VREVAL

Export models to FBX file via 3DsMax

From Revit views via 3DsMax to Unity and VREVAL

Edited by

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1. PREPARING 3D VIEWS IN REVIT

Goal

Within a VR evaluation study, the participant will move through a virtual environment.

One way to creating a virtual environment is to use a CAD software like Autodesk Revit.

In Revit an environment can be designed and displayed through different design options, level of details and phases.

The environment can be exported in partial models. In the virtual environment that gives the freedom of displaying only the elements and parts, which the participant should see for the task.

To work with partial models, it helps also to get better display performance for large model and experience. Mostly, not all the model has to be displayed very detailed, because the participant will not come as close to see elements in detail.
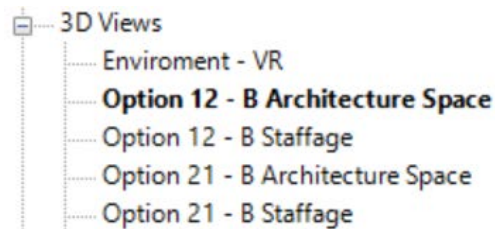
Step 1

To create a single or partial virtual environment, we use "what you see in the Revit 3D view, we export.

Hide all objects, which should not be visible in the virtual environment.

Objects should be only visible in one of the exported views. If they overlap, the surfaces will flicker and distract the participant.

Later, you can tag the views with the tags "urban", "architecture" or "scenery" at the VREVAL website.

Example: Naming 3D Views

```
⊟---- 3D Views
   └---- Enviroment - VR
         Option 12 - B Architecture Space
         Option 12 - B Staffage
         Option 21 - B Architecture Space
         Option 21 - B Staffage
```
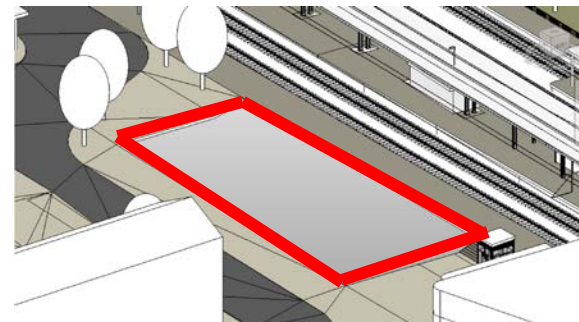
Step 2

Hide all Markers in any 3D views which will be exported.

The marker parameter (location of the marker, name, description, location of participant etc.) will be uploaded with a Dynamo script to the VREVAL Database.
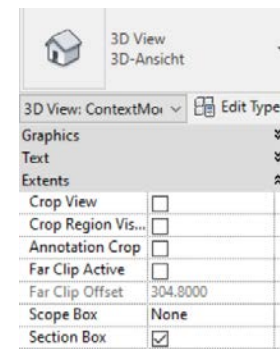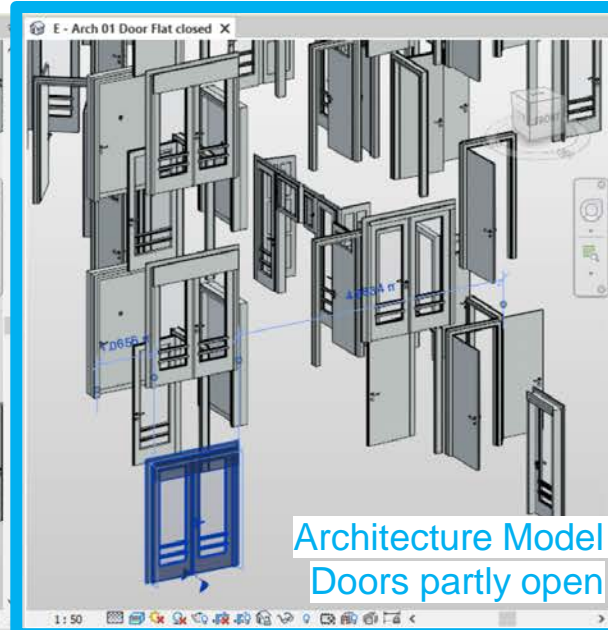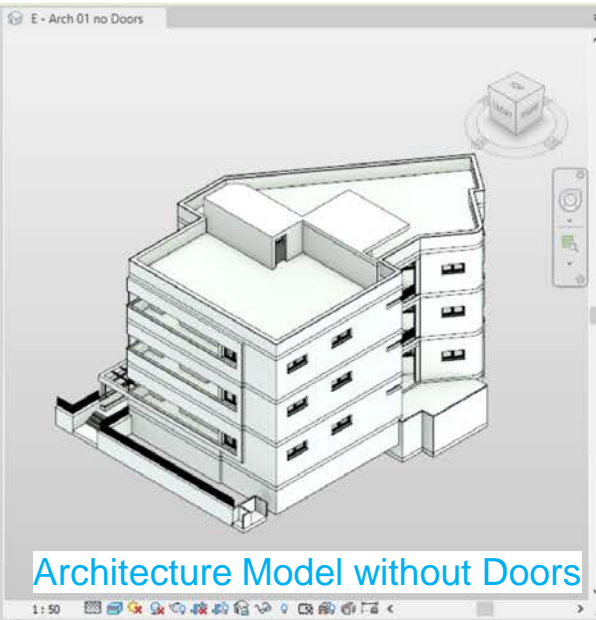
Options or Phases can help to organize different design variants. The advantage is, that specific options or phases can be chosen to be shown in selected views. Design options can be at the same location and participant can view from same location different design options if selected.
(e.g. door open or closed = two options)

Tip

To create a cut out in a toposurface, use the site tool **Split Surface**

Section Boxes can be used for defining the area of context model which will be exported. A huge context model can slow down the VR computer.

EXAMPLE: PREPARED 3D VIEWS FOR EXPORT

Architecture Model without Doors

Architecture Model all Doors open

Architecture Model Doors partly open

Doors are copied to different phases (align to same place). Doors are created in current phase and demolished in next phase.
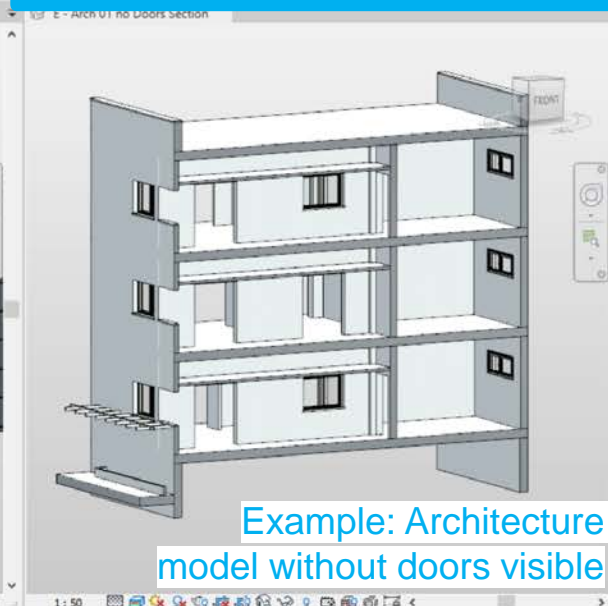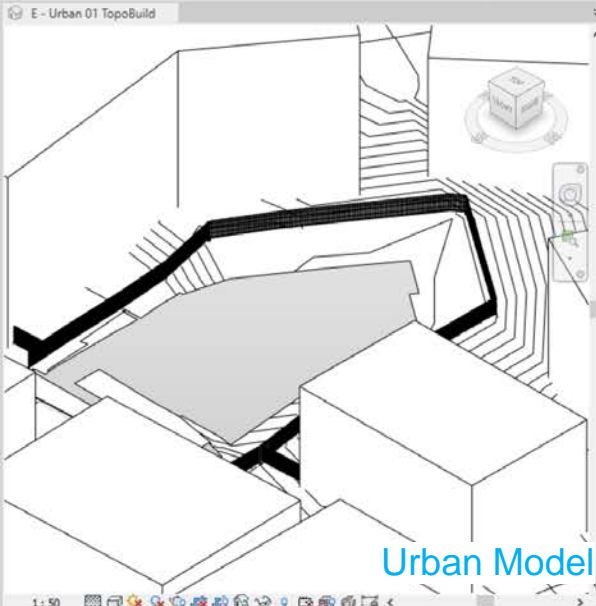
Urban Model

Scenery: Furniture 3. Floor
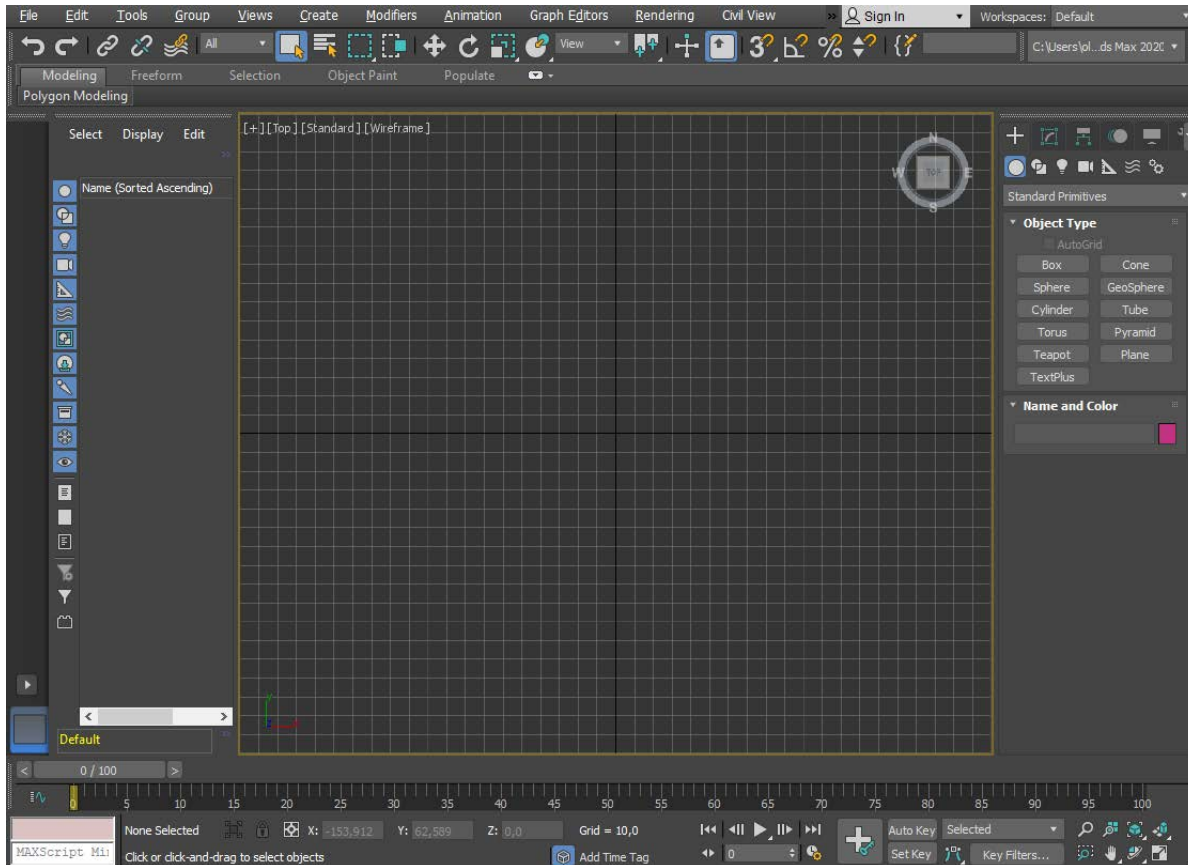
Example: Architecture model without doors visible

3D View Settings for showing specific phase

2. EXPORT FBX FILES

Step 1

To export a usable FBX file, 3DsMax 2020 will be used.
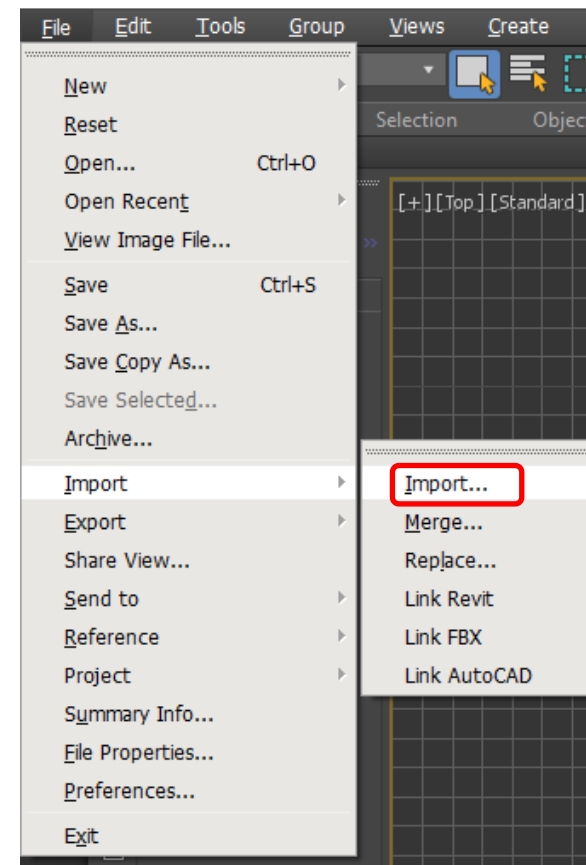
Start 3dsMax or create a new project
(New All)

Step 2

Import the Revit File

Before you import the Revit file, make sure you saved the Revit file, as the views will be directly referenced from the .rvt file
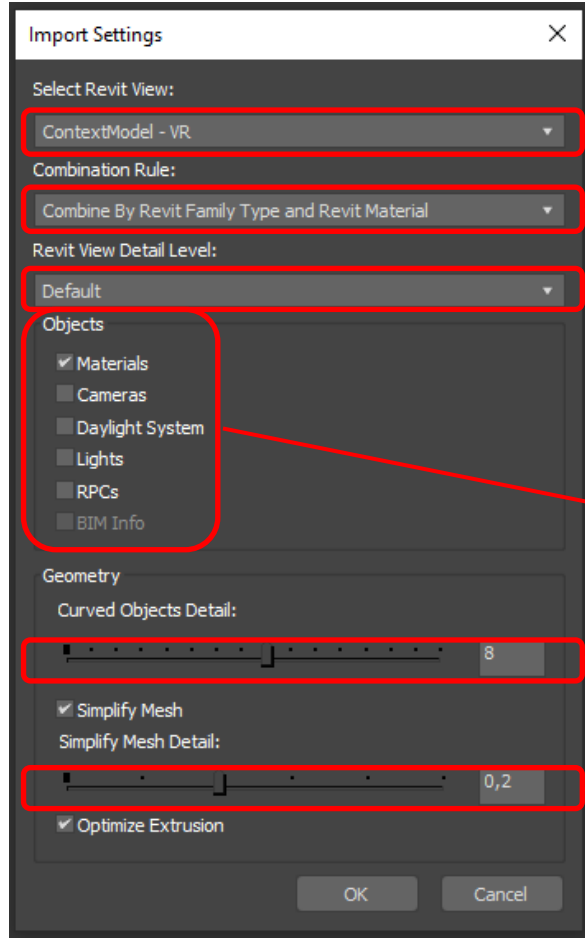
Open (import) the Revit file.

2. EXPORT FBX FILES

Step 3

Change the Import Settings.

Import Settings	×

Select Revit View:

ContextModel - VR ▼ ⟶ Choose a 3D Model View, which you will import

Combination Rule:

Combine By Revit Family Type and Revit Material ▼ ⟶ Choose the following Combination Rule

Revit View Detail Level:

Default ▼

"Default" Detail Level will choose the Detail Level of your predefined Detail Level of the Revit 3D View.

Objects
- ☑ Materials
- ☐ Cameras
- ☐ Daylight System
- ☐ Lights
- ☐ RPCs
- ☐ BIM Info

⟶ Only Materials are required.

Geometry

Curved Objects Detail:

[slider] 8 ⟶ Defines the Curve Details of an Object. Choose between 8 – 10.

☑ Simplify Mesh

Simplify Mesh Detail:

[slider] 0,2 ⟶ Simplify Mesh Detail will reduce the polygons of the Model. Choose 0,2.

☑ Optimize Extrusion

OK   Cancel

Step 4

Import all family types visible in the Revit View.

Select Revit Family Types to Import	×

- ☑ 3D Baum - Ellipse (2)
- ☑ 4800 x 2400 mm - 90 deg (1)
- ☑ Bordstein (1)
- ☑ CLS_Gleisbett_2016 (2)
- ☑ DB NEU AUFZUG (8)
- ☑ DB Personenaufzug mit Vordach (8)
- ☑ DB_Green_Space (1)
- ☑ DB_Green_Tuck (1)
- ☑ DB_Pedestrian_Walk (1)
- ☑ DB_Plattform (1)
- ☑ DB_Roof (2)
- ☑ DB_Roof 50 (1)
- ☑ DB_Street (1)
- ☑ DBI Wetterschutzhaus Kat2 (15)
- ☑ Fahrrad (2)

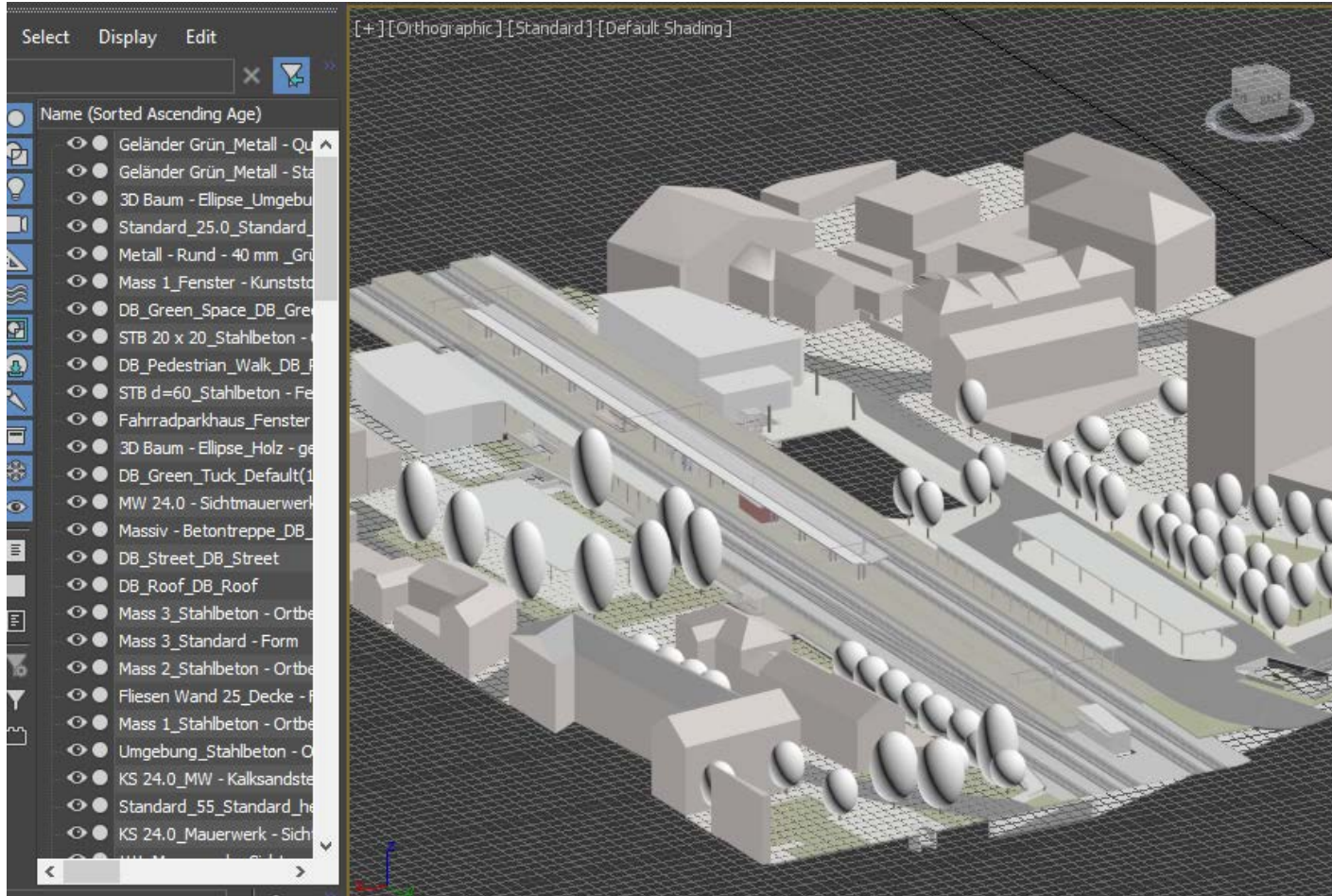☑ Import All   OK   Cancel
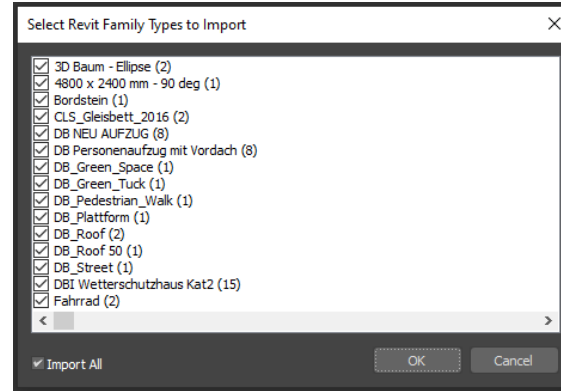
Continue to fully import the geometry to 3DsMax

2. EXPORT FBX FILES
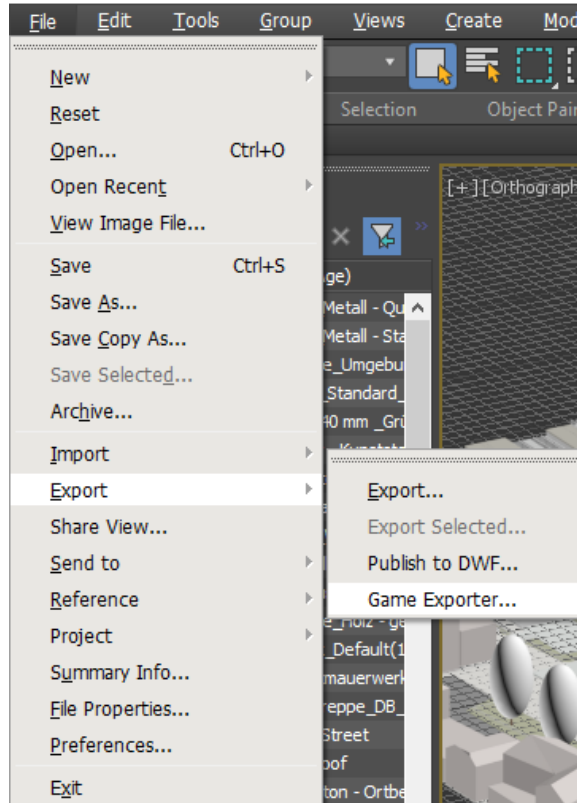
Step 5

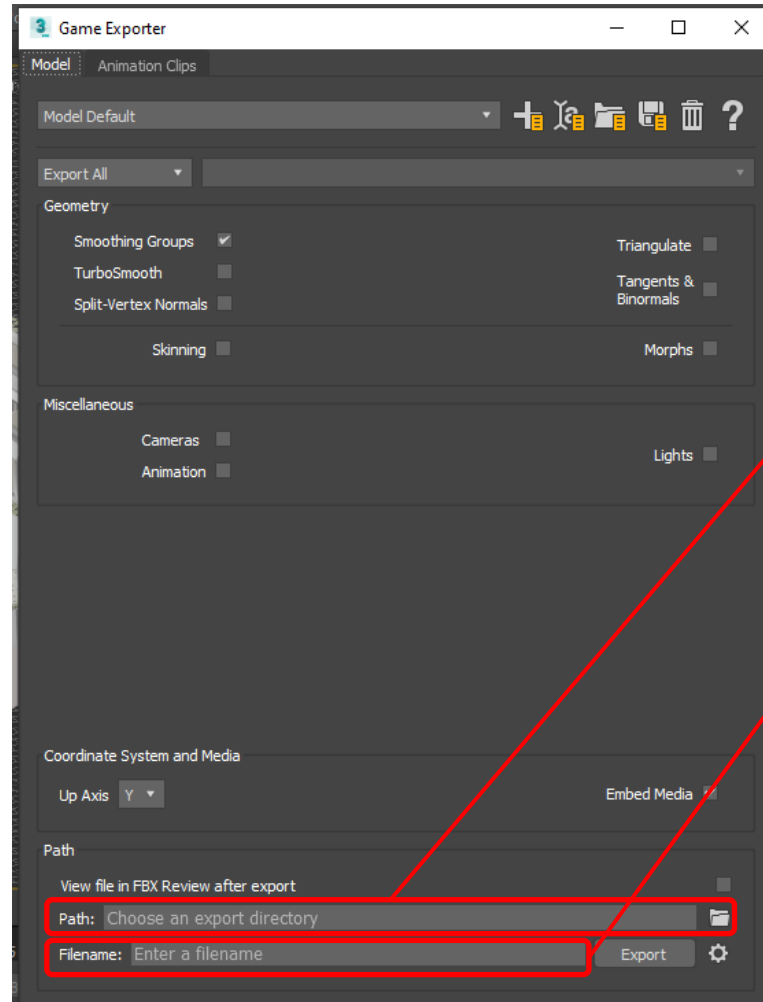Successfully Imported Model

2. EXPORT FBX FILES

Step 6

Export the 3D geometry from 3Ds to an FBX format.

Choose *Export -> Game Exporter*

Step 7

Change Settings

Choose an export directory for the export file.

Choose a recognizable file name with the following parameter:

"GroupName"_"ModelType"_IdentificationNumber"

|	
GroupName	Will be predefined
ModelType	Use the following names: 1-CM (ContextModel) 2-AM (ArchitectureModel) 3-SM (SceneryModel)
Identification Number	**E.P.** 1-CM_100, 2-AM_110, 3-SM_111, 2-AM_120 *1 Context Model is primary, 2 Architecture Models can be exchanged, 1 Scenery fits only in the Architecture Model 110 but not in 120.*

2. EXPORT FBX FILES

Step 8

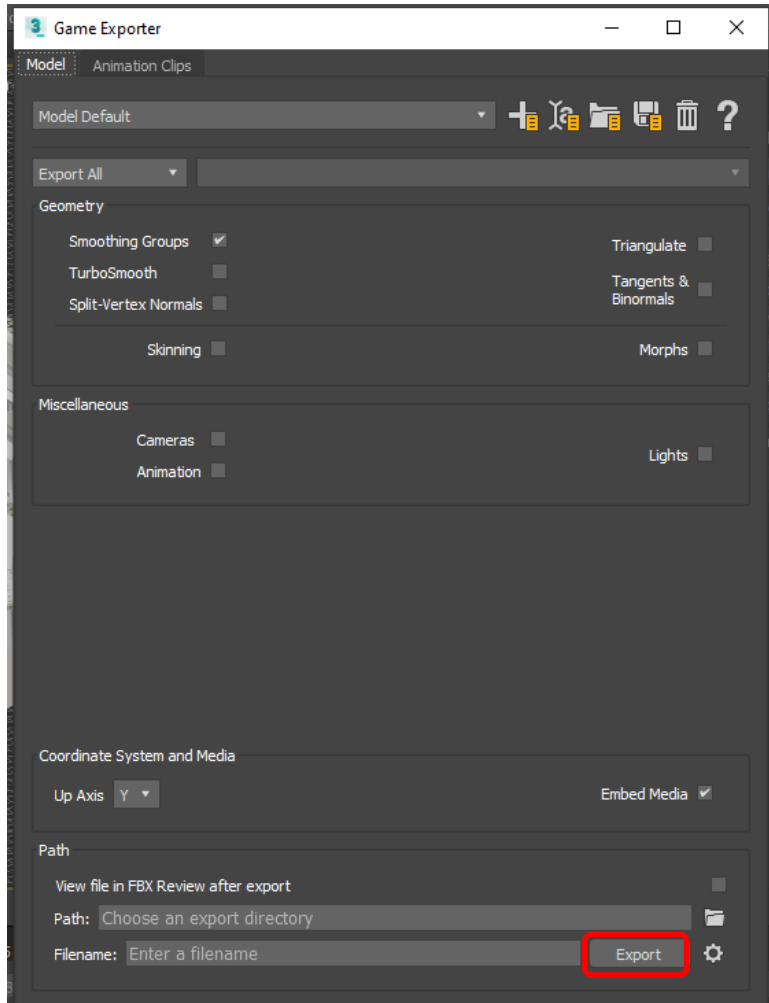Don't forget
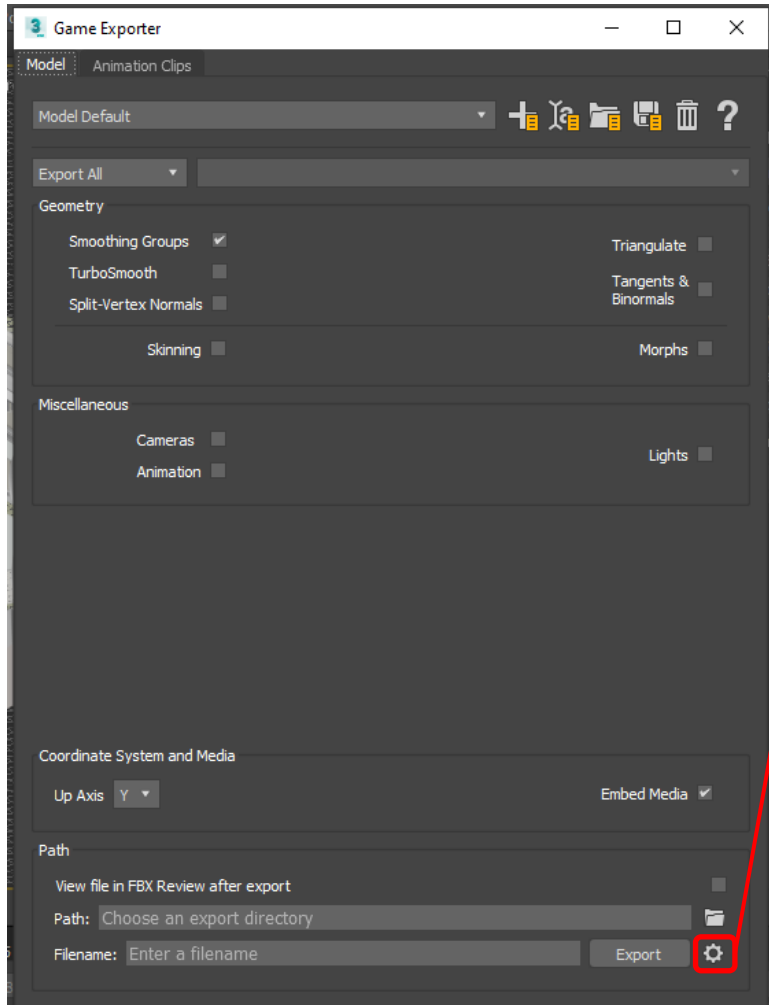
Change Additional Settings
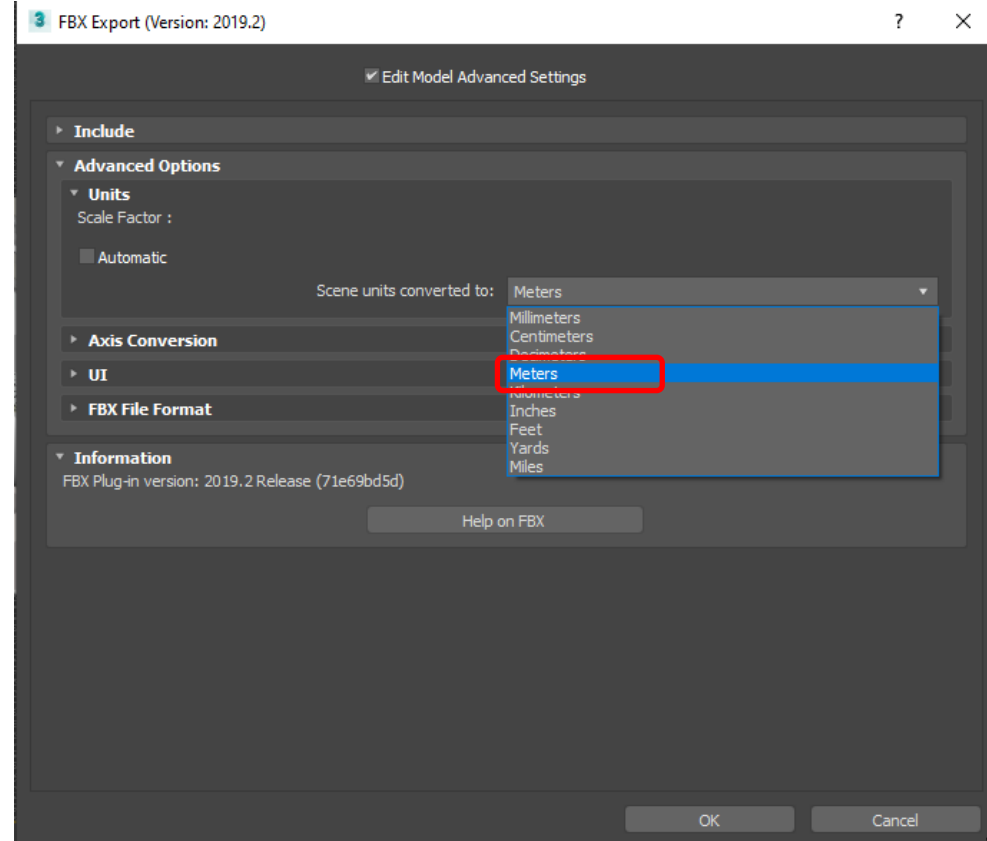
Change the export units to **Meters**. *Check for each export or the virtual environment will not be usable.*
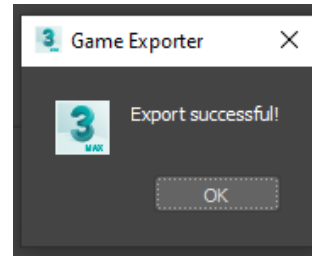
2. EXPORT FBX FILES

Step 9

Export the FBX file.

Step 10

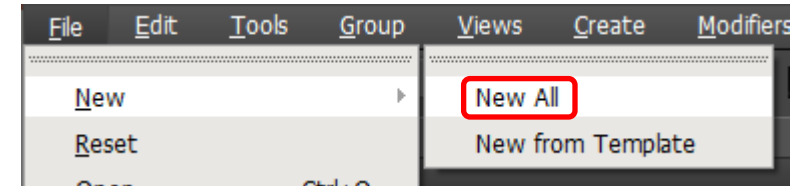Done!

Do not use Period "." (dot) in Export Names!

Step [restart]

You have to export more models?
Open a new file.

Now, you can import the Revit file again and choose another prepared 3D view.

3. NEXT STEPS

Next Steps ...

Group the exported models as an Asset Bundle using Unity and upload zipped file to VREVAL Platform.

(explanation in next tutorial)