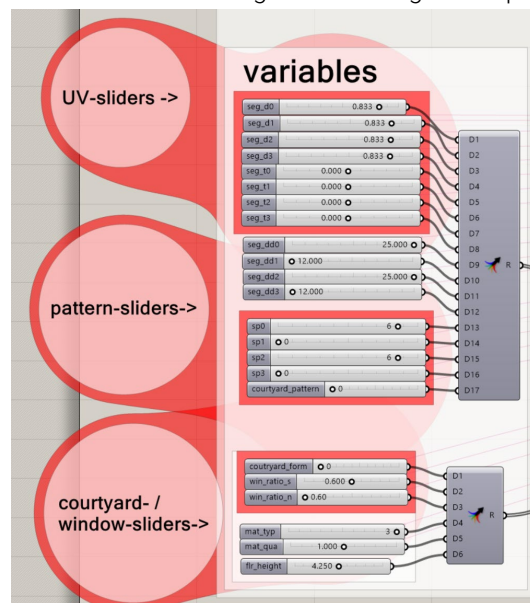# User Interview Worksheet

Task_0: Parametric Model Test

Task_0_a: Play with Building Geometry & Envelope

This task aims to test if the definition of the **building geometry and envelope** is reasonable from the architectural perspective.

Instructions:

1. Move UV-sliders to change the shape of the building geometry
2. Move pattern-sliders to change the form of the building geometry
3. Move courtyard- / window-sliders to change the building envelope

Evaluations:

1. Evaluate the flexibility of the building geometry and envelope
2. Evaluate if the complexity of the building geometry and envelop is reasonable and practical

Questions:

1. How to understand the essential complexity of building geometry in the early design stage?

Task_0_b: Play with Building Performance

This task aims to test if the definition of **design variables** is reasonable from the sustainability perspective.

Instructions:
1. Move UV-sliders to change the shape of the building geometry
2. Move pattern-sliders to change the form of the building geometry
3. Move courtyard- / window-sliders to change the building envelope
4. Move material-sliders to change type and insulation performance of the building constructions
5. Calculate building performance: embedded GWP / energy demand / total GWP
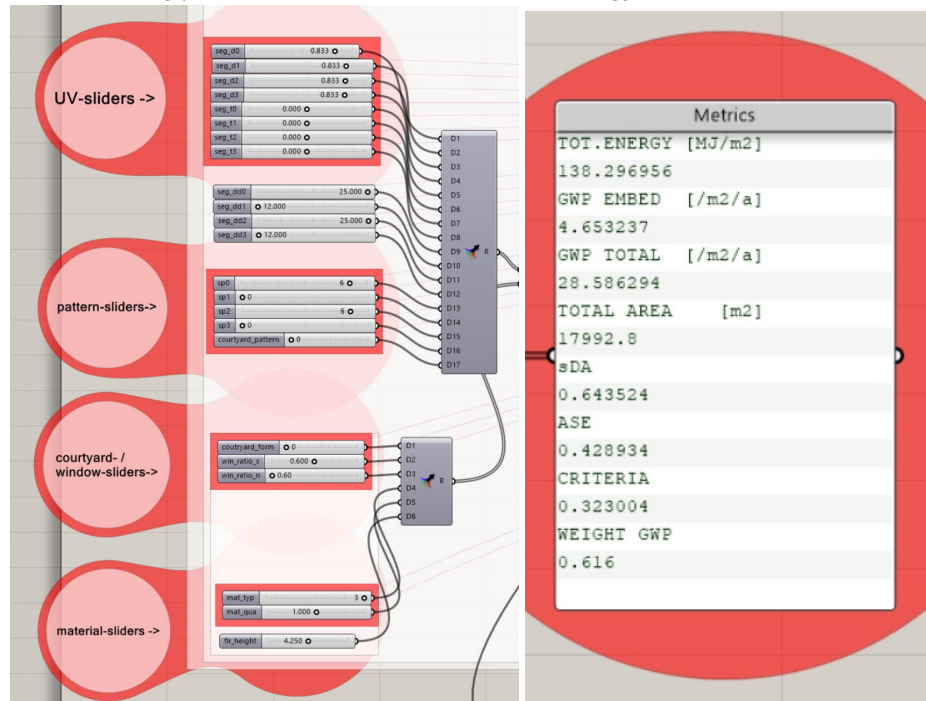
Evaluations:
1. Evaluate the definition of performance-related variables (glass-related, material-related)
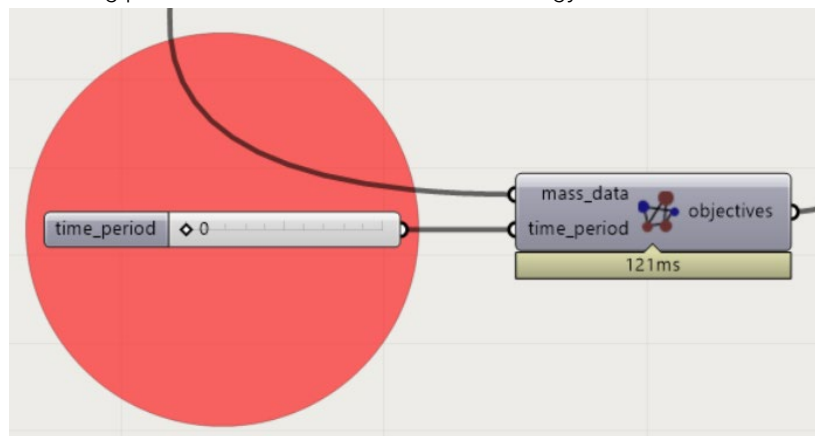
Questions:
1. How to understand building performance in the early design stage?
2. How to understand the relationship between CO_2 emissions and energy demand?

Task_0_c: Play with Time Related Building Performance

This task aims to show the **dynamic building performances** in terms of **time**, which are estimated by the predicted climate according to the climate analog.

Instructions:
1. Choose one design result from **Task_0_b**
2. Choose time scope within 0-50 years
3. Calculate building performance: embedded GWP / energy demand / total GWP


Questions:
1. How to understand the relationship between time and building performance?
2. How to understand time related CO2 emissions and energy demand?
3. What is essential to design for the future?

Task_1: Design Optimization Quality Test

This task aims to test if the tool is able to fulfill the **design requirements** from the geometry optimization perspective, including **flexibility** and **functional quality** of the design geometry, while achieving the building performance optimization requirements.
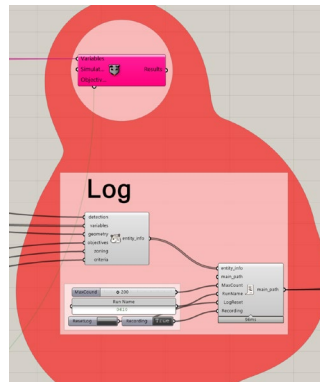
Instructions:
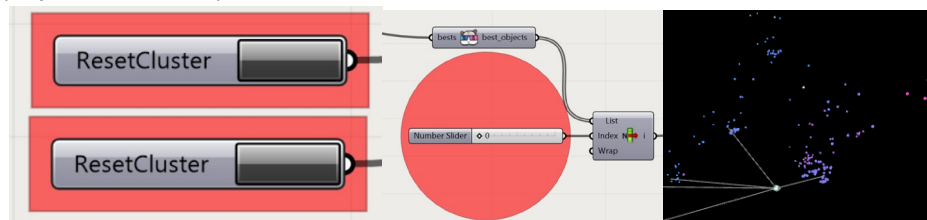1. Detect the site and baseline
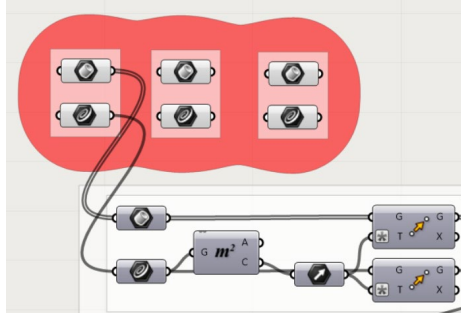
2. Input user design requirements to define the use scenario
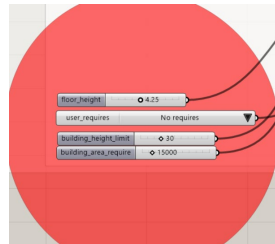
3. Run Optimization: 3 runs of 200 iterations in each run

4. Display the solution space and best solutions


Evaluations:
1. Evaluate if the solutions fulfill the design requirements from the user
2. Evaluate the flexibility of the solutions
3. Evaluate the quality of design geometry

Task_2: Optimization Quality Test

This task aims to test the performance of the overall **optimization** and **decision making** process, including: quality of the best solution(s), convergence speed and robustness.
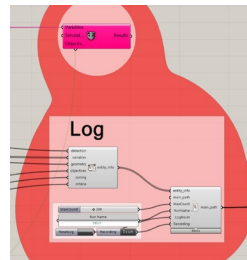
Instructions:

1. Detect the site and baseline
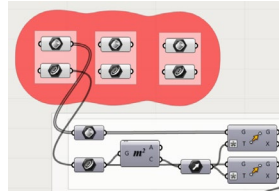
2. Tun the criteria attributes: weights of design penalty, weight of performance objectives
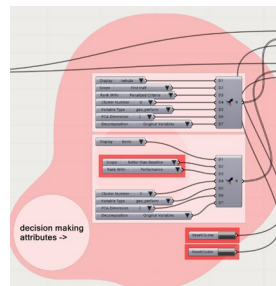

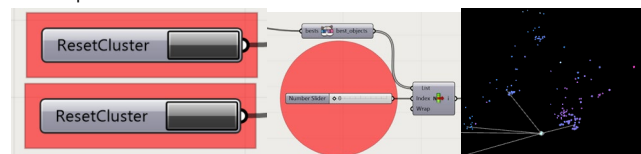3. Run Optimization: 3 runs of 200 iterations in each run

4. Select the entities with better performance than baseline, rank with original or penalized criteria

5. Tun the decision making attributes

6. Display the solution space and best solutions

Evaluations:

1. Evaluate the quality of design geometry
2. Evaluate the improvement of the building performance (embedded GWP & energy demand / total GWP / criteria / penalized criteria)