

LUMION CROWD RANDOMIZER DOCUMENTATION

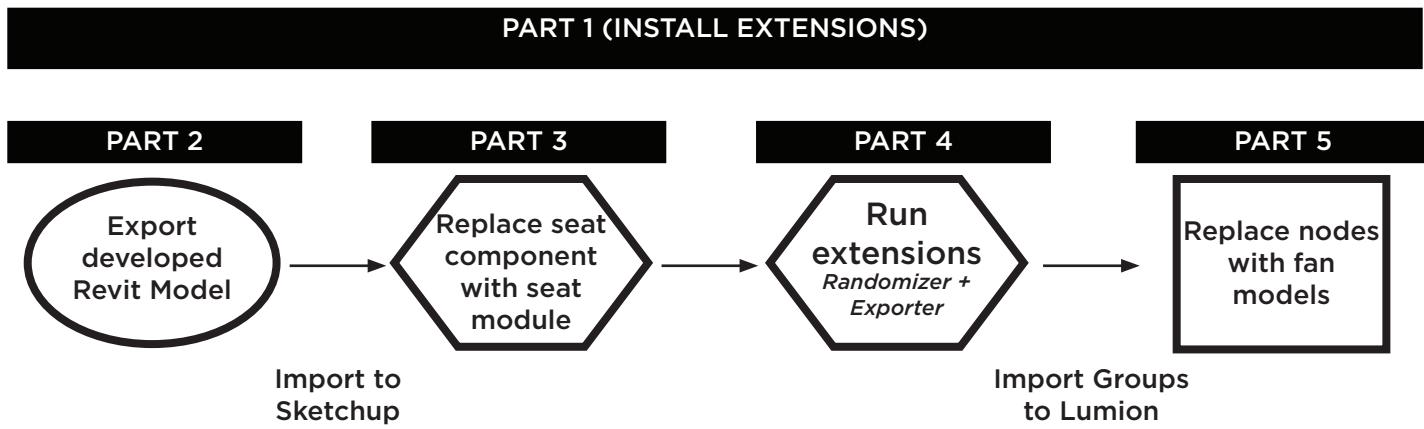
Overview

This process is intended to alleviate the time and tediousness of populating random-looking stadium crowds in Lumion for rendering processes.

This assumes that there is a seating bowl with Revit seats using our standard Revit seat family (preferably placed using our bowl tool)

The process uses 2 custom sketchup extensions to create a set of files that are then imported into Lumion. Once in Lumion elements are mass-replaced using native Lumion tools. Additional consideration has been given to place standing and seating positions to add additional variety to the crowd.

The steps listed in this document are divided into 5 parts:



Compatibility

Process has been tested on:

Revit 2018

Populous Stadium Tools v2018.12.21.0

Sketchup Version 19.0.685

Lumion 9.5

PART 1: LOADING THE EXTENSIONS

NOTE: This method was designed to work in conjunction with the Populous bowl tool and the Populous line-based seat family
The steps below were used in Sketchup Version 19.0.685.

1. Locate the 2 sketchup extension files

File location:

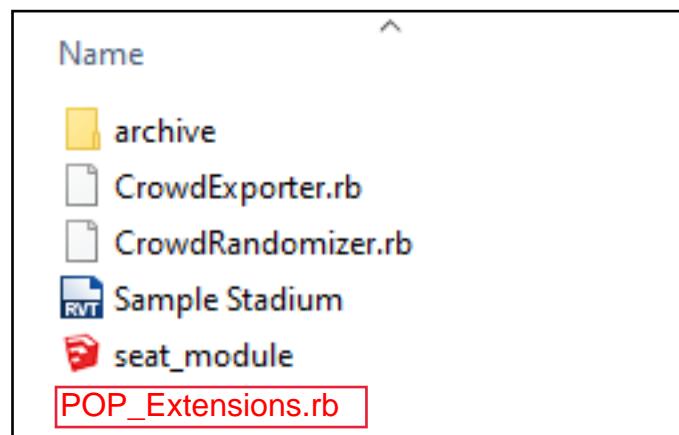
\pop.local\usrroot\studio_R+D\Lumion Crowd Process\Download Package

Extension File #1: CrowdExporter.rb

Extension File #2: CrowdRandomizer.rb

update: also copy "POP_Extensions.rb"

* you will use the “seat_module.skp” file later in the process during Part 3



2. Place the 2 extension files in your Sketchup plugins folder.

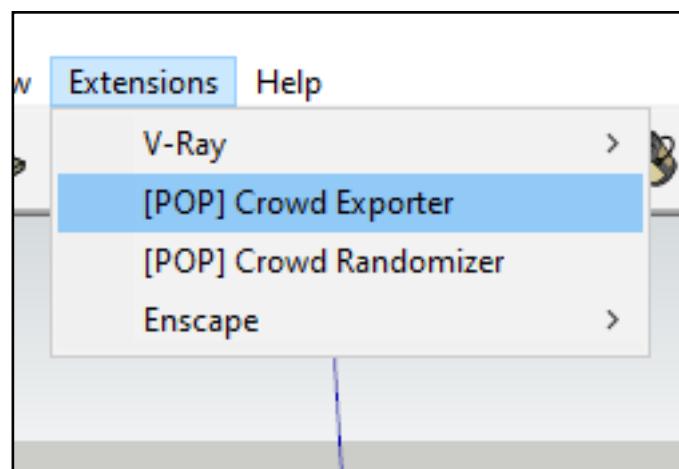
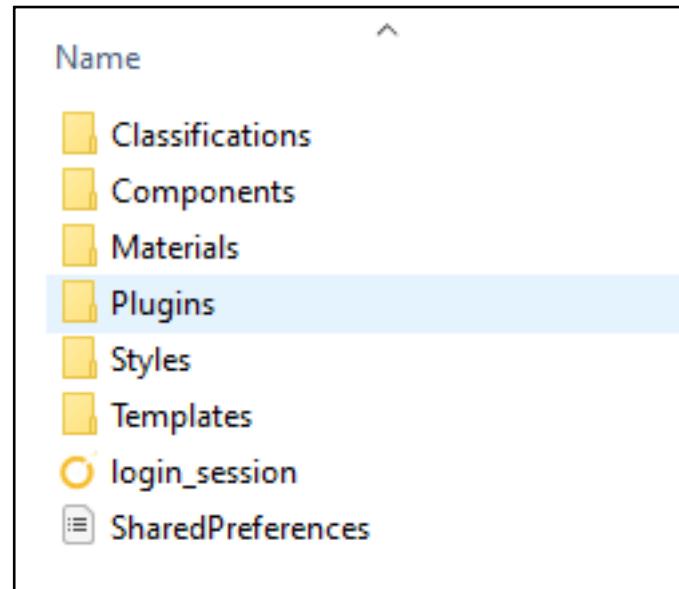
You can locate the folder by going to Window> Preferences. Then select “Files” and navigate to the “Components” folder. Then move up a level in the directory to the Sketchup 2019 folder.

The Plugins folder can be found there.

note: you may need to set your extension loading policy to “Unrestricted”. To change the setting go to Window>Extension Manager.

Then click on the settings “gear” button on the top right corner to set the Loading policy.

Close and reopen Sketchup
The “Crowd Exporter” and “Crowd Randomizer” should now appear under your Extensions toolbar



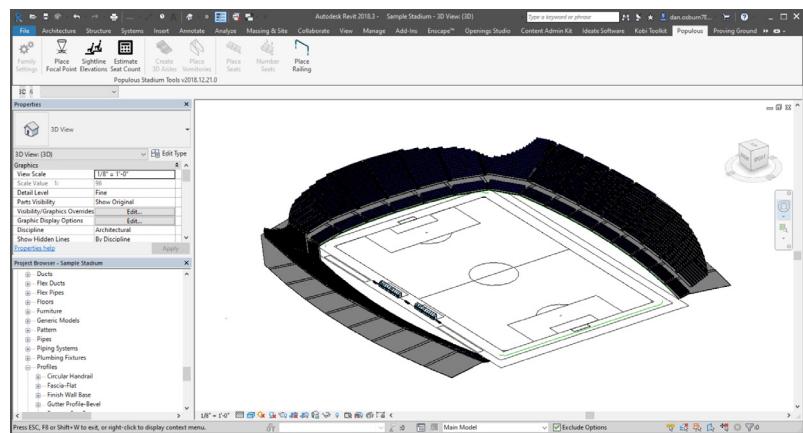
PART 2: REVIT EXPORT

NOTE: This method was designed to work in conjunction with the Populous bowl tool and the Populous line-based seat family
The steps below utilize a sample bowl constructed in Revit 2018 using the Populous Stadium Tools v2018.12.21.0

1. Isolate Elements for export

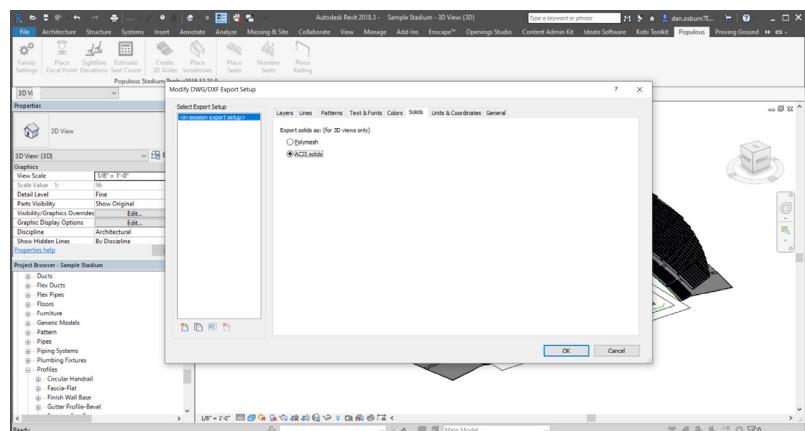
(note: you only need the seats, but sometimes it is helpful to export the bowl as well)

Open Revit Model and navigate to a 3D view to capture a view of the bowl.
To avoid large file sizes and processing times, hide/remove visibility for all components of the model that are not directly associated the seating bowl



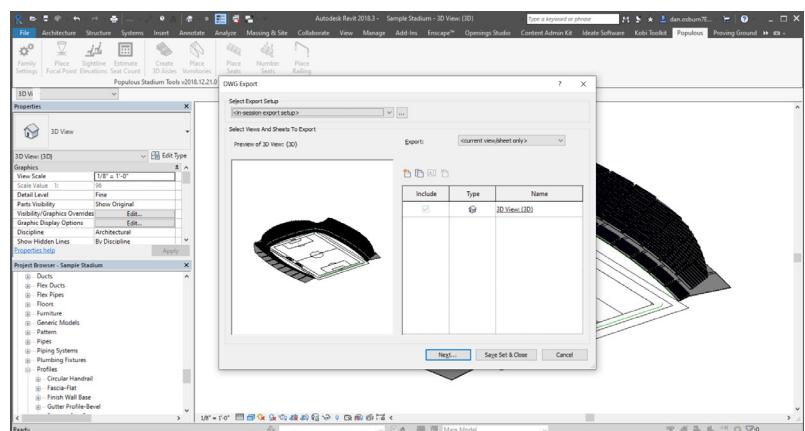
2. Set export options

Ensure that the ACIS Solids option is selected for the DWG/DXF exports.
You can check this setting from the following path File -> Export -> Options (Icon with wrench) -> Export Setups DWG/DXF -> Solids Tab



3. Export the file

Export the Revit model as .DWG File



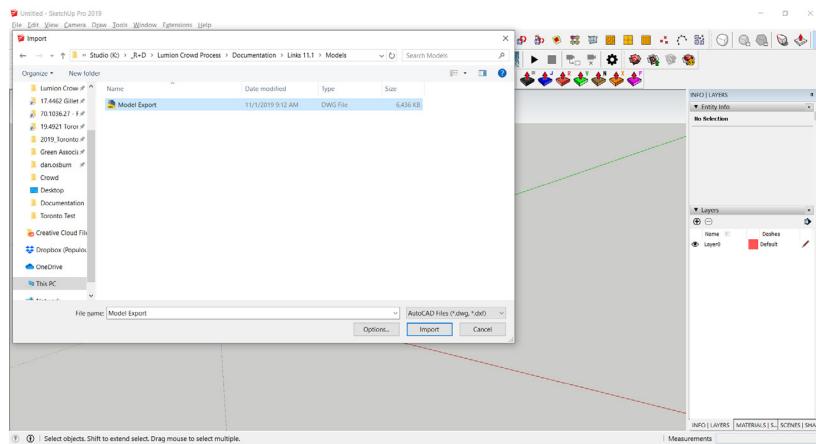
PART 3: RANDOMIZE & SORT SEATS IN SKETCHUP

NOTE: This method was designed to work in conjunction with the Populous bowl tool and the Populous line-based seat family
The steps below were used in Sketchup Version 19.0.685.

1. Import the dwg into Sketchup

[Even when working on an existing project, It is recommended to create a new, clean sketchup file exclusively to import the dwg file]

Before importing, delete the default entourage figure (aka “Marc”) from the model to avoid an erroneous note from being created. Import the .DWG model just created from Revit.

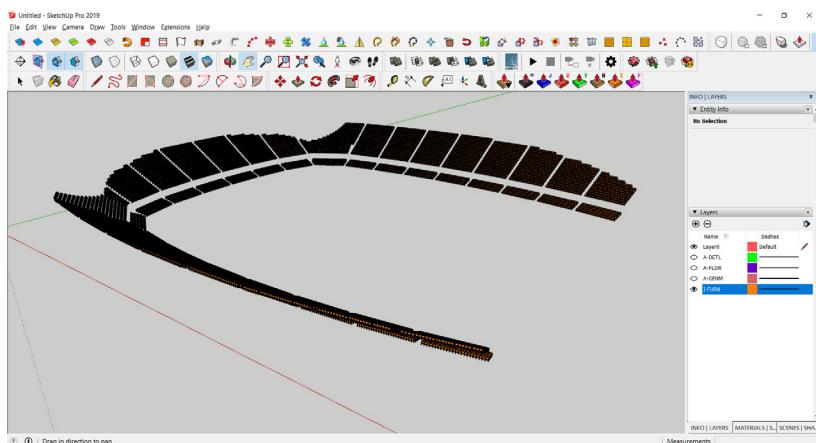


Make sure that Layer 0 is completely empty with no geometry present

2. Visual check of layer with seats

Isolate the “I-Furn” Layer (turn off all other layers) and make sure only the seats are present.

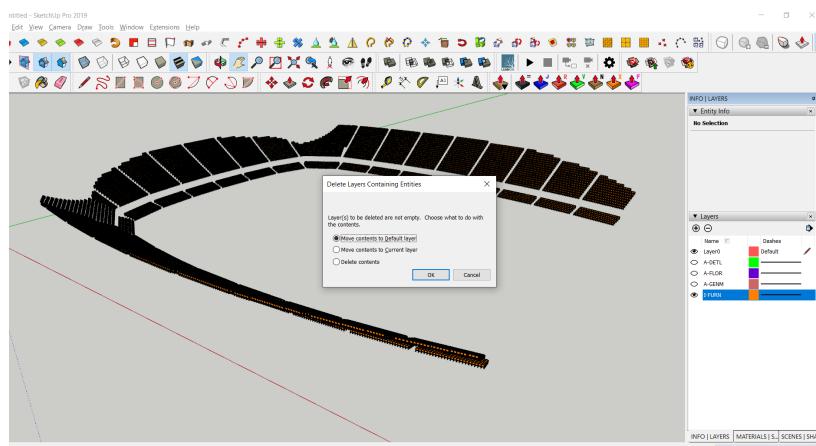
Delete any extraneous geometry



3. Move seats to “Layer 0”

Once we have isolated the seats, delete the “I-Furn” Layer and select the “Move the Contents to Default Layer” option.

This will move the seats to “Layer 0” and prepare them to be formatted by the extension

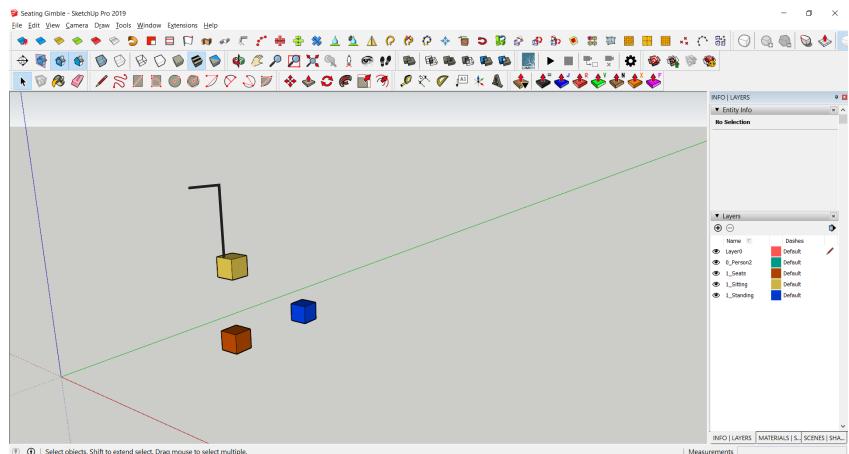


4. Grab the “Seating Module”

In a separate sketchup file, open the “SeatingModule.skp” file.

You’ll find it in the same folder as the extensions from “PART 1”

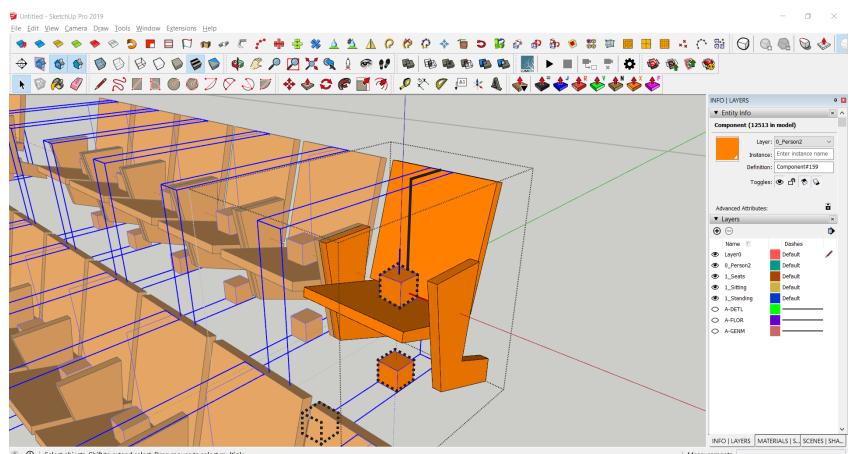
Copy-clip (CTRL-c) the component



5. Edit the seat component

Locate a seat model and double click to enter the component editing mode

Once inside the seat component, place the seating module. It should replicate itself across all seats of the same type.

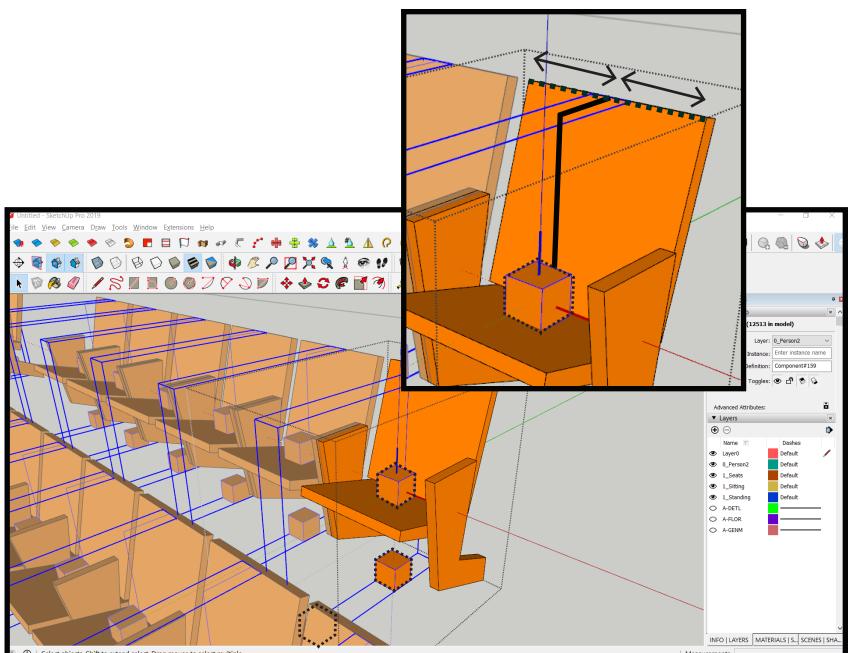


6. Adjust the seat component

Once the seat module is in place, adjust its placement within the seat component.

The “L” -shaped line is aligned with the middle of the seat and the horizontal portion of the “L” lines up with the top of the seat.

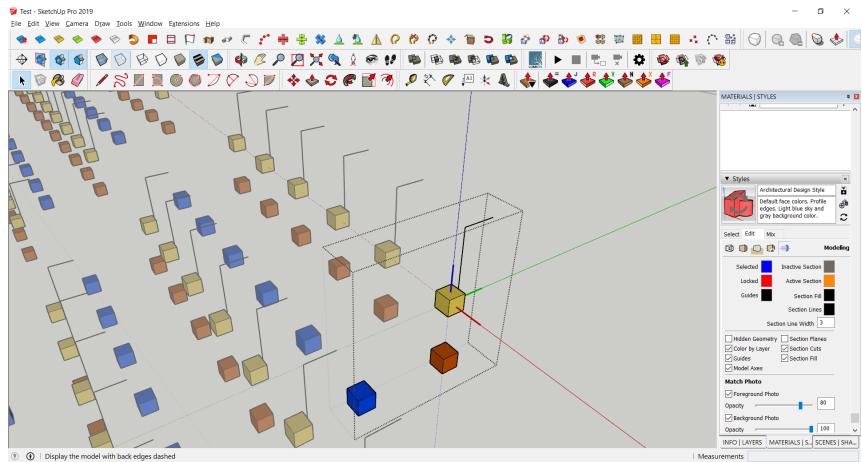
Depending on which seat you selected, you may need to flip the component to orient the module properly (use the “flip along” the component’s Green axis)



7. Delete the seat

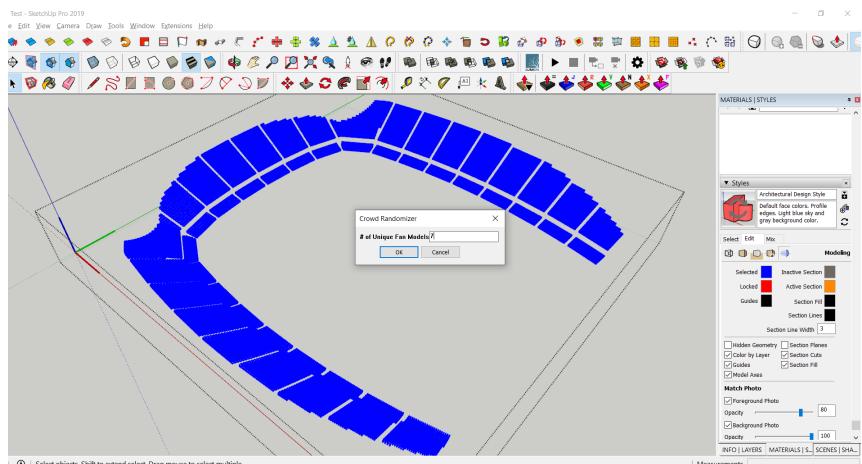
Once the module is in place delete the seat geometry. Since you are still working inside the seat component, all seats of the same type in the file should disappear.

Optional: It may be easier to interpret the different parts by setting the current style to “Color by Layer” and updating the style options



8. Repeat as needed

If there are multiple seating types in the model repeat “Part 3” until every seat component has been replaced with a seating module.



PART 4: RUN THE EXTENSIONS

NOTE: This method was designed to work in conjunction with the Populous bowl tool and the Populous line-based seat family

The steps below were used in Sketchup Version 19.0.685.

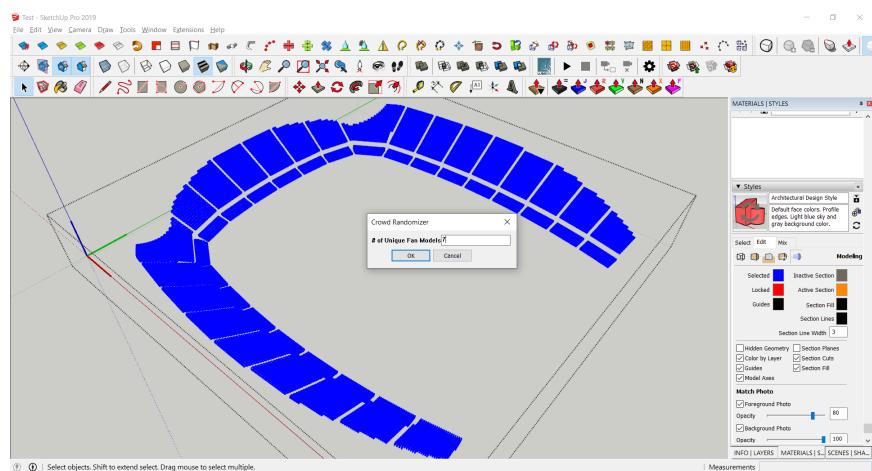
1. Run Randomizer extension

Zoom out to be able to select each seat. Make sure that the seating components are being selected individually and not as one group entity. Once selected, activate the “Crowd Randomizer” which should now be located in the Extensions drop down. Input the amount of unique fan models you would like for the crowd.

You want to look at your total number of seats and have enough groups to give a variety of “Fan” types and no more than 2,000 items in one group.

With 12,000 seats, we have found that 7 models work efficiently.

($12,000/7 = 1,700$ fans per group approximately). This process may take several mins.

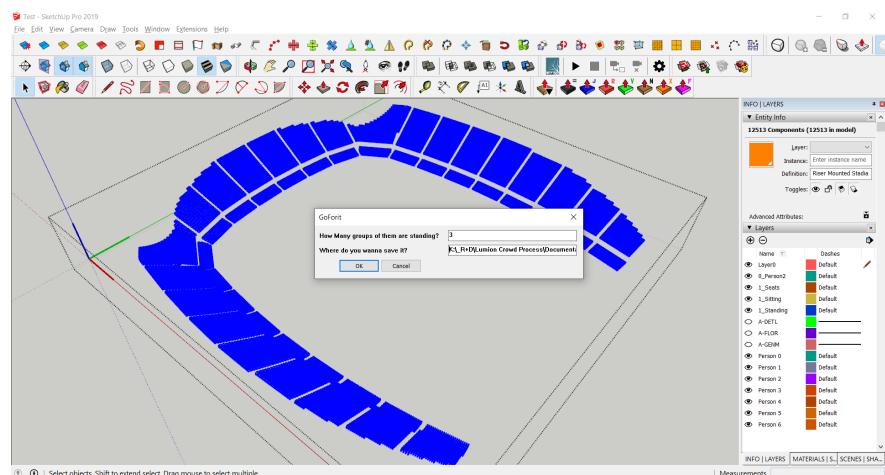


2. Run Exporter extension

Once the randomizer extension has completed and with the seats still selected, open the “Crowd Exporter” extension.

The dialogue window will ask for how many groups of unique models you would like to stand. This allows for placing of both seated and standing fans.

It will also ask for a file location for exported files to be sent to. You can copy and paste a file location into the dialogue box

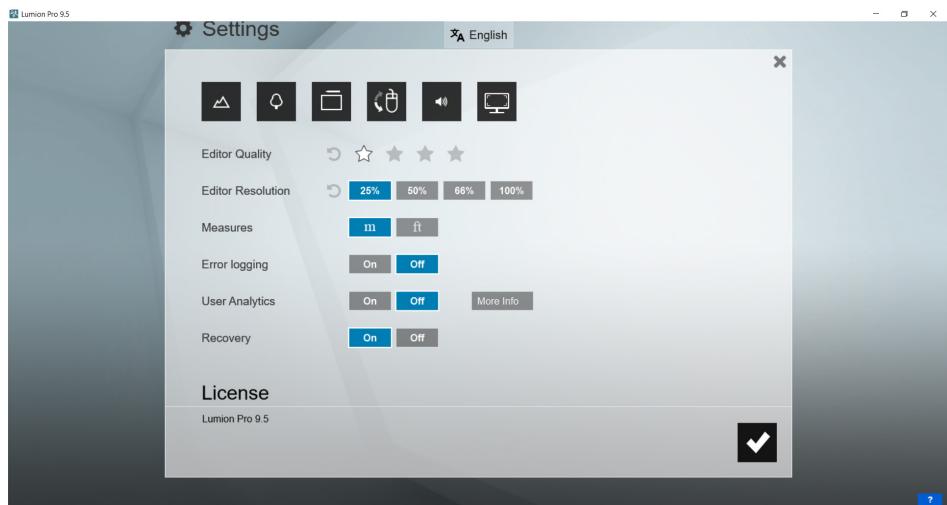


PART 5: PLACE FANS IN LUMION

NOTE: This method was designed to work in conjunction with the Populous bowl tool and the Populous line-based seat family
The steps below were used in Lumion 9.5.

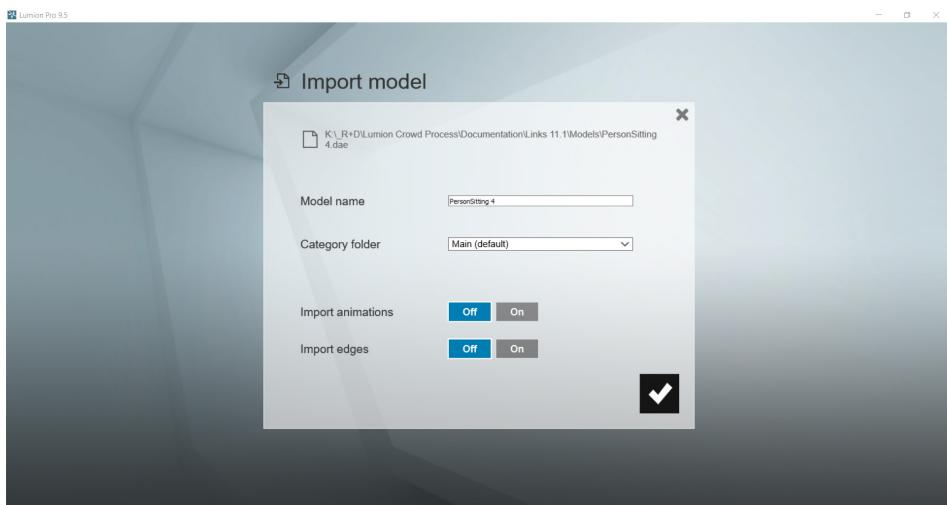
1. Lumion Setup

Open Lumion and create a new model. For quicker processing speeds, you can turn down the Editor Quality and Editor Resolution to the lower settings within the Settings menu located at the bottom-right side of the builder window



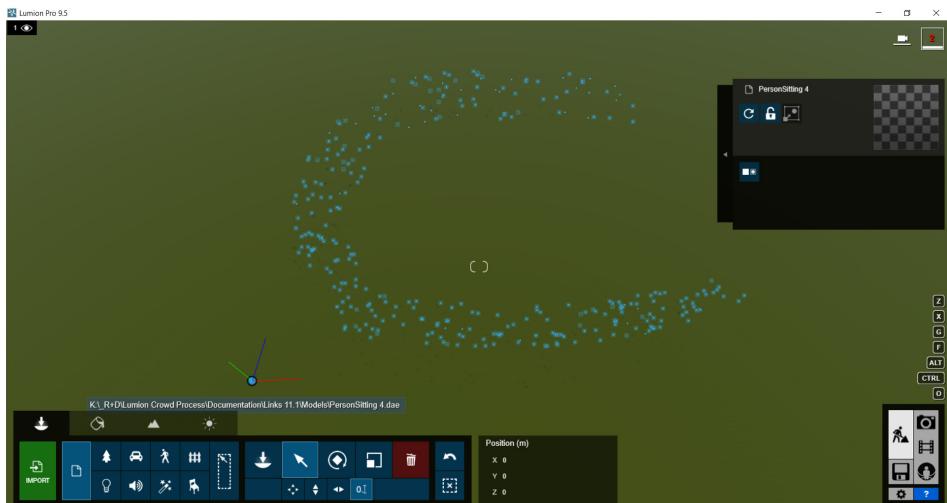
2. Import models

Import the first exported model from the folder that you designated in the Crowd Exporter in Part 4



3. Move model to origin

Once the model is in Lumion, move it to the origin (0,0,0). If your original Revit model was made using our bowl tool, it will correspond to the center of the field and will help co-locate the rest of the model geometry



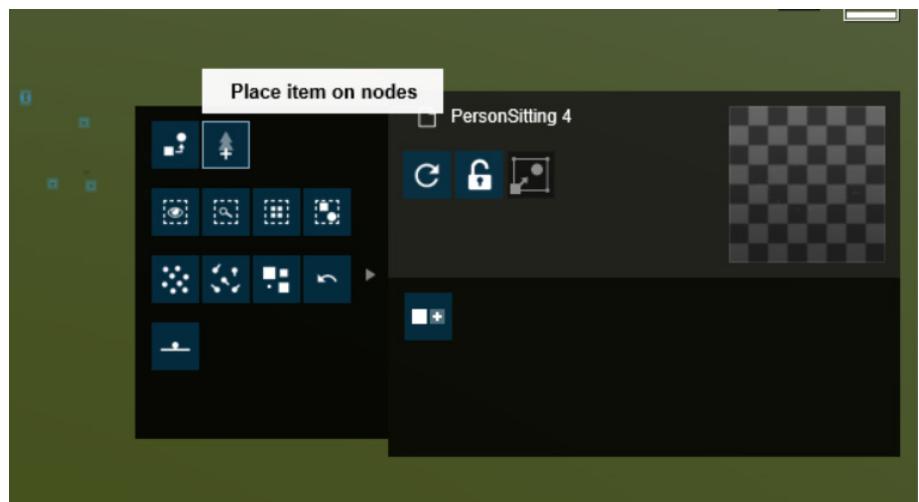
4. Start mass replace

Select the imported nodes then switch to the people and animals toolset.



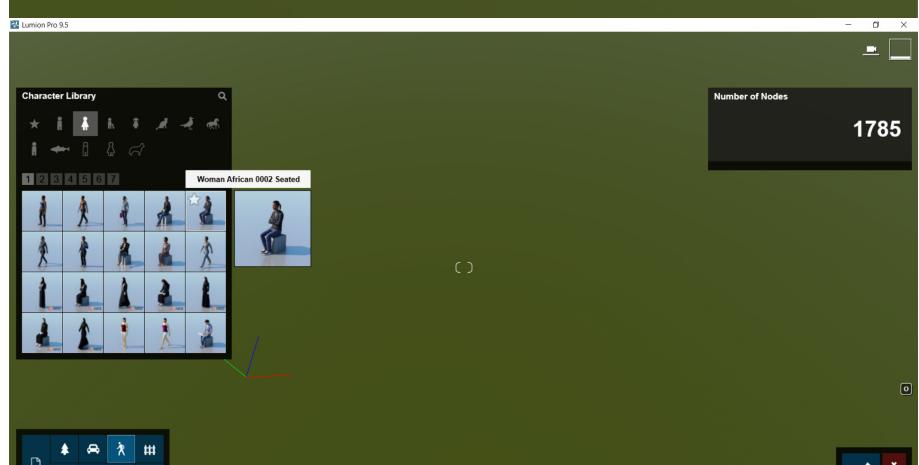
This will trigger the object properties window (top right of your screen).

Click on the arrow on the left edge of the dialog box to open the “Advanced Options” toolkit. Select “Place item on nodes”



5. Select item to replace

Now select a person corresponding to whether the imported model is for a seated or standing position. The import process may take 2-3 mins. The name of the object will tell you which library to use (standing/seating)



6. Repeat as needed

Repeat process until each exported model is imported and replaced with people. For faster usage in builder mode, it may be easier to place all people models on a separate layer and toggle their visibility when needed.



21. The crowd model is now ready to be used in rendering. From this point, you can import the stadium context. For faster usage in builder mode, it may be easier to place all people models on a separate layer and toggle their visibility when needed.