User Manual

A Generative Method to ReFrame Visitor Experience in IKEA Showroom

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[48-724] Scripting and Parametric Design
Final Project

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Spring 2022 [48-724] Scripting and Parametric Design
Final Project

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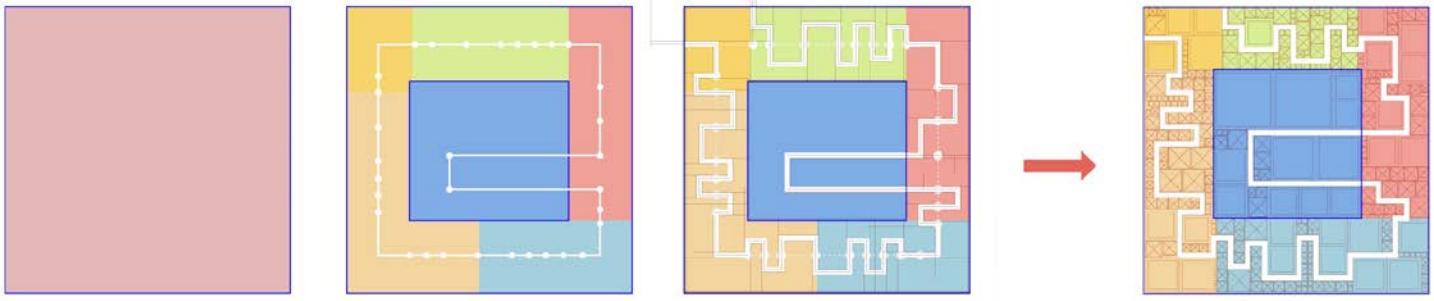
How does **Maze of IKEA** work?



Site Properties

200x200 floor area
(the conventional IKEA show-room dimension)

Average Circulation

random spaces division;
random dividing points list;
the average path;

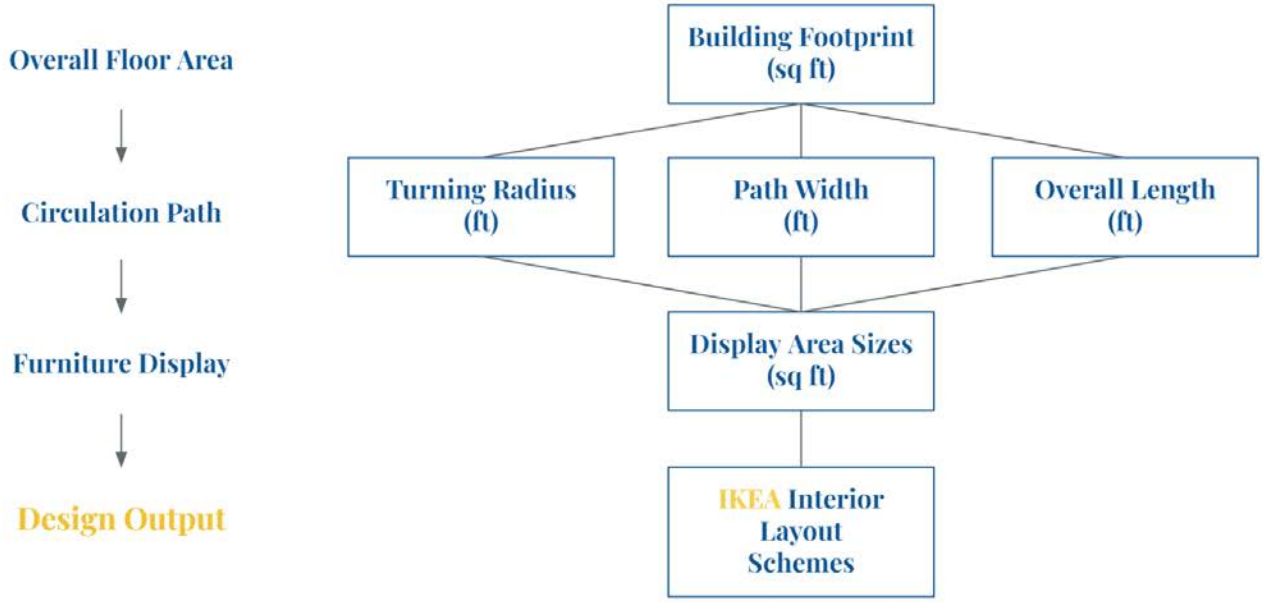
Path + Space Divider

showroom dimension;
circulation path (recursion);
divided layout;

Define Display Area

potential product layout
(data-based allocation of Area display/ Item display/ Shelving units / Partition wall).

Algorithmic Flow Chart

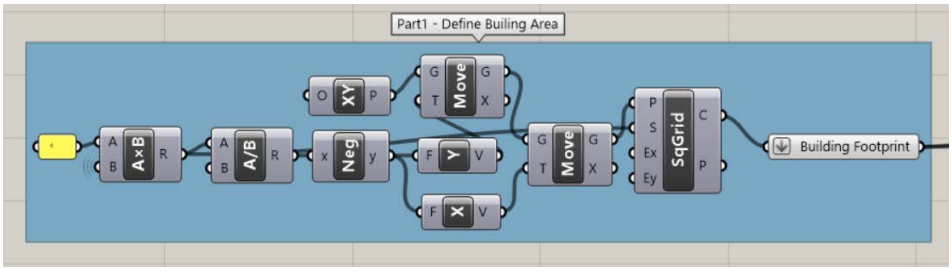


Parameters Input/Output Flow Chart

In a nutshell, this plugin is primarily composed of four parts. With the first part being the input of site boundaries generated. Next, the plugin will draw a centralized “courtyard” and automatically finds the average path as the baseline. In this step, actual generation will be operated based on input parameters. Furthermore, the average path will be offset to further articulate the circulation zone - eventually divided into modularized display areas.

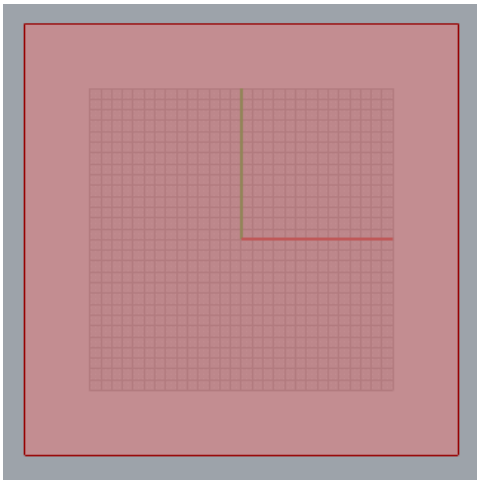
Part 1 . **Define Site Boundary**

User Input - " Building Footprint dimension" Factor



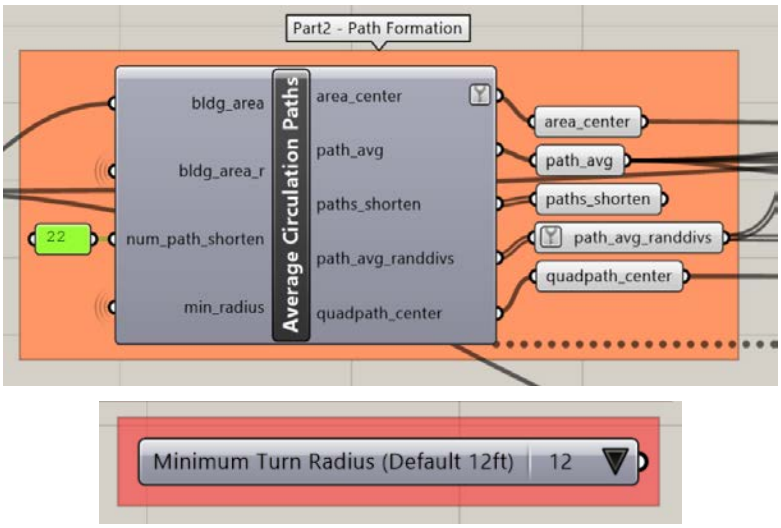
Building footprint definition

As the first step, users need to define the site boundary. By default, the conventional building dimension of an IKEA showroom is 200 ft x200 ft. The unit factor in the script is based on multiplication of 4. Therefore, while the variant in the sliding bar ranges from 48ft to 64ft -the plugin provides a varying scale of building from 196ft to 256ft in dimension.

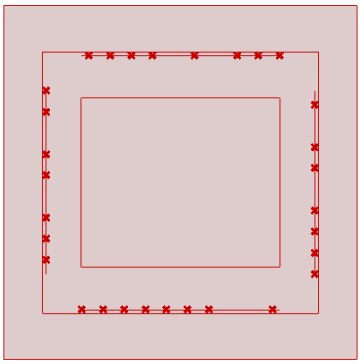


Part 1 Output - "Building Footprint Generated by Plugin"

Part 2 . **Generate Circulation Baseline**



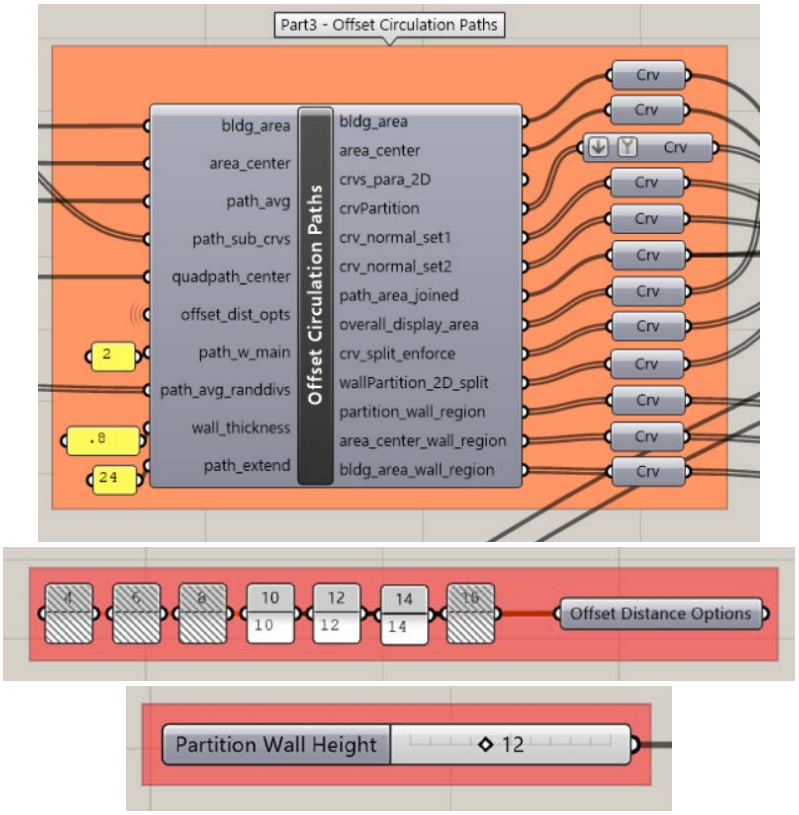
User Input - " Minimum Turn Radius"



Part 2 Output - "Average Circulation Path"

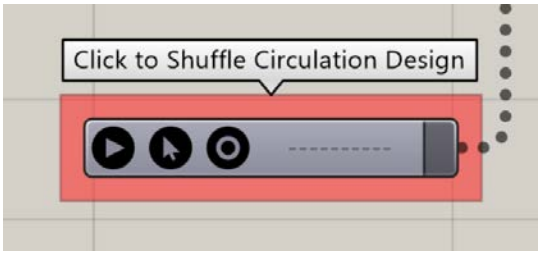
As introduced in the algorithm workflow, based on the building footprint generated in Part 1 of the plugin, Part 2 automatically generates a **baseline average circulation path** as "path_avg". By user defined input of 'minimum turning radius', this part of the script actively divides paths into increments of steps with minimal randomization. Points in the screenshot demonstrate **turning points of the final paths** in the next step.

Part 3 . **Offset Circulation Paths**

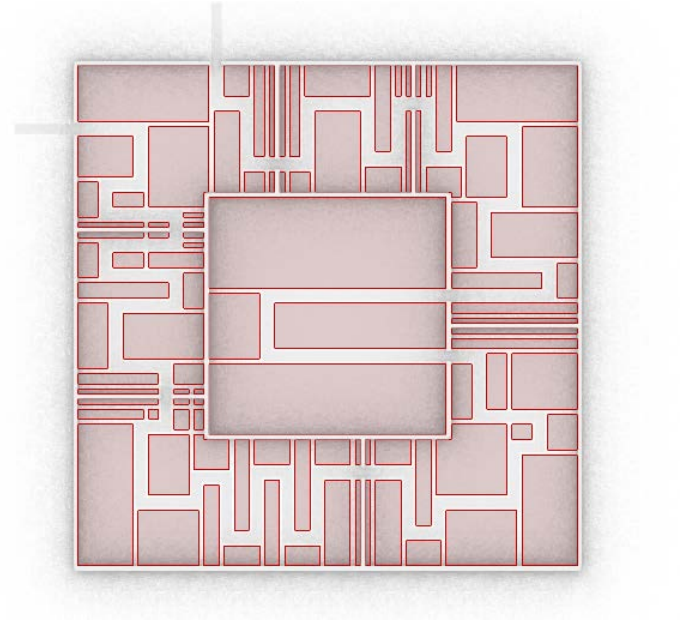


Part 3. User Input - “Offset Path + Space Dividers”

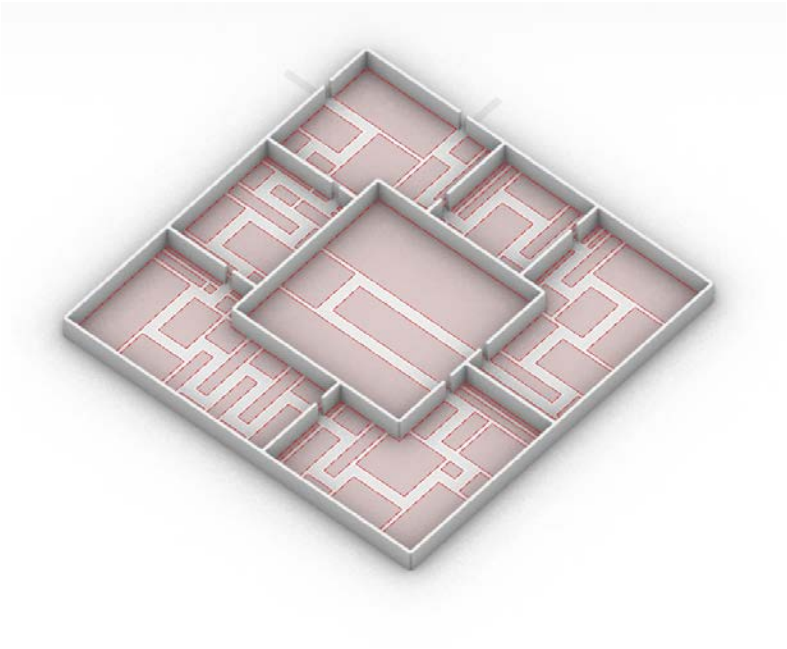
Selectively, users can opt to decide which parameters to be used for “offset distances”, which will ultimately determine the final circulation path offset from the baseline (see the updated path screenshot). Based on the combined selections of parameters above, users can elect to use the “Shuffle Circulation Design” feature to regenerate design scenarios until optimal results are achieved. At this point, a preview of the design scenario will be provided for reference. (see screenshots below).



Part 3. User Input - “Shuffle Circulation Design”

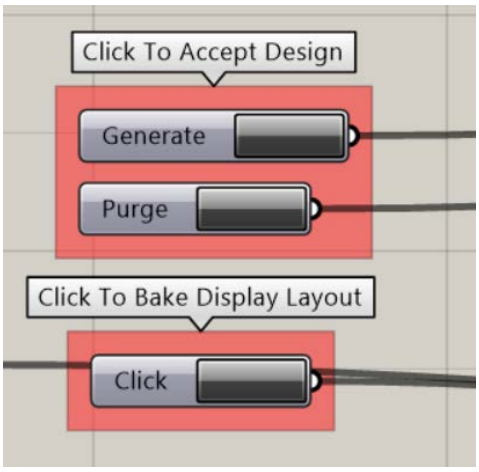


Part 3. Plugin Output - “Design Scenario Preview” - Plan View



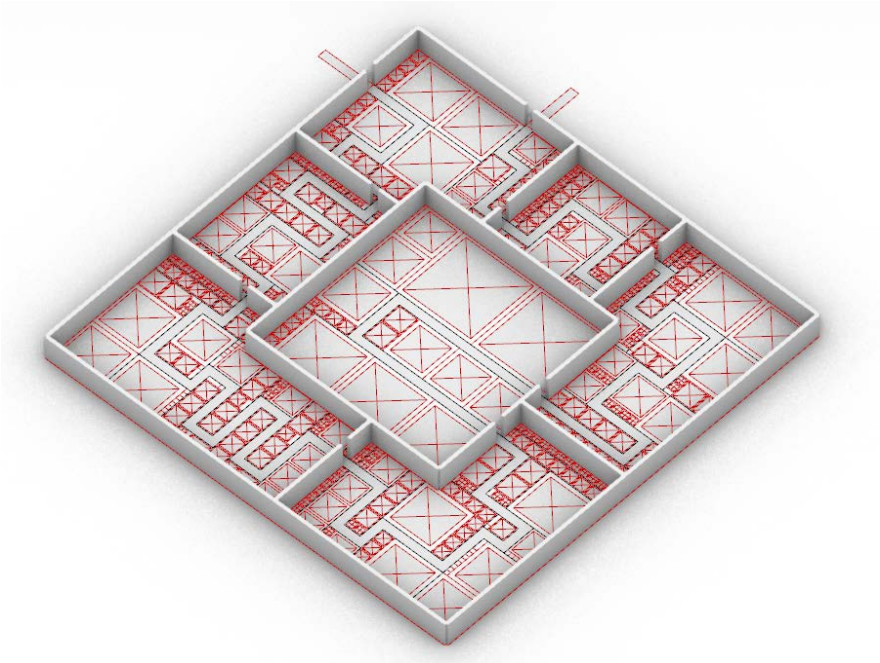
Part 3. Plugin Output - “Design Scenario Preview” - Axon View

Part 4 . **Generate Display Areas**

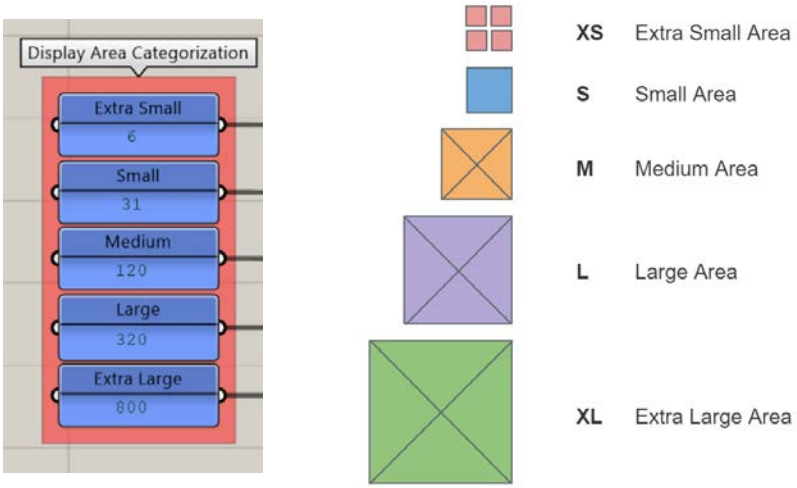


Part 4. User Input - “Accept Design - Generate”
+
“Base Display Layout” into Rhino Space

Within the last part, once the design scenario generated in Part 3 is accepted, the plugin operates recursion events to articulate potential display layout in individual spaces. An intended consistency of dividing spaces in squares for modularity purposes. If the user is not satisfied with the outcome, “Purge” action can help the user to start over.

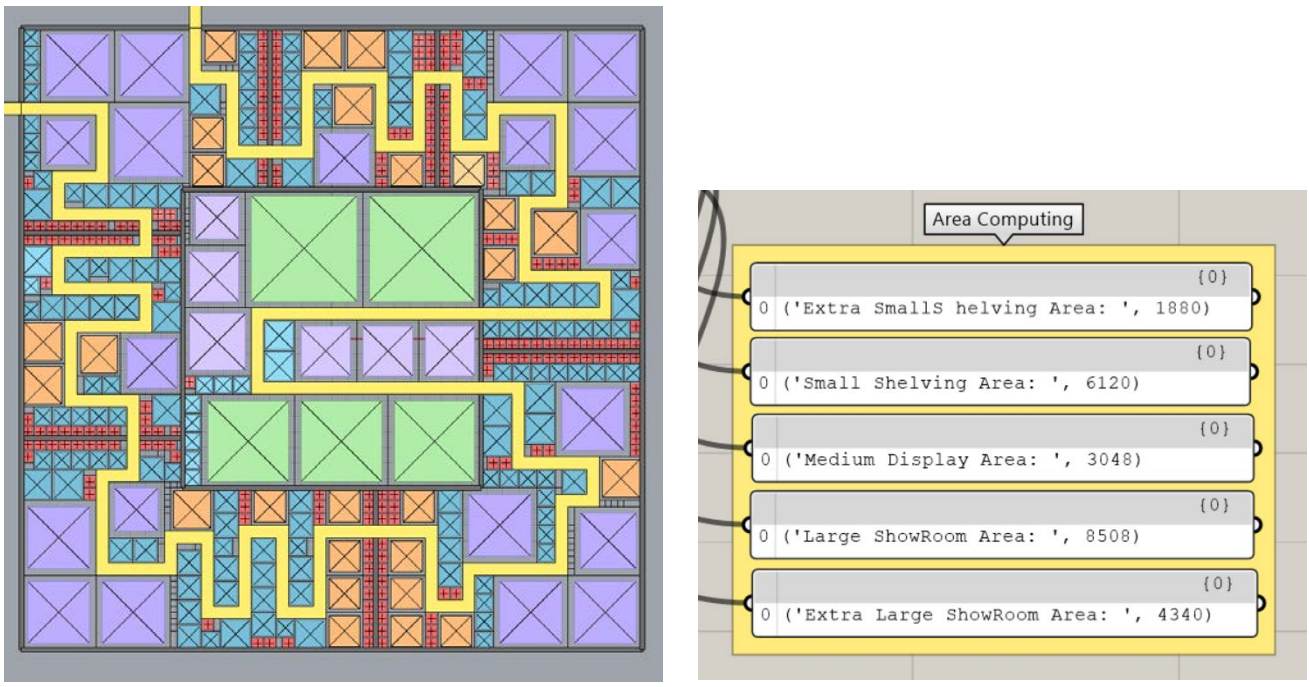


Part 4. Plugin Output - “Generated Display Area” - Axon View

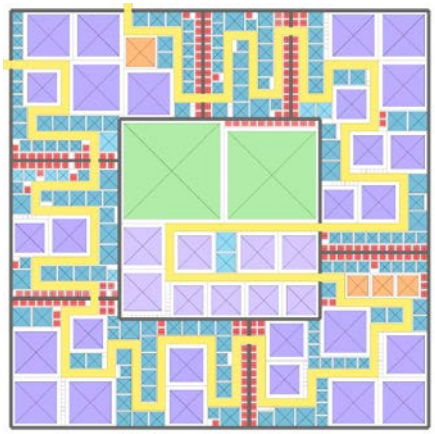


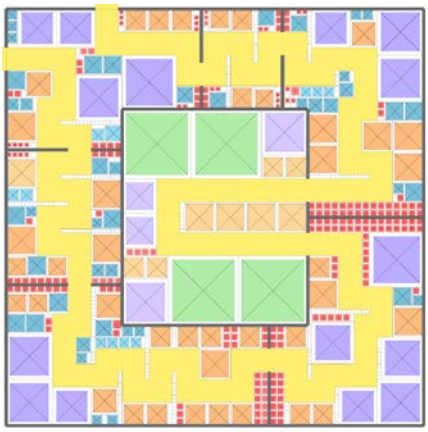
Part 4. User Input - “Display Area Categorization”

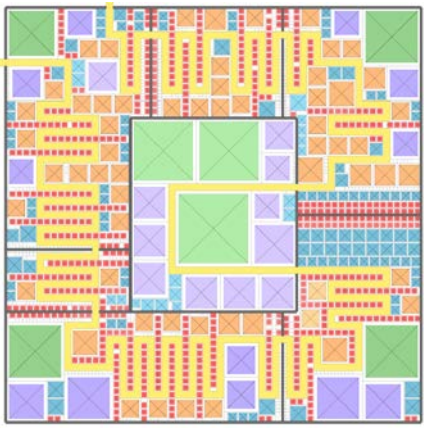
In order to visualize various hierarchies of display areas generated, users can opt to change parameters in the “Display Area Categorization” to gauge output parameters in the final visualization below - with the intent to categorize scales of display area by computed area data (as shown in the table below). At this stage, the Plugin execution process is complete.



Part 4. Plugin Output - “Colored Generated Display Area” - Plan View
+ “Display Area Summary Table by Category”



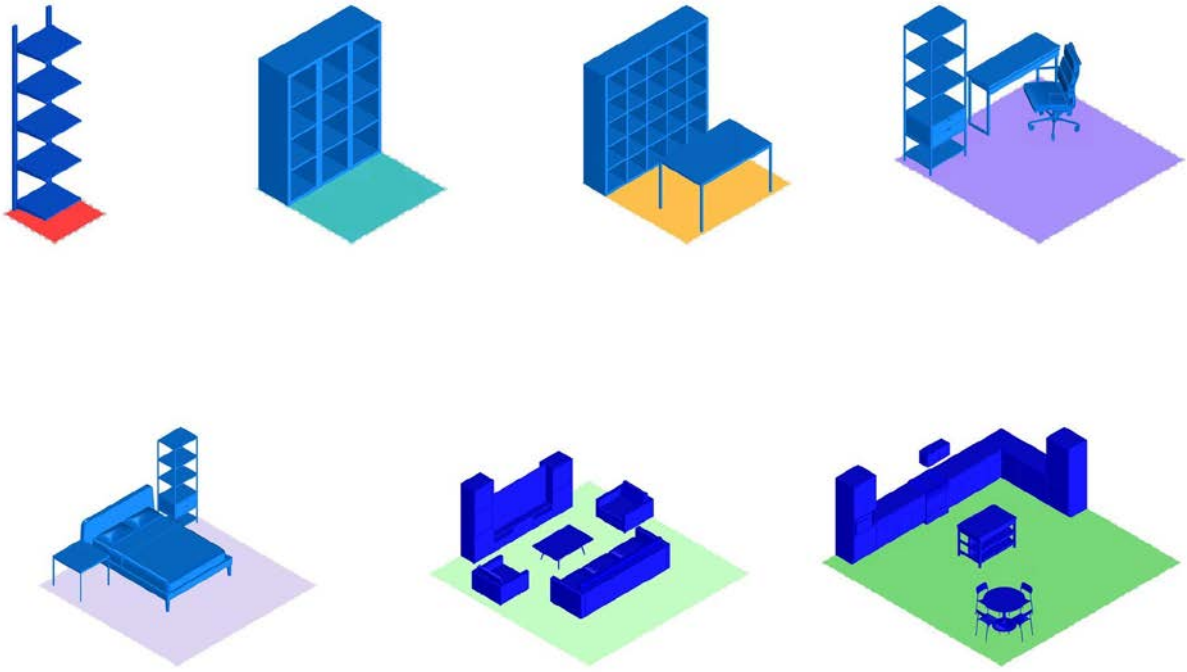




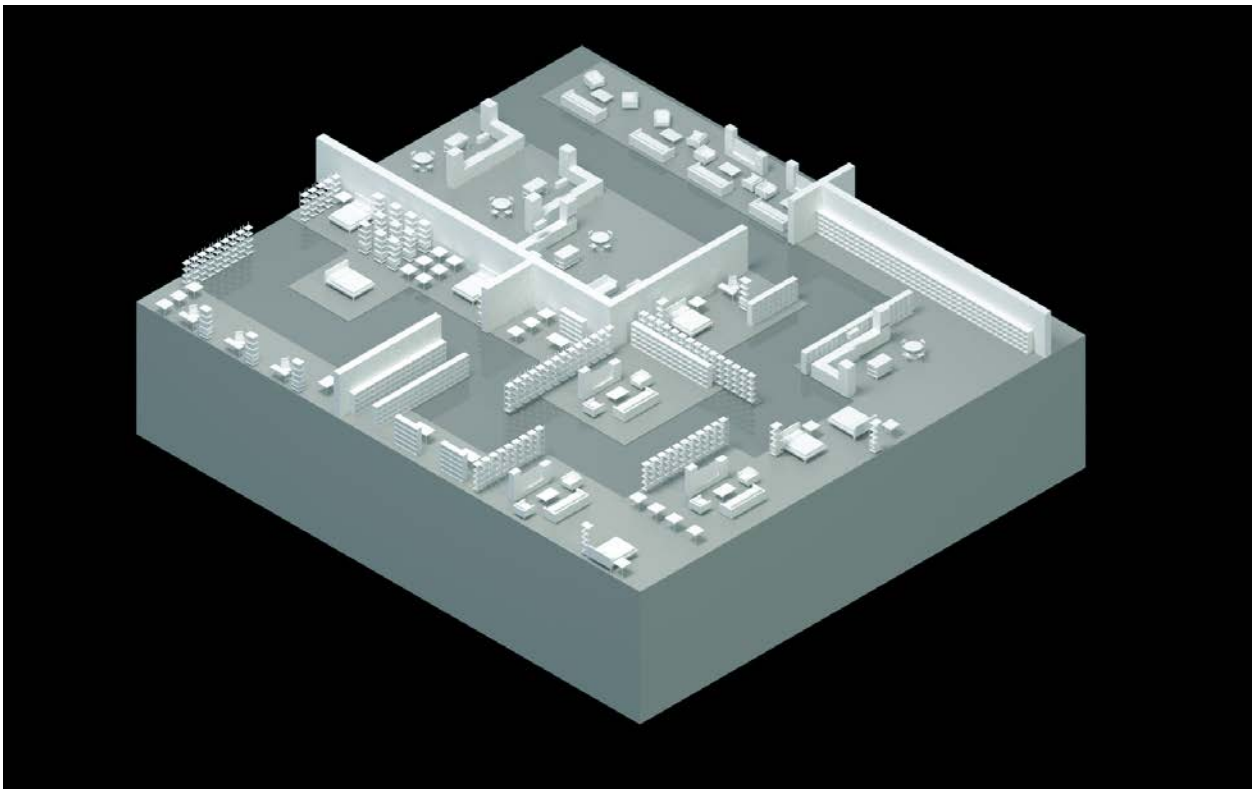
Part 4. Plugin Output Samples

Part 5 . **Layout and Display Activation**

As defined in the previous section, the IKEA space plan is broken up into color-coded displace typologies determined by area. Below are some examples of typical IKEA displays and furniture layouts. Designers can take the spatial outputs defined in the previous steps and layout their own furniture and displays as needed, depending on what the store has in stock. The below examples are just a fraction of what IKEA has in their warehouses.



Part 5. Design Application - “IKEA Display Typologies”



Part 5. Design Application - “IKEA layout examples”

Part 5. Design Application - Renderings