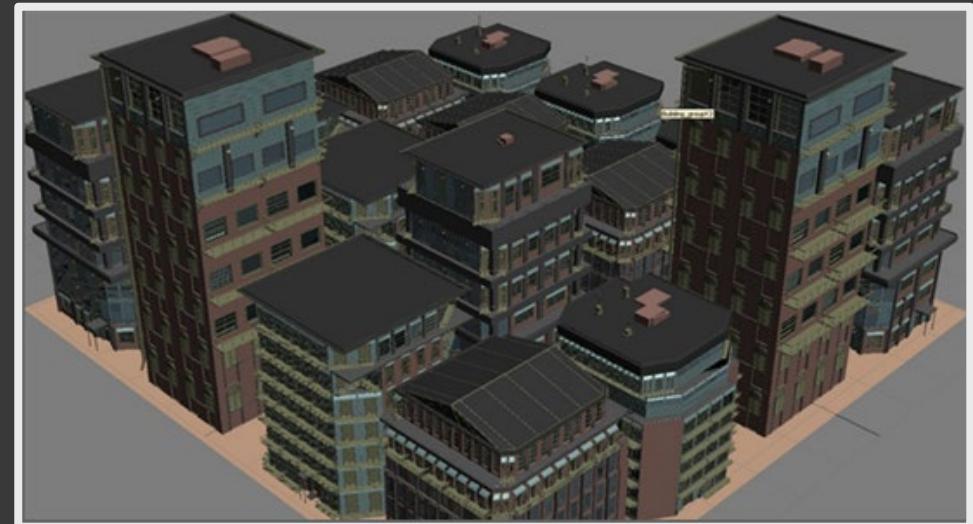


Procedural Building Generator

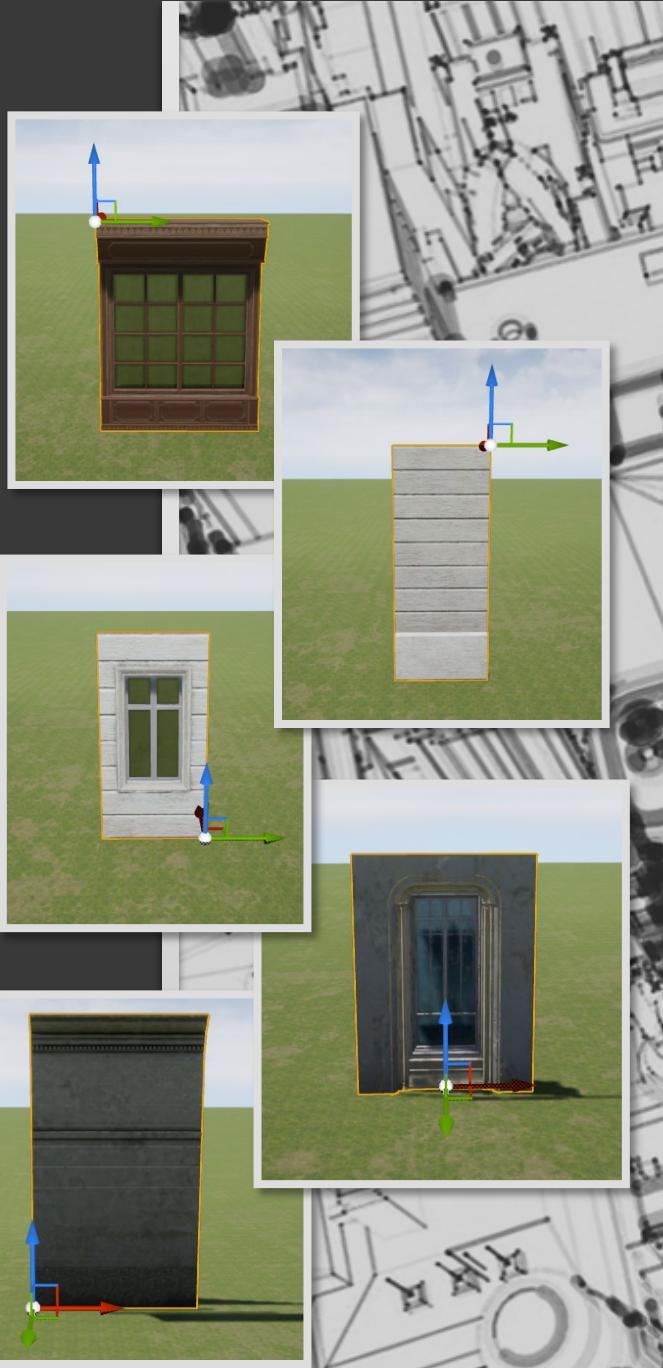
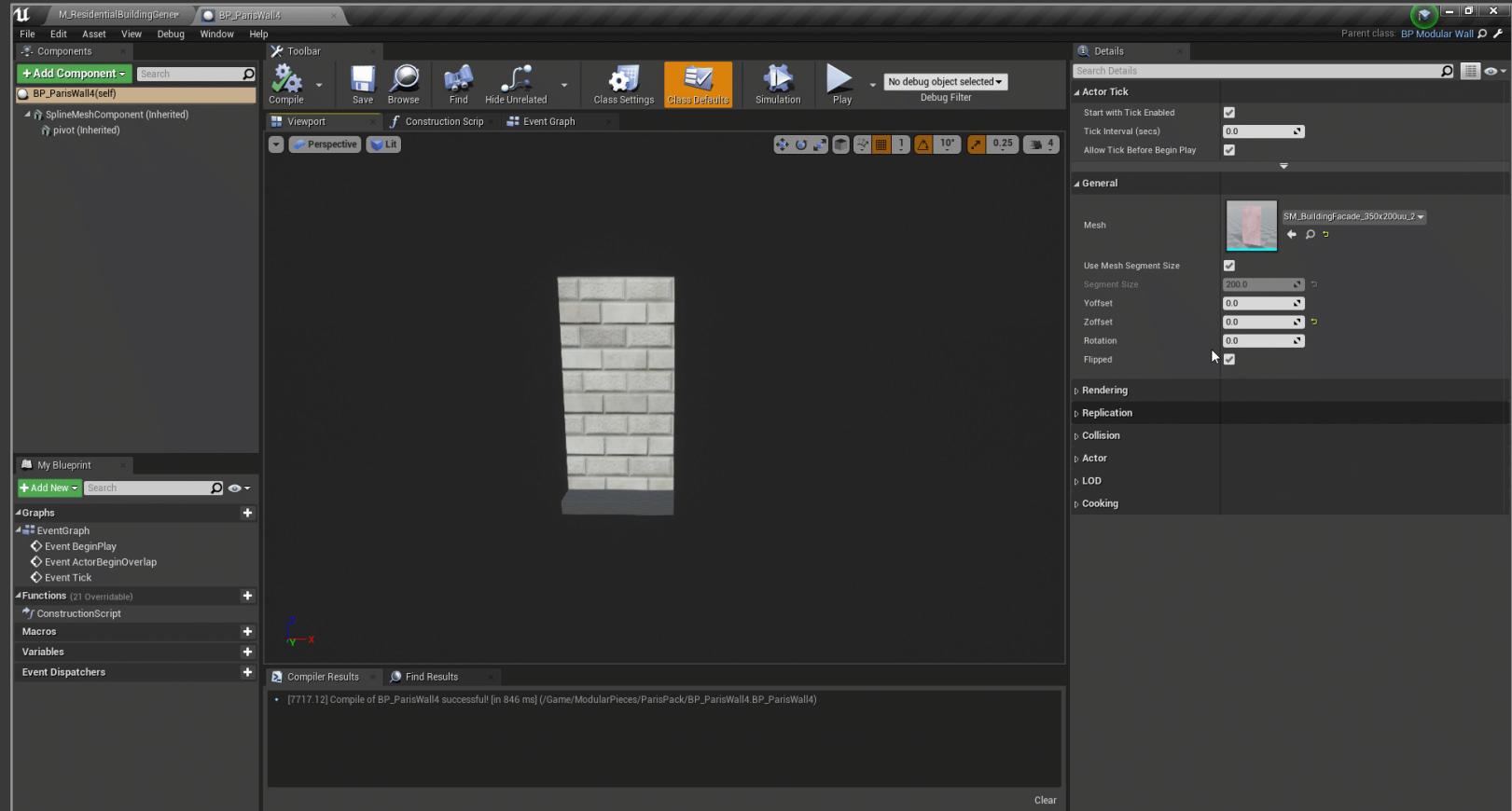
Final Presentation – Sandy Demian

Overview

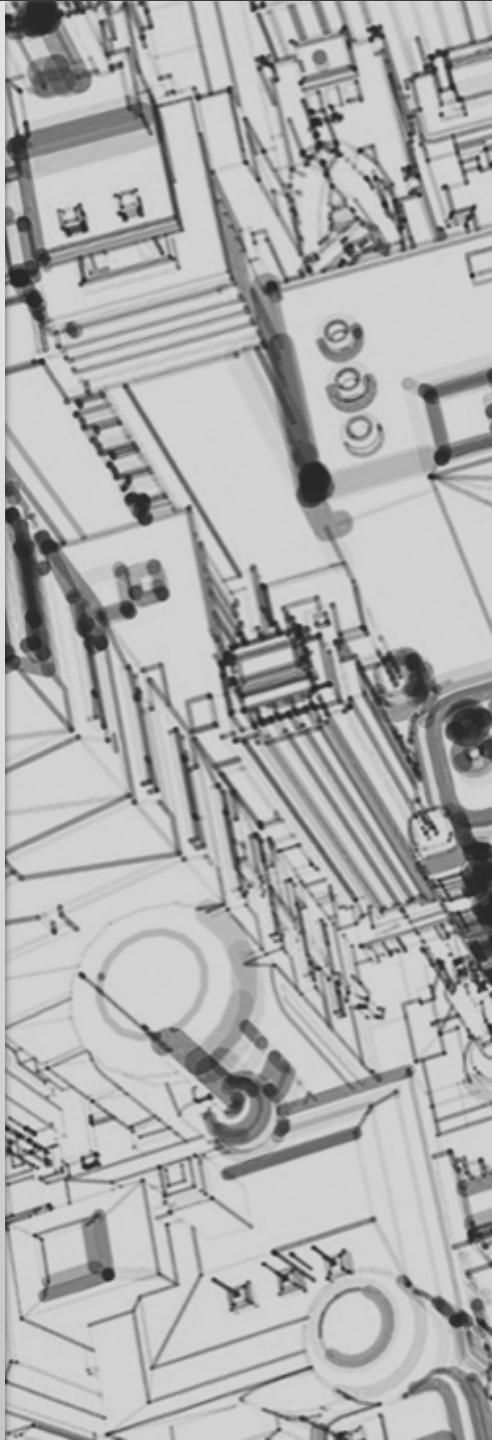
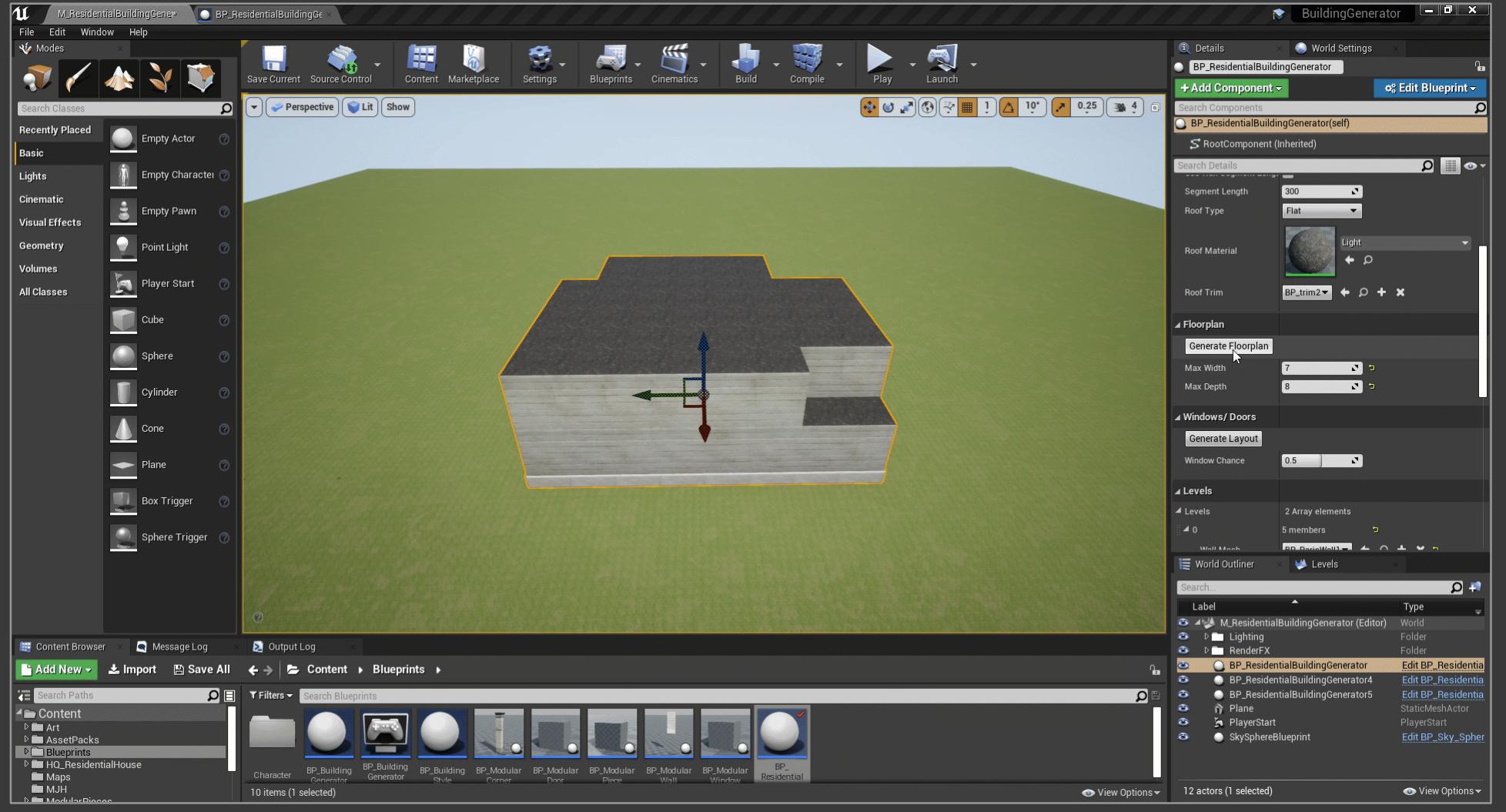
- Procedural Building Generator
 - Residential houses
 - City buildings
- Buildings can be generated automatically or by using splines
- Works with Modular meshes from asset packs
- Engine: Unreal



Using Asset Pack Meshes



Floorplan Generation

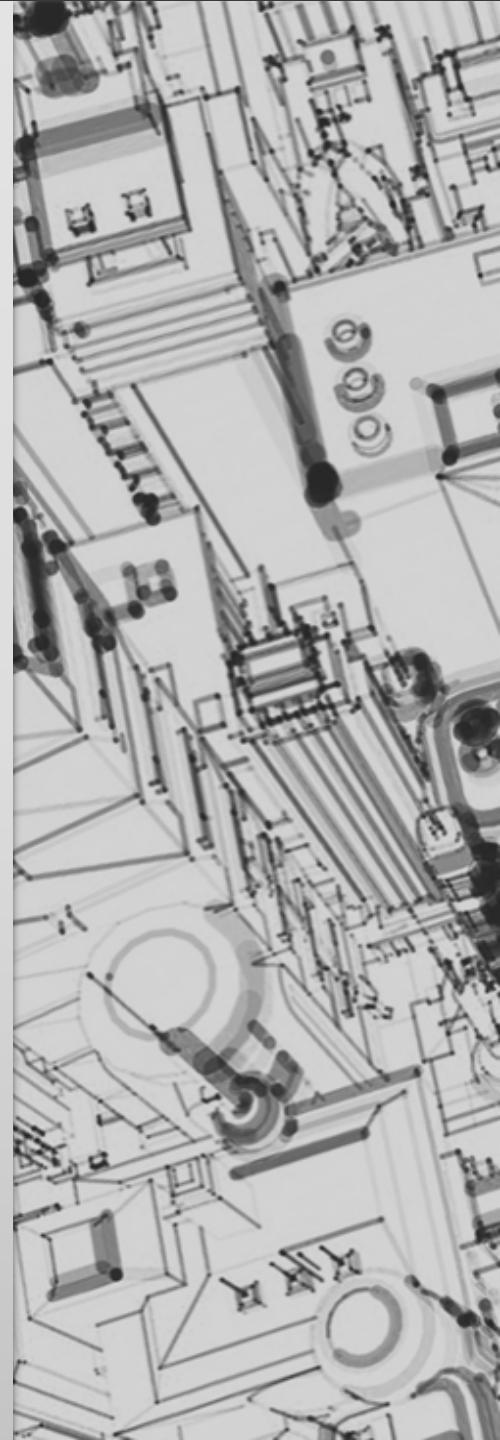
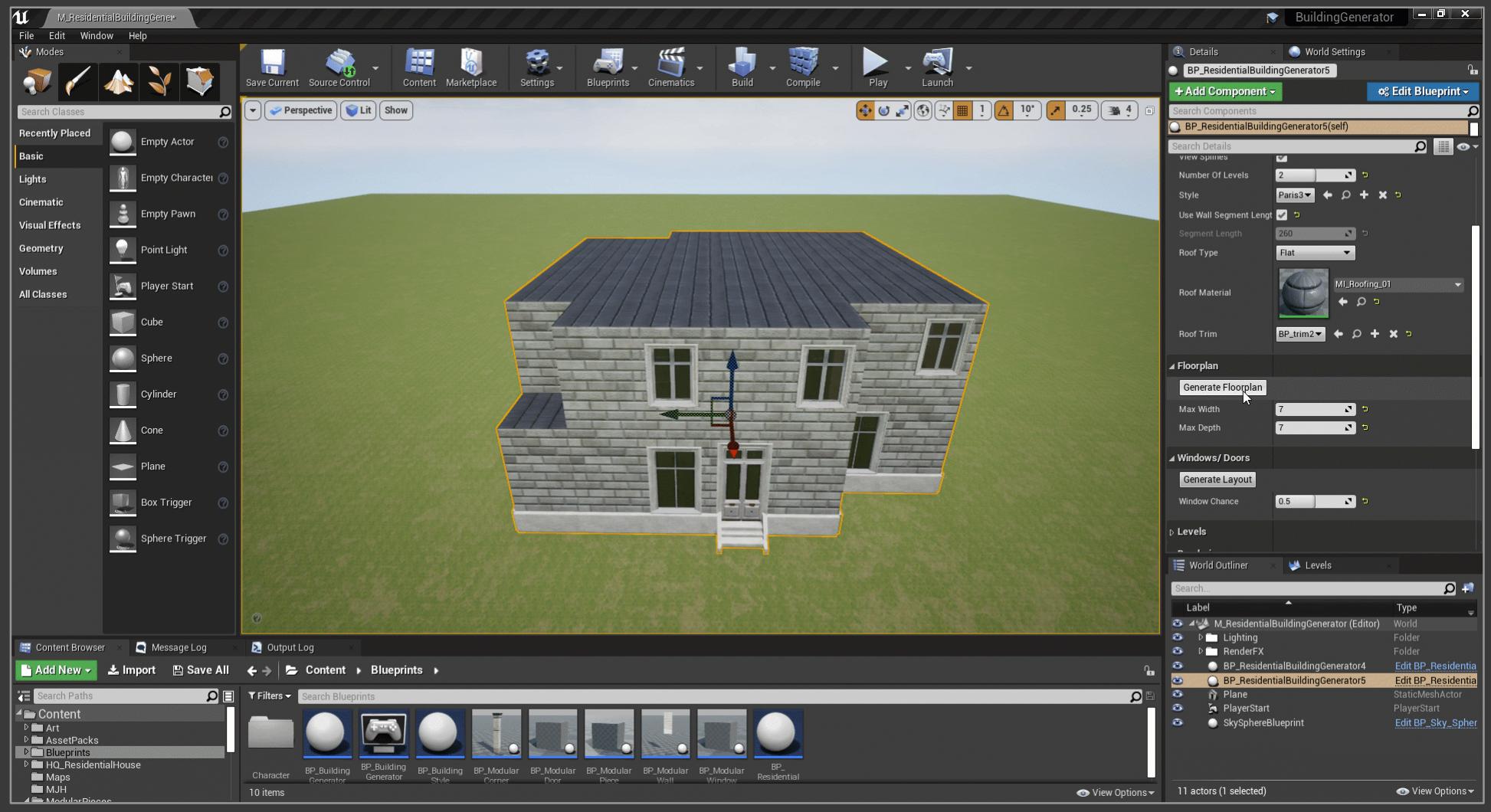


Window/Door Placement

- A ratio is used to decide the number of window segments relative to wall segments
- The last two segments placed are used to guide the random placement of the next segments
- Example: the chance of placing a window increases after two walls and decreases after two windows to create a more balanced placements

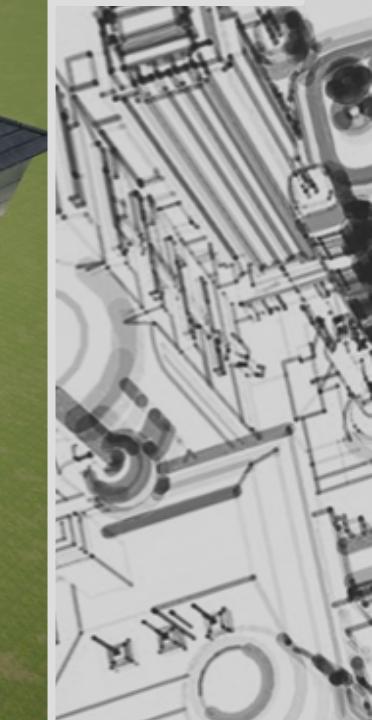
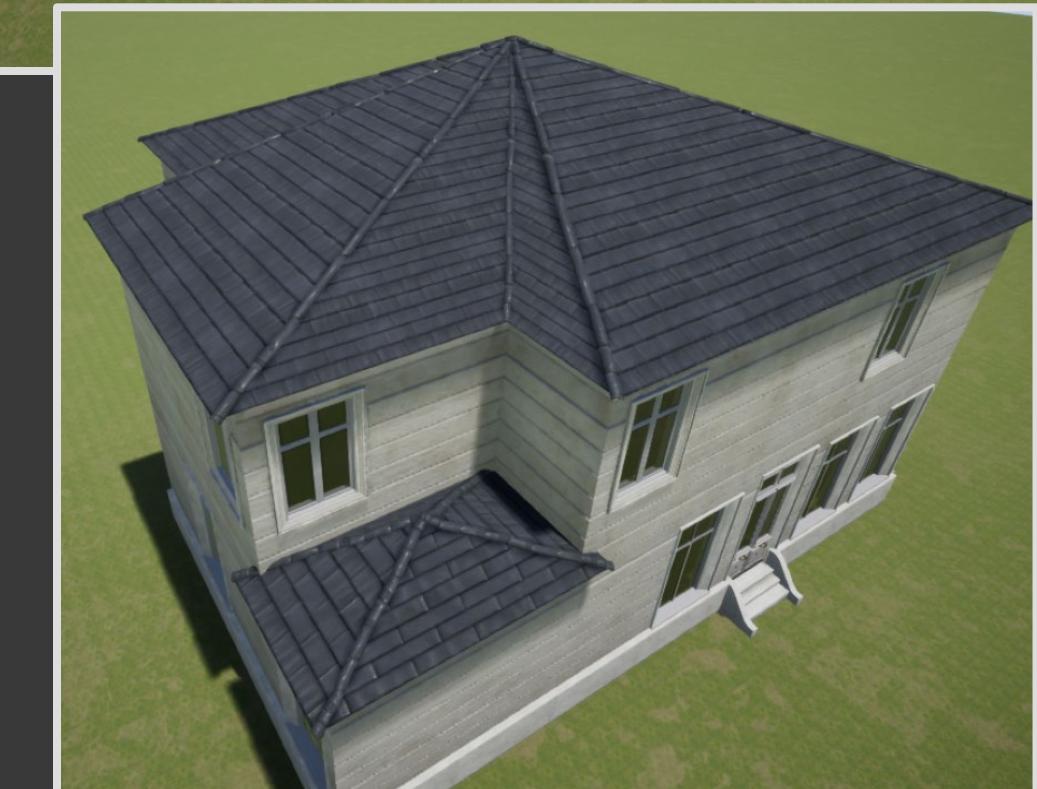
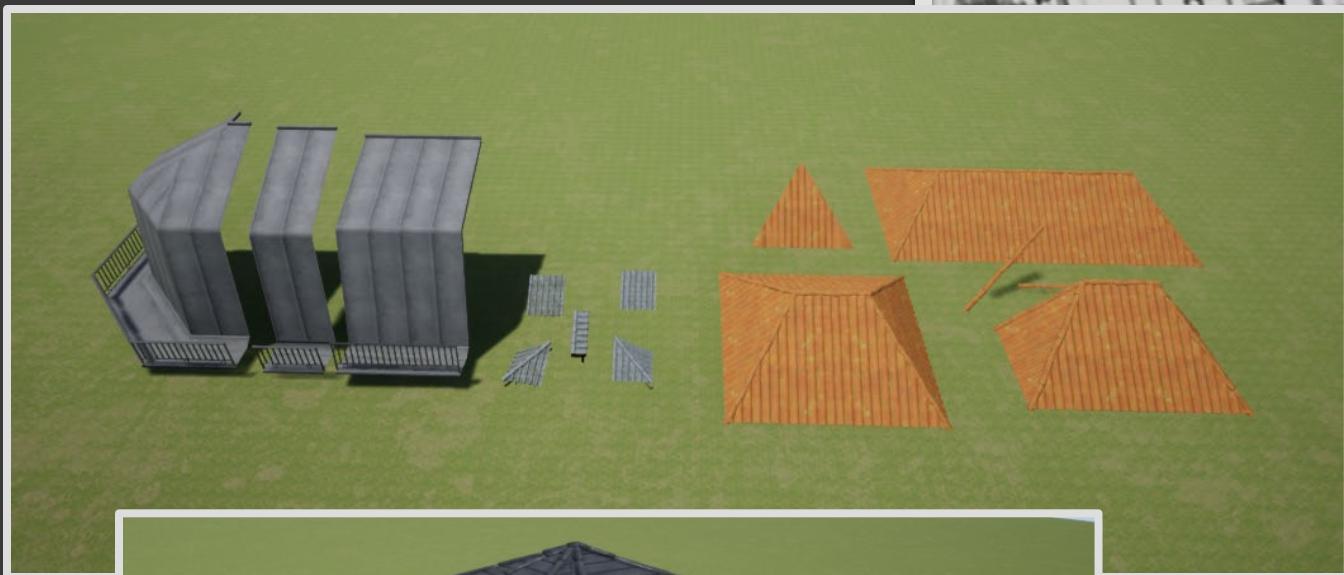


Window/Door Placement

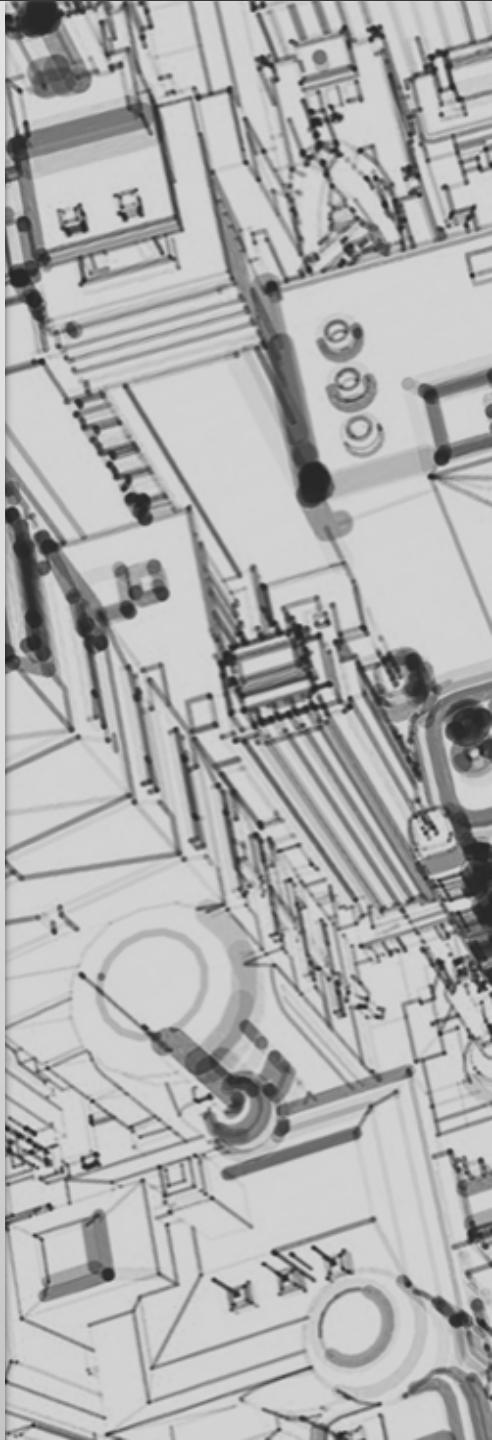
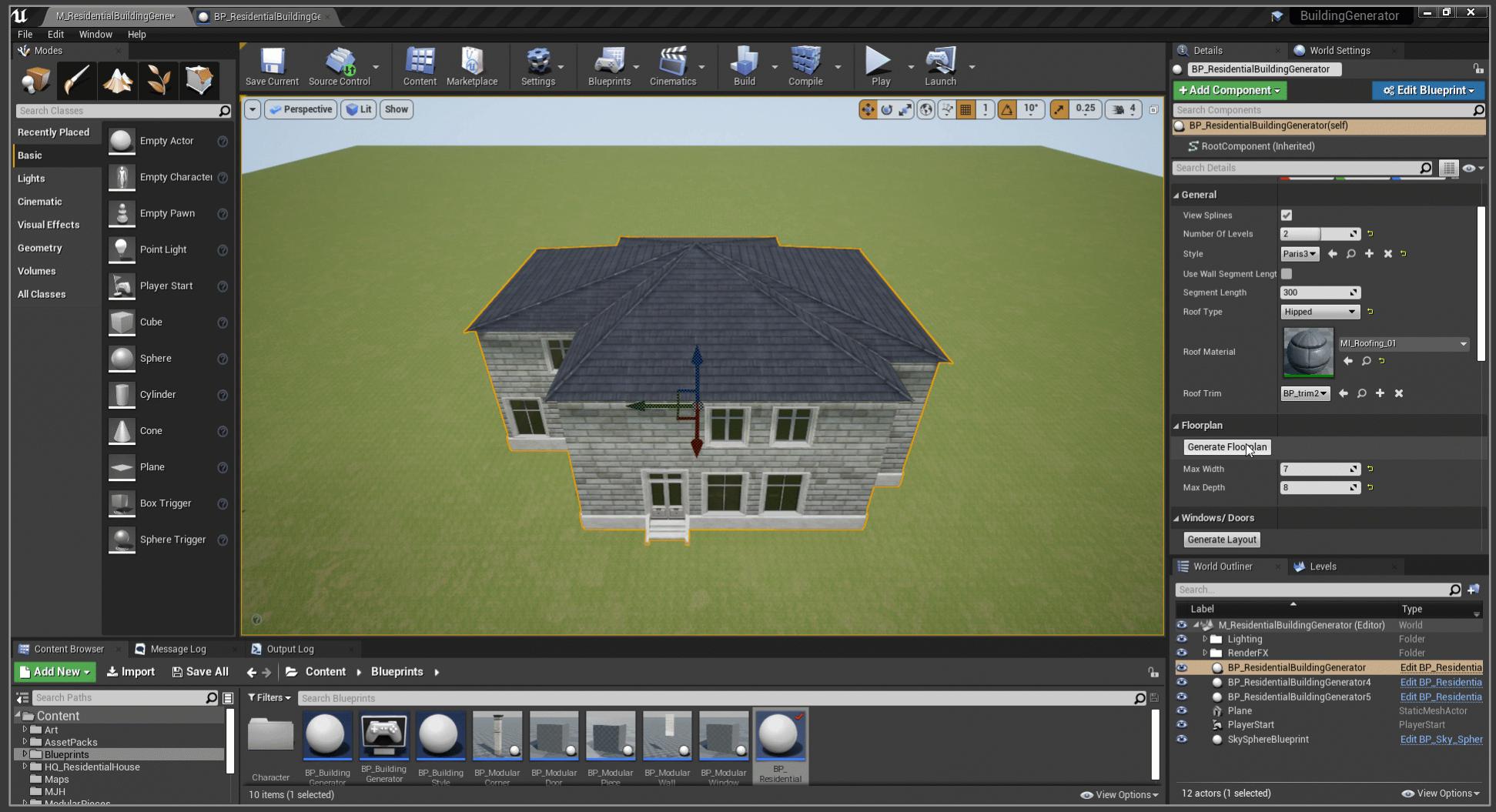


Roof Generation

- Roof generation by assembling segments was not possible for the custom floorplans
- Instead the best solution was to programmatically generate the roof mesh and UV it
- Roof material can be changed for variation



Roof Generation



Building Style

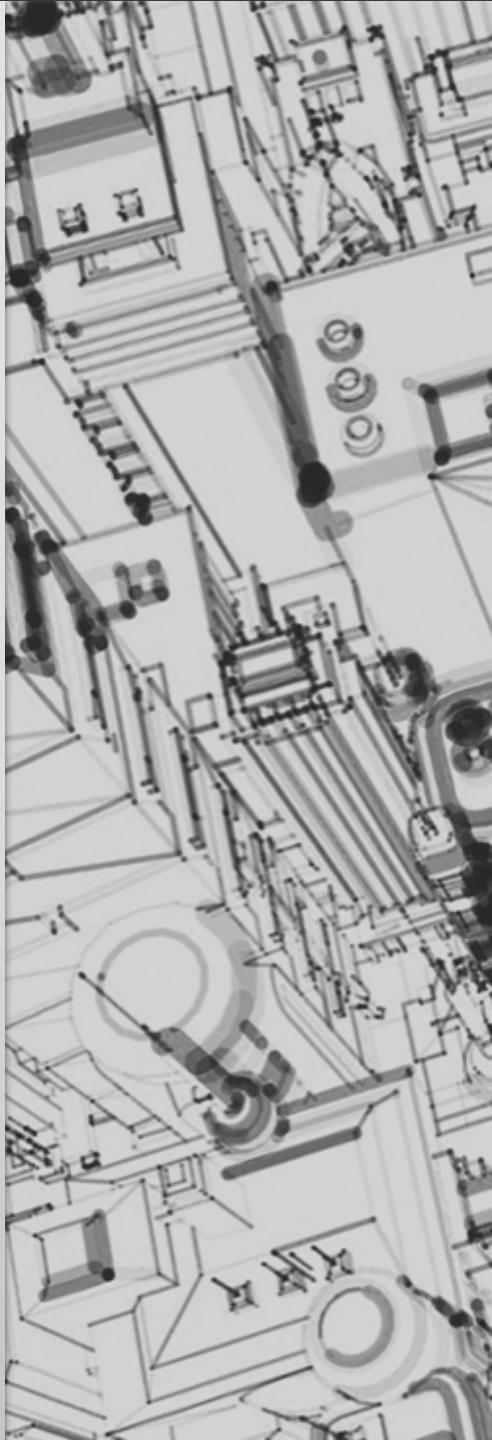
- Created a way for defining a “building style” so the user can pre group meshes



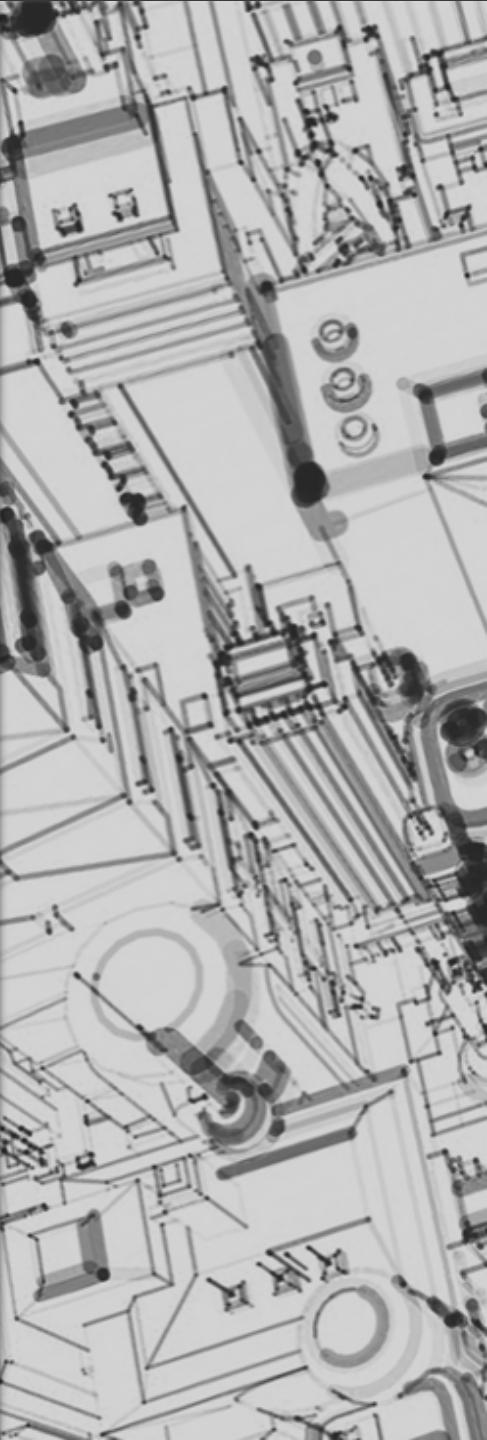
Search Details

Levels	
▲ Levels	2 Array elements
▲ Levels	5 members
0	Wall Mesh: BP_ParisWall3 ▾ ↪ 🔍 + ✎ ✖
0	Window Mesh: BP_Window6 ▾ ↪ 🔍 + ✎ ✖
0	Door Mesh: BP_ParisDoor3 ▾ ↪ 🔍 + ✎ ✖
0	Corner Mesh: BP_Corner1 ▾ ↪ 🔍 + ✎ ✖
0	Add Windows: <input checked="" type="checkbox"/> ↪ 🔍 + ✎ ✖
▲ 1	5 members
1	Wall Mesh: BP_ParisWall4 ▾ ↪ 🔍 + ✎ ✖
1	Window Mesh: BP_Window5 ▾ ↪ 🔍 + ✎ ✖
1	Door Mesh: None ▾ ↪ 🔍 + ✎ ✖
1	Corner Mesh: BP_Corner1 ▾ ↪ 🔍 + ✎ ✖
1	Add Windows: <input checked="" type="checkbox"/> ↪ 🔍 ✖

▶ Rendering
▶ Replication
▶ Collision



Building Style



Schedule Vs. Progress

- Objectives not completed:
 - Generate decorations [shutters, light fixtures, trims]
 - Create two modes for generating high rise buildings and houses
 - Save generated buildings without the generation data

- Reasons for delays:
 - Mesh Problems
 - Spline Struggles
 - Roof generation much more complicated than expected [2.5 weeks vs estimated 1 week]







Questions/Feedback