Conversion x to City**GRID**® workspaces

This short overview is intended as introduction into some FME workflows in combination with City**GRID**®. Besides an active FME license (currently we support FME 2018 and higher) you will need some form of licensing of City**GRID**® in order for the workflows to work. For different licensing options please contact office@uvmsystems.com. If you encounter problems with the workflows please contact support@uvmsystems.com.

Currently it is possible to convert the following formats to City**GRID**® with the help of FME

- CityGML
- Collada
- DWG
- Shapefiles/DGN

All of them have to be converted to City**GRID**® Surfaces with specific workspaces, explained below. Only then they can be processed with the Workspace **CGSurface2CGLines** as a last step befor you will be able to use the full functionality of the City**GRID**® tools on your data.

CityGML2CGSurface

Since CityGML models are in opposite to City**GRID**® facebased, it is first necessary to use this workspace to convert the CityGML structure into a structure City**GRID**® can read.

input data	Building models in CityGML
Result data	City**GRID**® faces of the building models

Actions:
Execute the FME workspace "CityGML2CGSurface"

Published parameters:

Universal translator	Batchfle	Description
Sheetline Cell	--BlattNr	Optional parameter to define the cell to be processed
InputCityGML File(s)	--S_CITYGML	Directory with sourcedata
OutputCityGRID	--D_CITYGRD	Directory of the output data
Building Generation Method	--p_UnitUsage	- Extruded footprint - Automatic Building Modeling. - Photogrammetric Restitution Describes how input data was generated.
Log File	LOG_FILE	Directory of the FME Logfile
Keep Groundsurfaces	p_keep_groundsurface	Yes/No, Default Yes

Collada2CG

To convert collada files to City**GRID**® correctly, there are three workspaces to use.

01 DAE2CGSurface

This workspace reads in dae files and generates an independent unit from the content of each file, which has the dae file name as UnitID.

The model name can be determined by the user.

input data	One or many Collada Files .dae
Result data	City**GRID**® surface data

Actions: Execute the workspace "01 DAE2CGSurface"

Published parameters:

Universal translator	Batchfile	Description
Source COLLADA File(s)	--S_Dataset_COLLADA	COLLADA source data file(s). The City**GRID**® unit id will be generated from the file name
Destination CityGRID file	--DestDataset_CITYGRID	Directory of the output data
Modellname	--p_ModelName	Model name to be set by the user
Log File	--LOG_FILE	Directory of the Logfile

02 Create Elements

This workspace analyses the City**GRID**® Surfaces from the previous workspace and differentiates the faces into facades and roofs based on the gradient of the face normal. If it is > 88° the face will be declared a façade, below it will be declared a roof.

input data	City**GRID**® surface data
Result data	City**GRID**® surface data with differentiation

Actions: Execute the workspace "02 Create Elements"

Published parameters:

Universal translator	Batchfile	Description
Input CityGRID	`--S_CityGRID`	The City**GRID**® file from the previous workspace
Output CityGRID	`--D_CITYGRID`	Directory of the output data
Log File	`--LOG_FILE`	Directory of the Logfile

DWG2CGSurface

This workspace reads in dae files and generates an independent unit from the content of each file, which has the dae file name as UnitID.

The model name can be determined by the user.

input data	Dwg/dxf file
Result data	City**GRID**® surface data

Actions: Execute the workspace "DWG2CGSurface"

Published parameters:

Universal translator	Batchfile	Description
Source Autodesk AutoCAD DWG/DXF File(s)	`--SourceDataset_ACAD_3`	COLLADA source data file(s). The City**GRID**® unit id will be generated from the file name
Destination CityGRID file	`--DestDataset_CITYGRID`	Directory of the output data
Source Autodesk AutoCAD DWG/DXF File(s)	`--DestDataset_ACAD`	Layers that are not used for conversion nto City**GRID**® wll be written out as dwg/dxf agan. With ths parameter specify the location of the unused features file

Polygon2CGSurface

This workspace allows conversion from Esri shapefiles, Bently DGN files or Autodesk DWG/DXF to City**GRID**® surfaces. Only polygonfeatures can be processed, every other geometry would be written out into a Unused dxf/dwg file. Polygonfeatures will create City**GRID**® surfaces, but without semantics and logic. Further processing would be necessary

input data	Dwg/dxf file, shp file, dgn file
Result data	City**GRID**® surface data

Actions: Execute the workspace "Polygon2CGSurface"

Published parameters:

Universal translator	Batchfile	Description
Input roof polygons	`--S_Generic`	Input files wth polygons to convert, either shp, dxf/dwg or dgn
Input Format	`--p_Format`	Specify input format, select either shp, dxf/dwg, dgn
Output Citygrid Surface	`--D_CITYGRID`	Directory for Output City**GRID**® surface file
Output AcAD unused	`D_ACAD`	Directory for dwg/Dxf where unused geometry will be written out.
Log File	`LOG_FILE`	Directory for FME Log File

CGSurface2CGLines

This workspace is necessary in addition to mentioned workspaces above. Surface data (City**GRID**® surface objects) are transferred to the line-based data model of City**GRID**® whereby all roof surfaces that border on a common edge are converted into an element complex.

If an element complex lies completely within another, it is declared a detail element complex. The maximum permissible base area of the roof detail can be specified via a parameter in order to be declared a Level of Detail 3 object.

Otherwise, the element complex becomes the main element complex of an object in its own unit.

The common edges are included as compulsory edges if the adjacent surfaces enclose a significant angle.

input data	City**GRID**® surfaces created by the format specific workspaces
Result data	City**GRID**® lines of the building models

Published parameters:

Universal translator	Batchfile	Description
Tile number	`--p_Tile`	Optional parameter to define the tile to be processed
Input City**GRID**® Surface	`--S_CITYRID`	City**GRID**® Surface source data
Output City**GRID**® Lines	`--D_CITYGRID`	Directory of the output data
Max. Area LoD3	`--p_LoD3Area`	Sets the max. Area of the Elementcomplexes do be defined as LoD3 in m2. Everything above will be integrated into the parent element (LoD2) m2
Snapping Tolerance	`--p_snapping Tolerance`	Tolerance for snapping lines with open ends in meters. Default 0.05.
Unit Creation	`P_Unit_creation`	- **Based on Input Semantics** the units are created based on the Hierarchy of the Input. Use only, when sure, Hierarchy of Input is thoroughly valid - **Based on Input Unit Level** - Units are created from Input-Units - **Based on Input Element** Complex Level Every Input Element Complex generates a Unit - **Based on Input Face**s Every Element creates a Unit - **Preparation Roof Panels** –project related setting – do not use.
Snapping before merging	`p_Snapping before merging`	Yes/No, Default Yes. Always keep on Yes
Logfile	`LOG_FILE`	