Industry Foundation Class (IFC) File(s) : C:\Users\JOSEFI~1\AppData\Local
 - [planlagetyp]: fasad

Links attributes from input data to Svensk geoprocess attributes. Details about the Svensk geoprocess attributes are included in the UML Model for Building:

ftp://ftp.lantmateriet.se/pub/svensk_geoprocess/UML-modell/SvenskGeoprocess_HTML_modell/index.htm

Building heights are hard coded in this version since the ground elevation is not known with high accuracy. The height attributes is set in transformer *AttributeCreator_BuildingHeight*.