

CIC BIM Competition 2021

OASIS



The surrounding zero-carbon park in Kowloon Bay was shown, mostly encircled by the tall high-rise commercial buildings.

About the new development of the zero-carbon park

Design Concept:
The rationale behind the design is to facilitate users' sense of mind. The design concept has taken reference from nature like trees. Elements like sun shading and the aesthetic of trees have been taken reference to. As referred to the building's name "Oasis", a great emphasis is to make sure the users can have an area where they feel more relaxed. This can become a platform in the middle of the district where people can rest from the chaotic and busy lifestyles.

Building Form:
Our building is surrounded by tall commercial buildings. Since the area itself is used as a pedestrian to Megabox, canopies are a way for us to solve how to control the users' circulation. The unique pixelated canopies are used to connect buildings with different programs. By using the same language, we created 4 courtyards that mimic the language implied on the canopies.

Spatial Arrangement:
On the ground floor, we placed public activities like the open exhibition and canteen. Above that, 4 courtyards are made to allow users to rest. Other more private programs are placed under the basement.

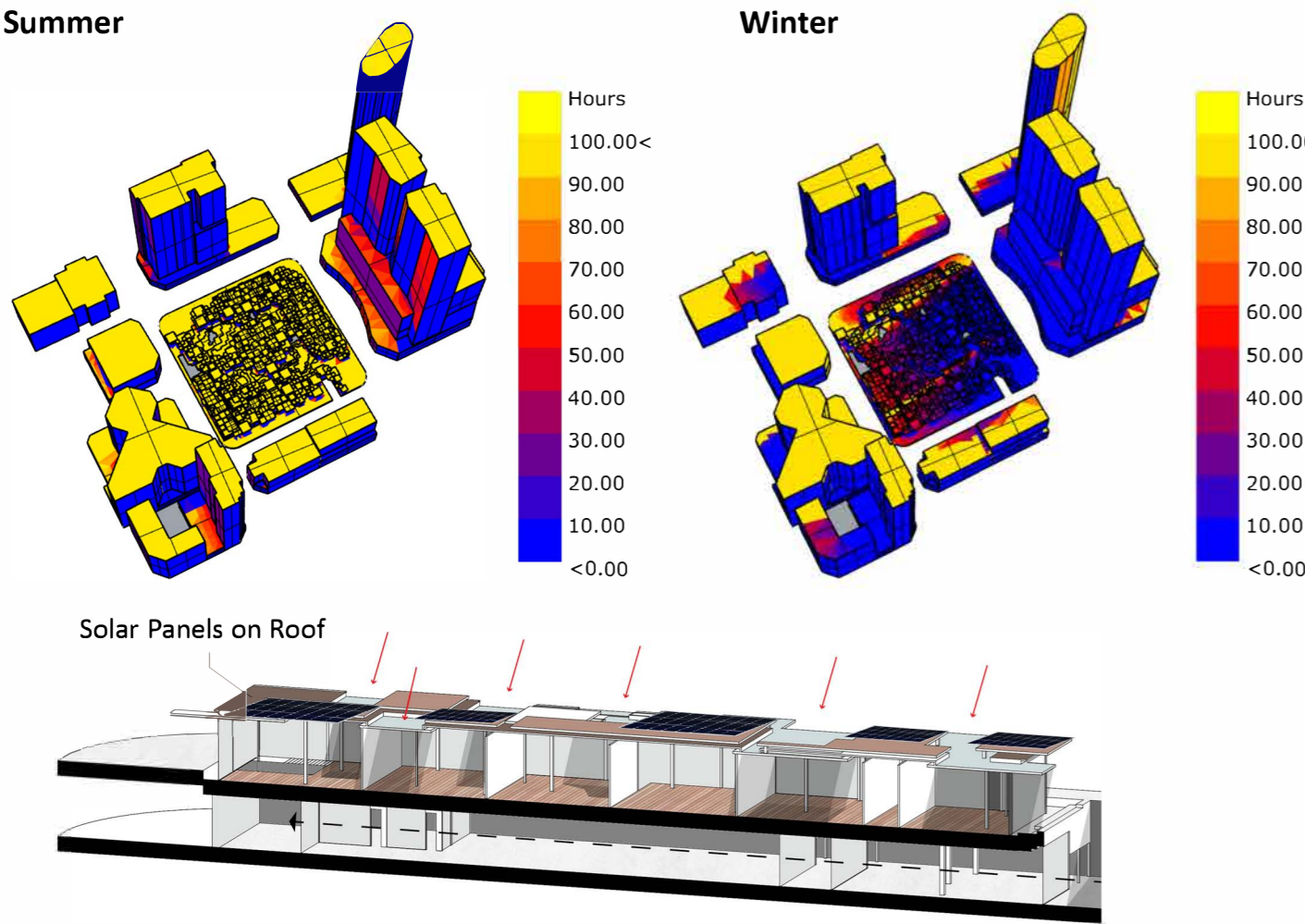
Connectivity:
The accessibility and openings of our site are considered where the zero-carbon park has its opening. To maximize people going into the building, we left an area open where users are prone to come in from like in front of the Megabox.

BIM uses in Design:
In terms of the process of using the BIM system, we first build up the basement by using walls and floor. After generating a basic model, we moved on to the engineering part. We began to modify our design by providing it with a usable and stable structure. We tried to use RAD and SAD in our canteen and to generate the HVAC system. Lastly, we polished our model by adding furniture and trees.

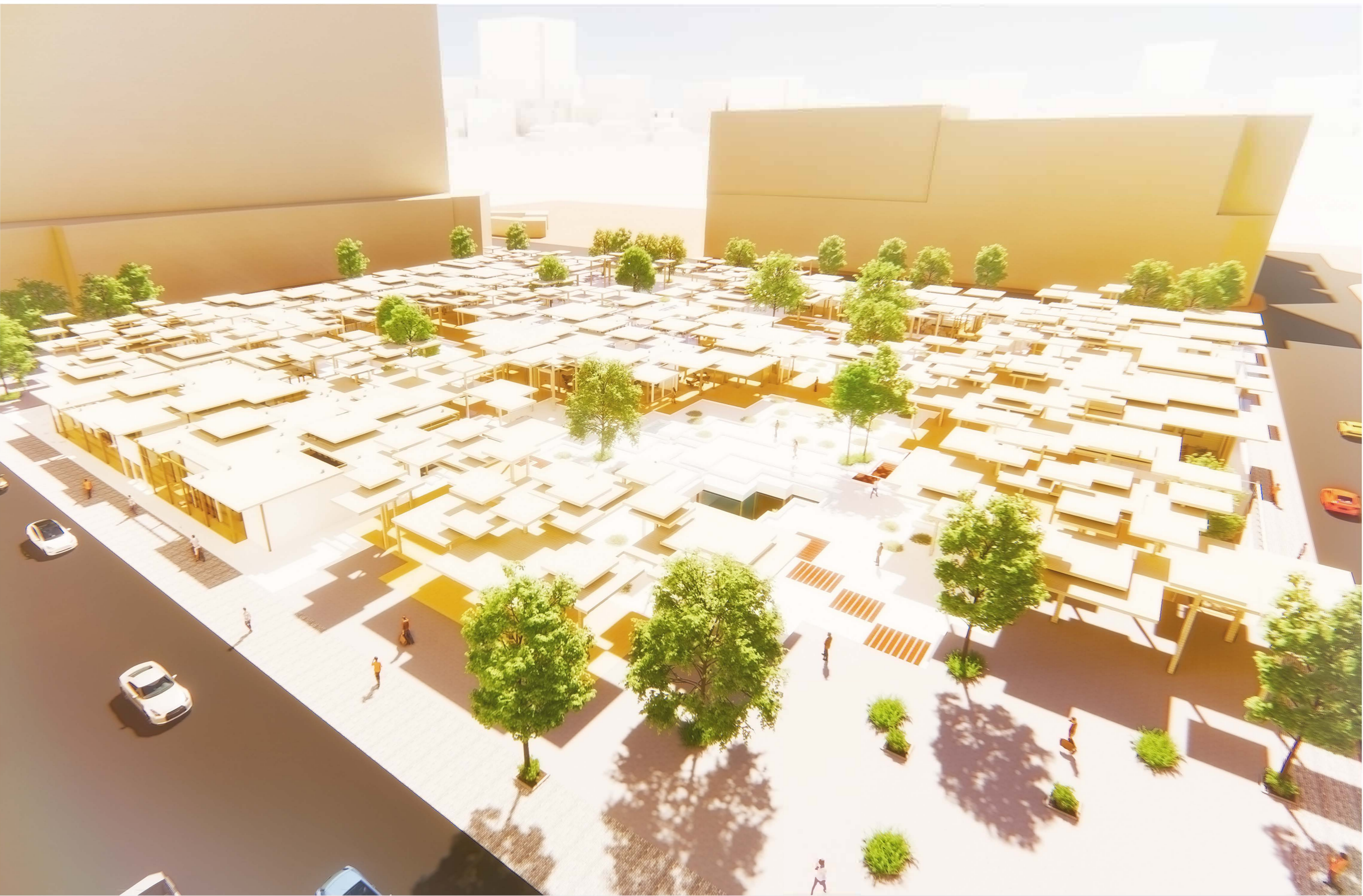
Quality of Design:
Before using BIM, we had used different software to develop our design such as Autocad, Rhino, Ladybug, Grasshopper, etc. Yet, we cannot make sure that the model can be exported in the standard quality by using a different software. By using BIM, the quality of the design can be ensured and the length and width can be shown clearly in numbers. Above that, our design can be presented in a professional way. Most importantly, BIM is more time-saving when handling the drawings such as plans and sections. On the other hand, it is able to generate the perspective in an easy way. Using BIM is easier to produce drawings with high-quality renderings.

Sustainability:
The sustainability of the design can be ensured with the provision of courtyards. Not only do courtyards help to provide natural ventilation during hot summer, but the canopies also cover enough areas to have cool air ventilation for users.

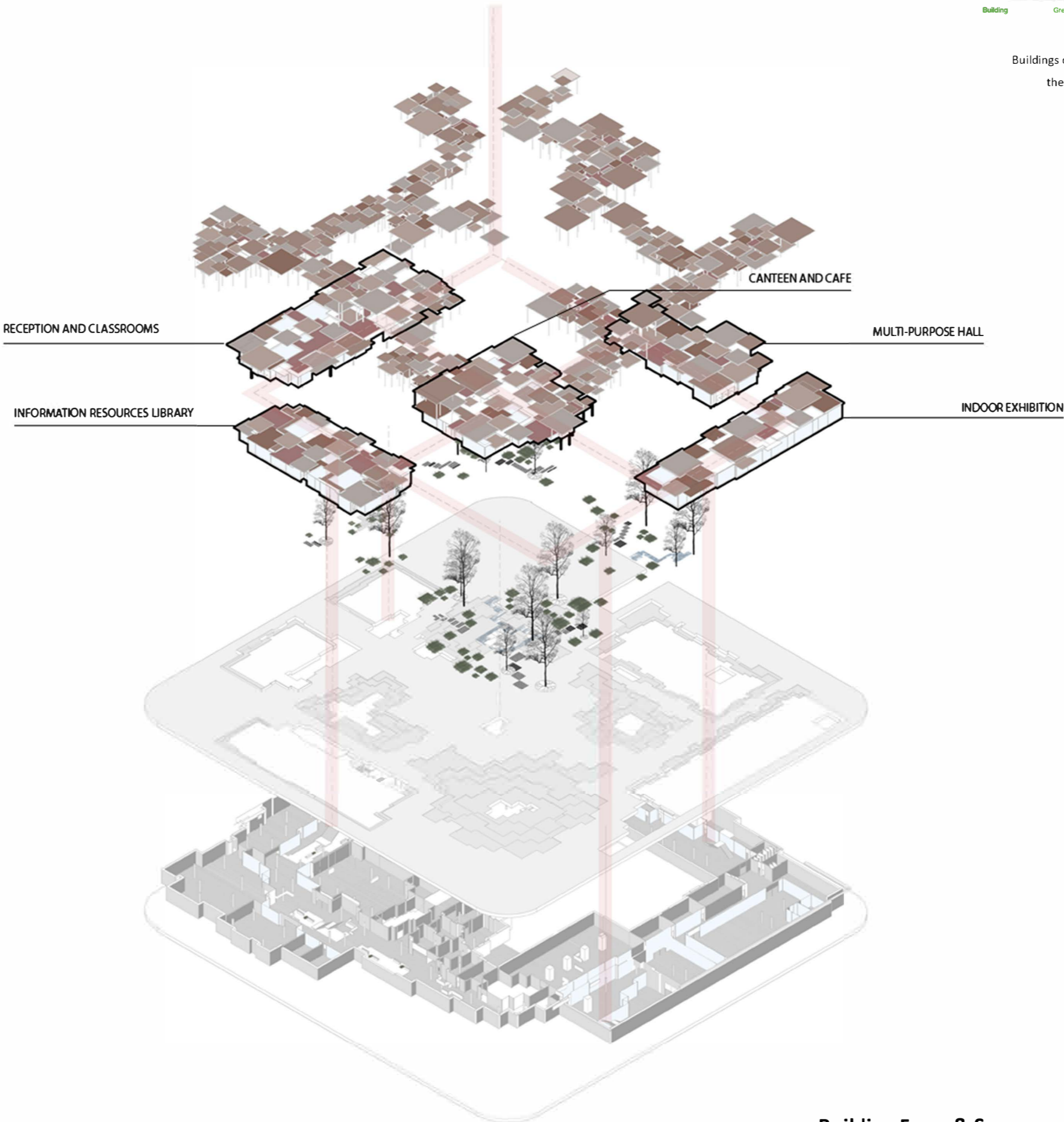
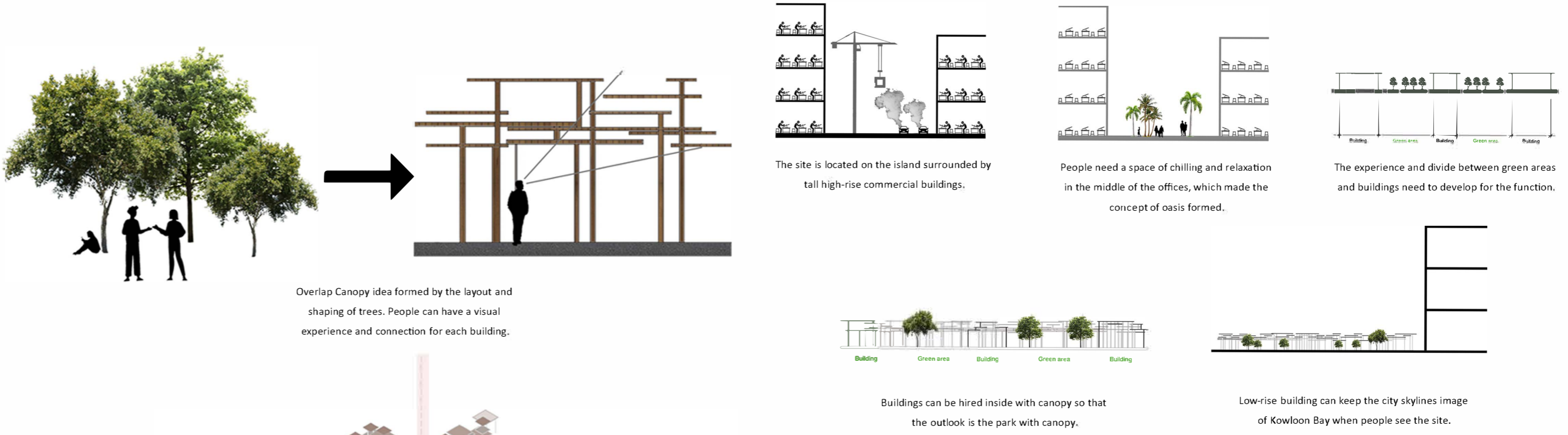
Summary:
The learning outcome of using BIM is that our group learned a great deal by using new software, through this we acknowledge our strong points and weaknesses as well as help each other improve and work efficiently. We can also realize whether our design is workable or not in coordination with the structure. All in all, the BIM system merges the design concepts and the structural concepts. Most importantly, we could complete this complex canopy organization and structural system efficiently and rationally in a short period of time because of using digitalization tool such as grasshopper and BIM software. BIM is an excellent software to use for team projects as it is efficient and can be used by all team members. We surely will use BIM 360 for our future projects.



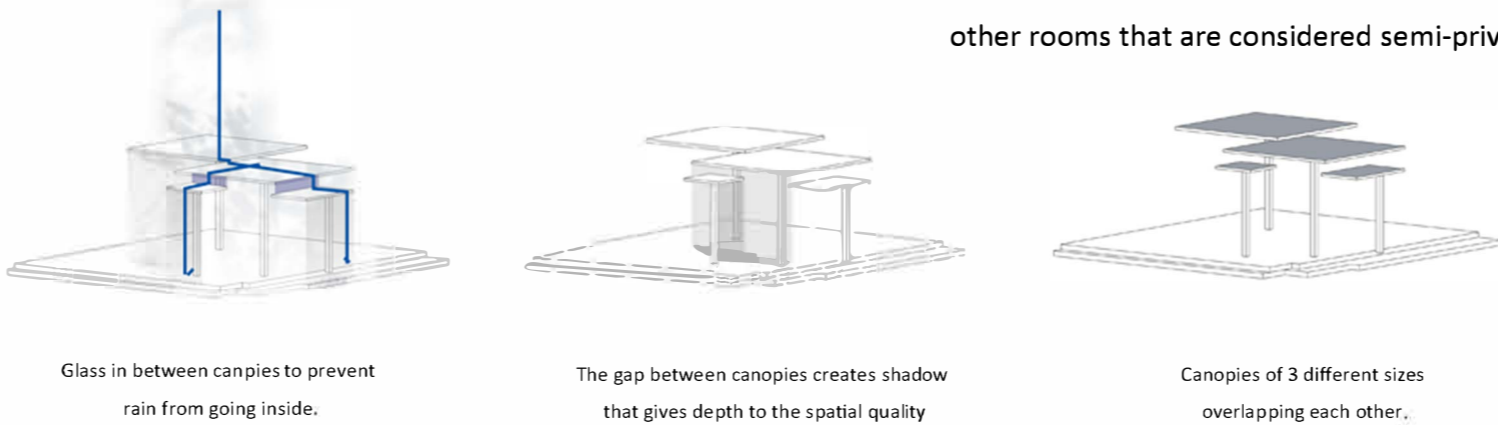
Solar analysis
With the help of solar analysis, we made use of this data to analyze the best position for buildings, solar panels and courtyards



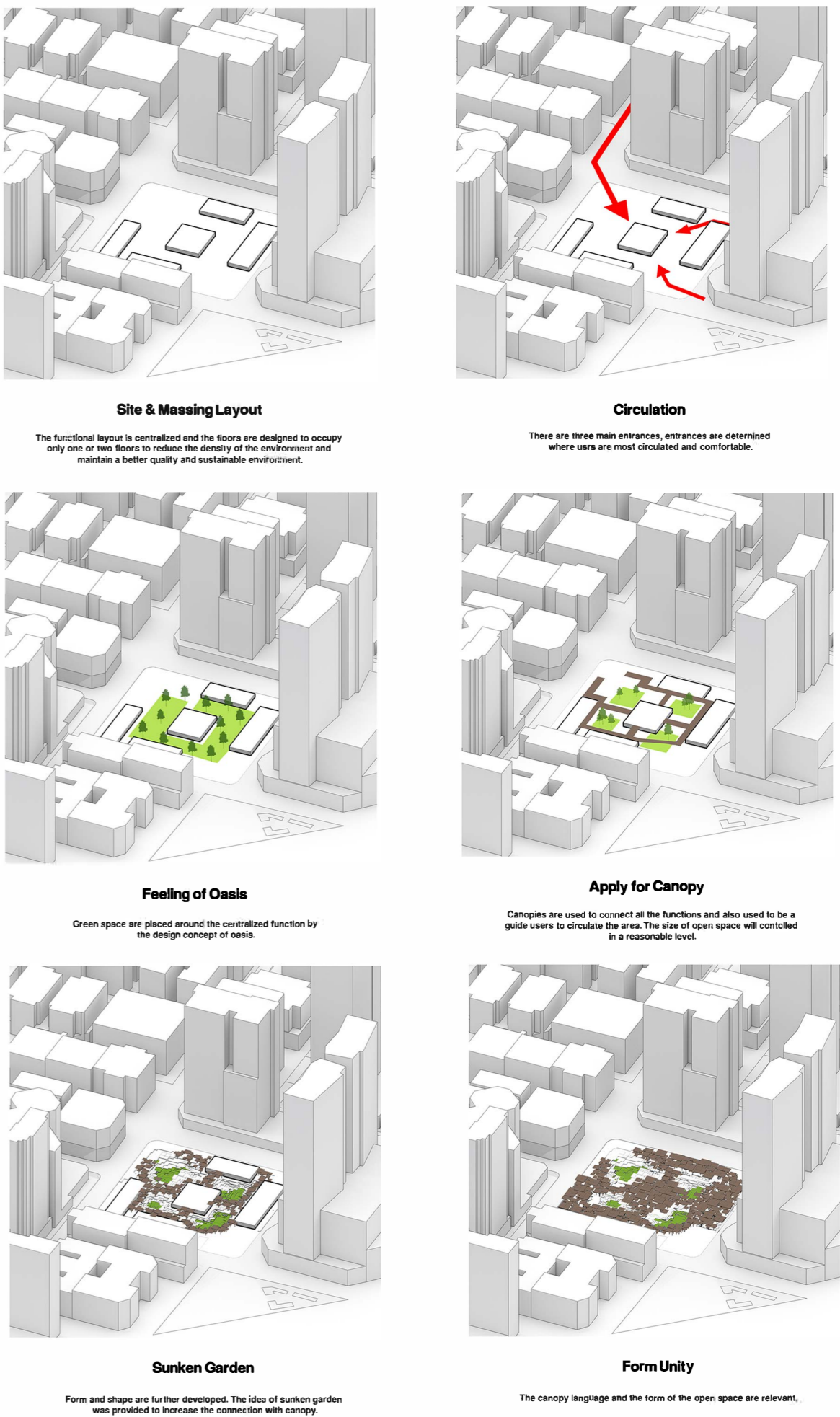
Overall Bird Eye view
The low story sustainable park setting was shown by this rooftop view with canopies design creating by the overlapping panels. The ventilated corridor for sustainability which is run through the whole project was shown.



Building Form & Space
The overlapping canopies are used to guide the users around the building. On the ground floor we have the 5 main functions - Canteen, library, indoor exhibition, multi-purpose hall and the classrooms. The basement has the car park area, offices and other rooms that are considered semi-private.



Concept of overlapping canopy



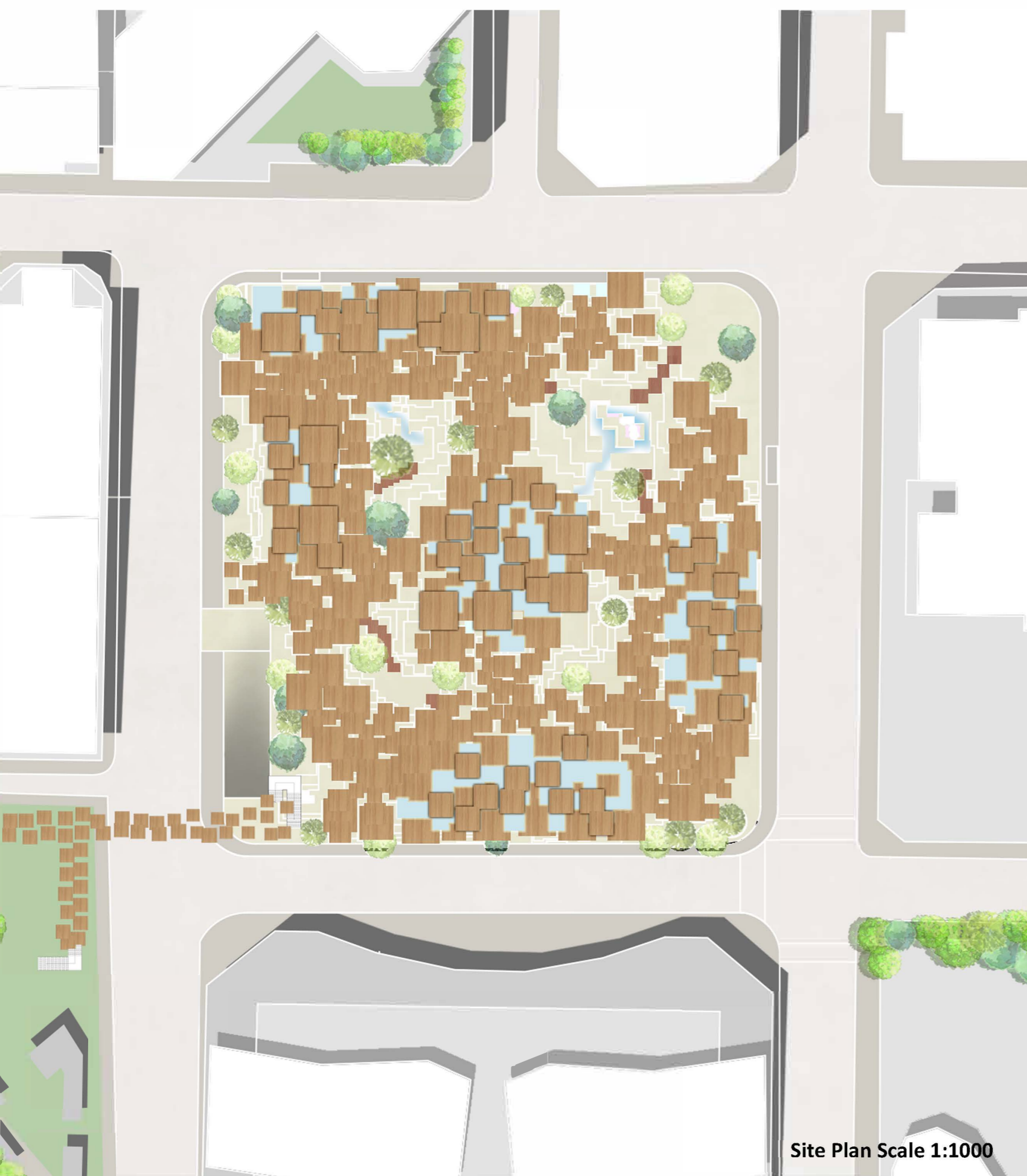
Design Development

Caravaneers

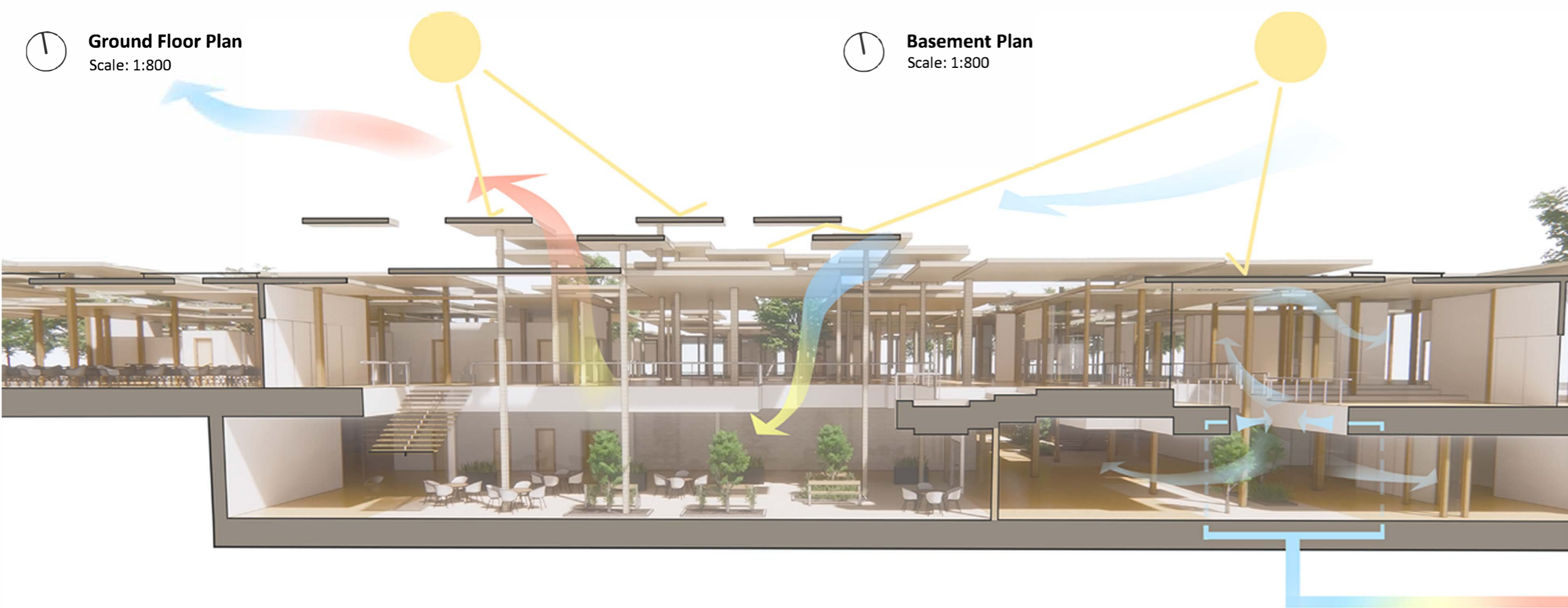
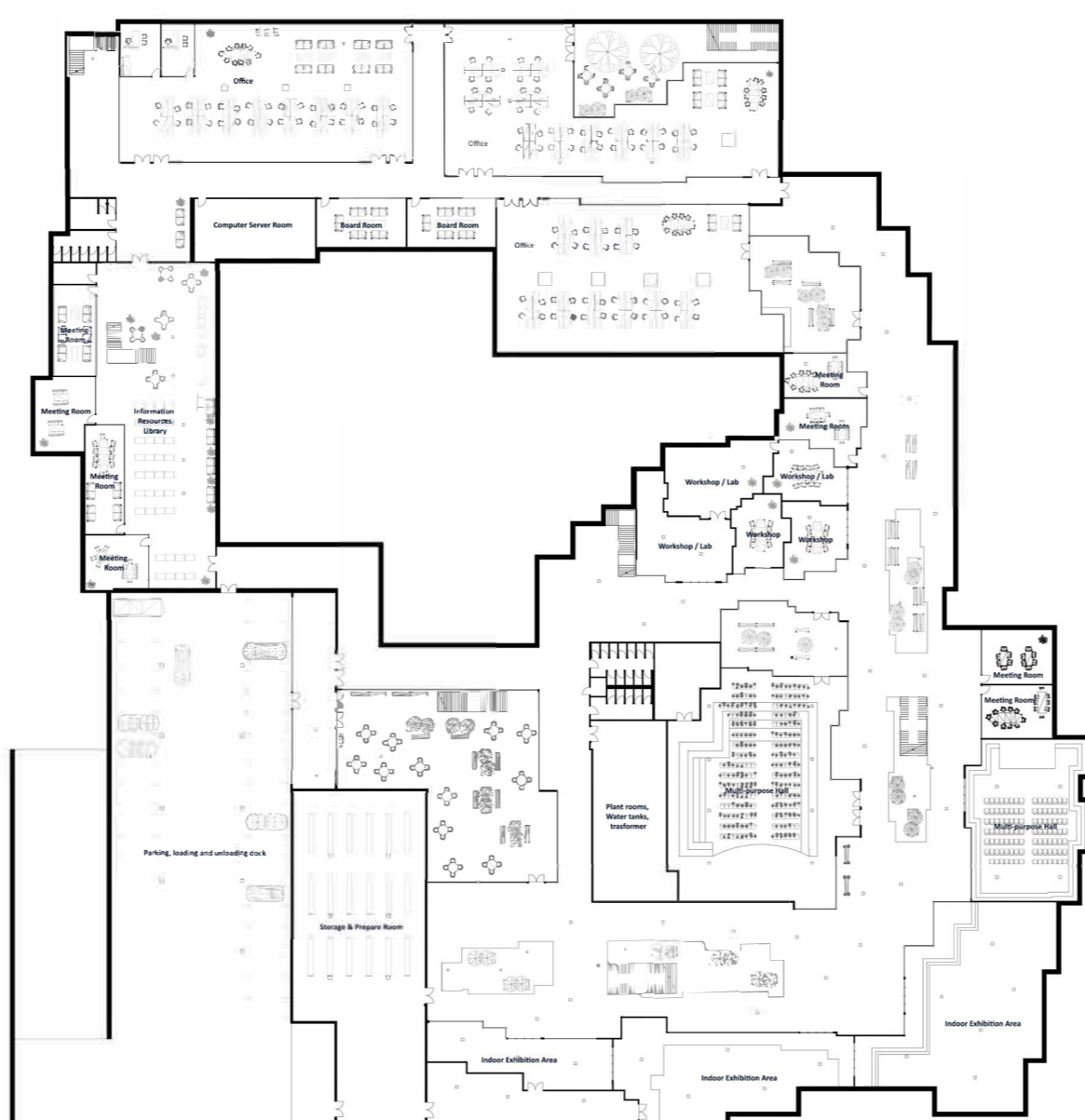
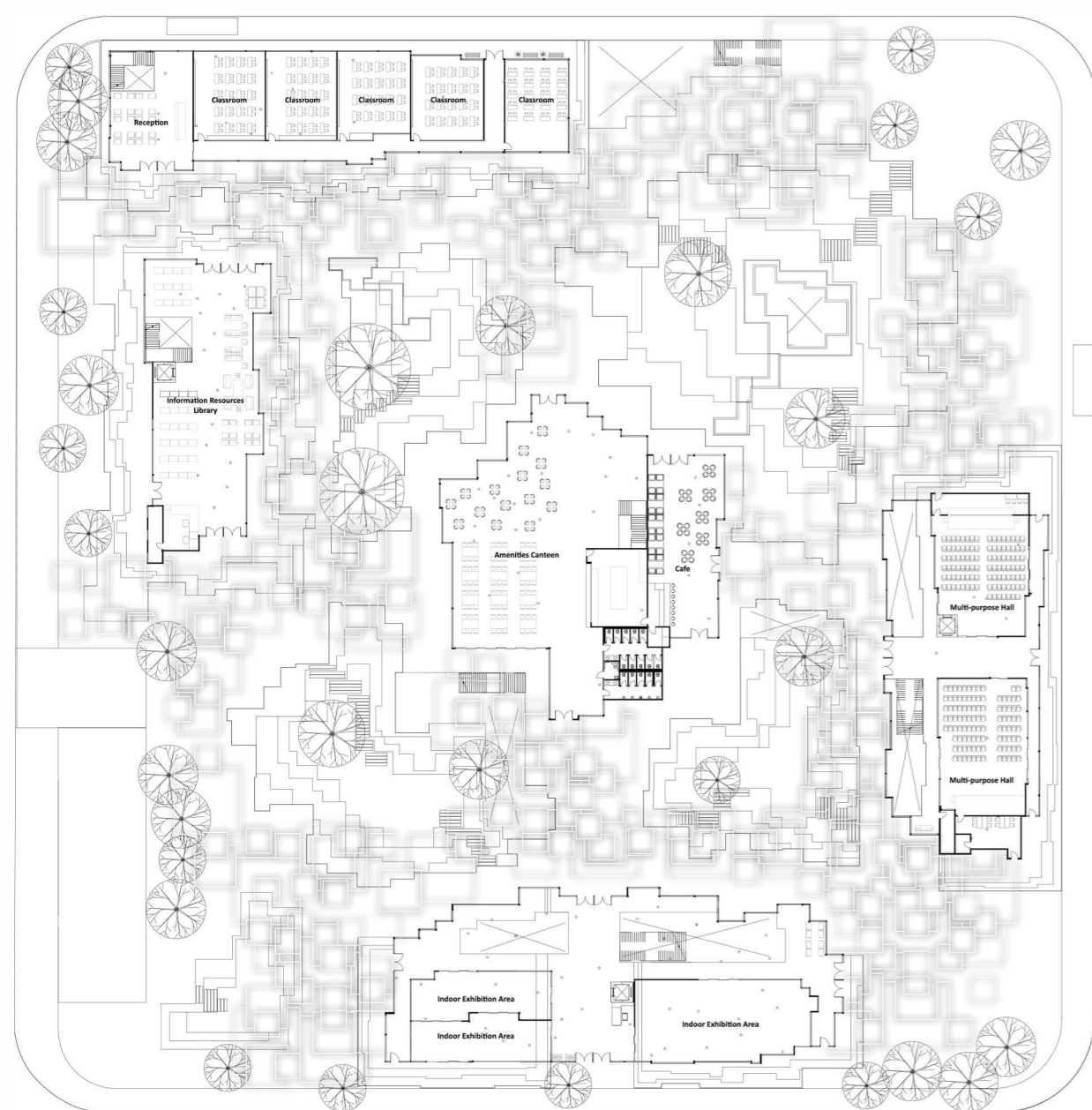
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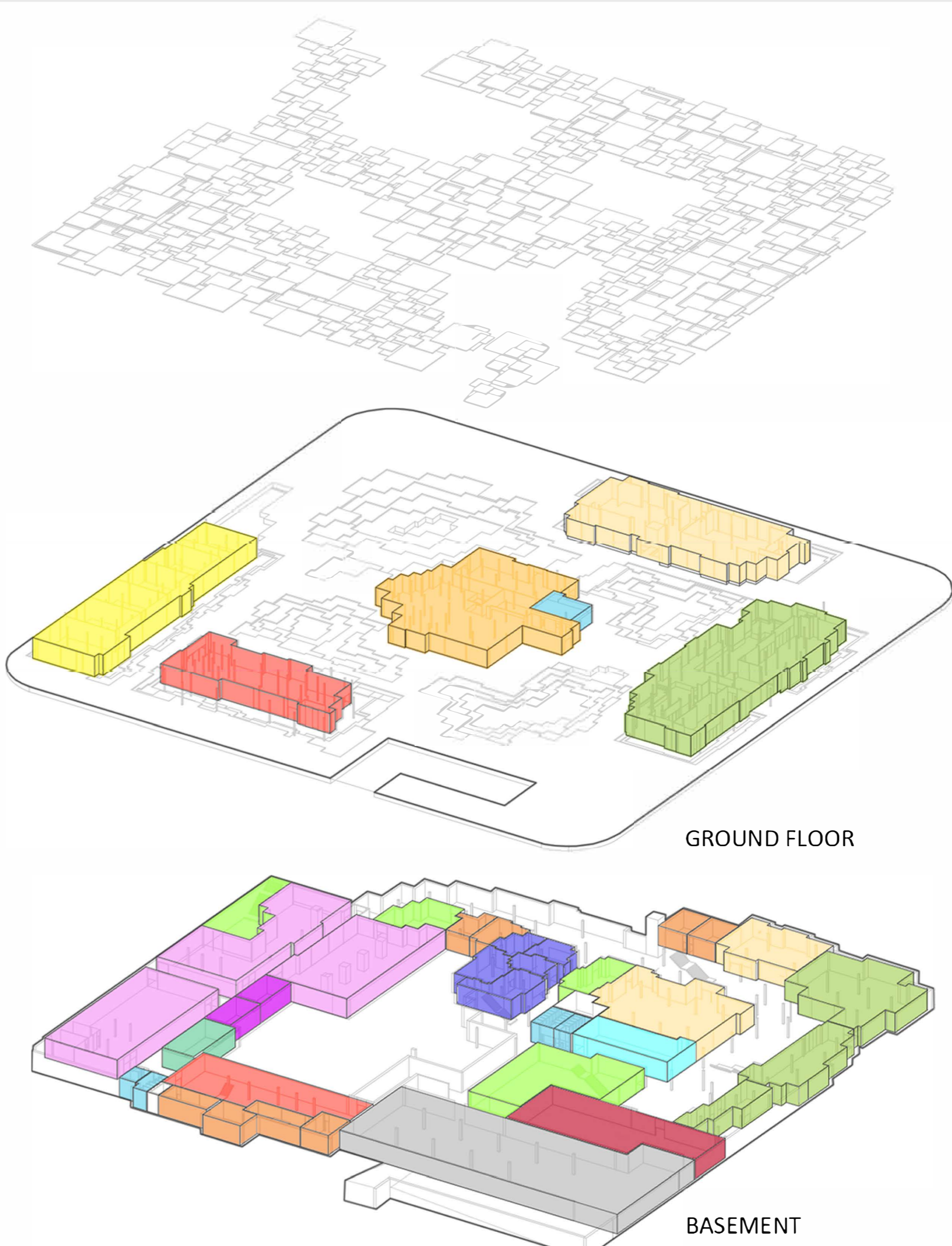
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The Perspective View of sunken garden and overlapping canopies

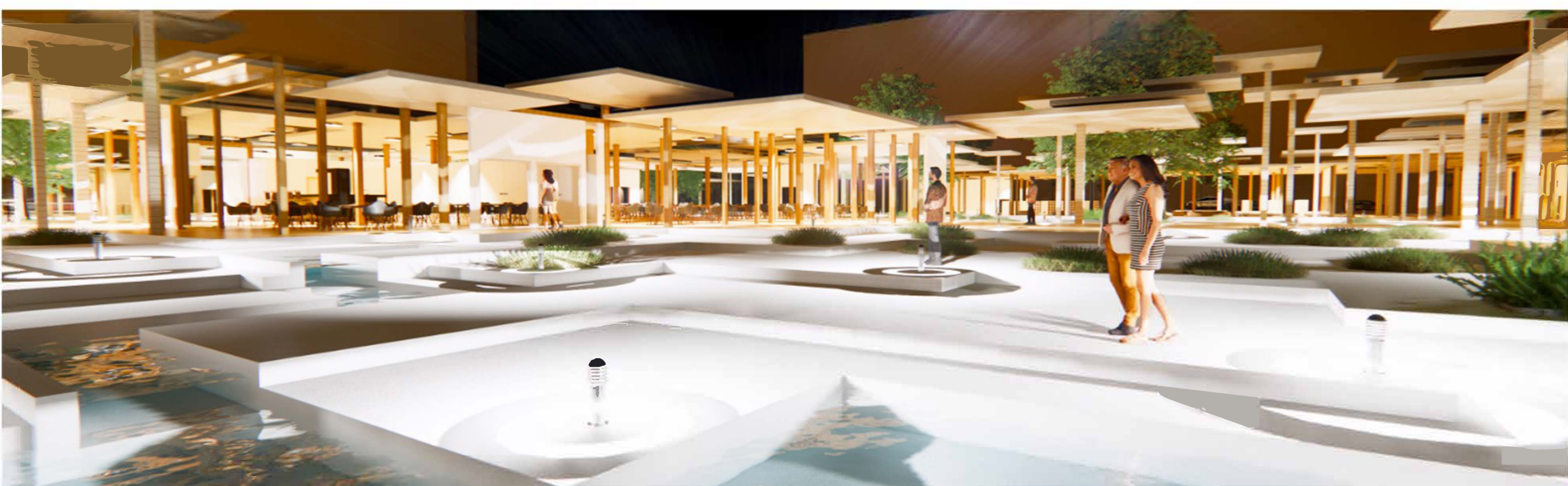


In this Diagram, the open space with the connection of G/F and basement, which is the sunken garden design, can help bring natural ventilation and balance the space between different seasons, warm in winter and cool in summer.



Zoning Diagram

LIBRARY	MULTI-PORPOSE HALL	COMPUTER SERVER ROOM	BOARDROOMS	CAR PARK
CANTEEN	CLASSROOM	LABS/WORKSHOPS	STORAGE	SUNKEN GARDEN
TOLIET	INDOOR EXHIBITION	OFFICES	MEETING ROOMS	PLANT ROOM, WATER TANK, TRANSFORMER

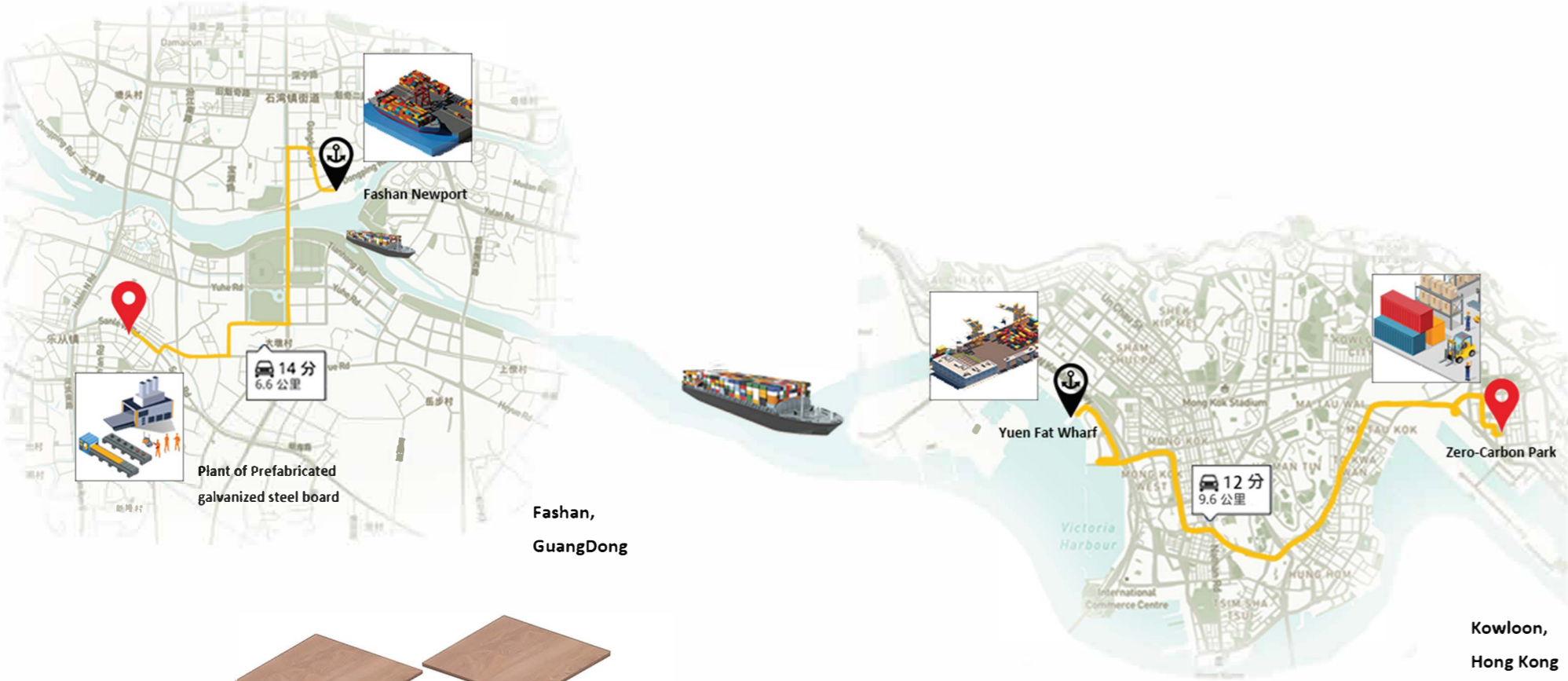


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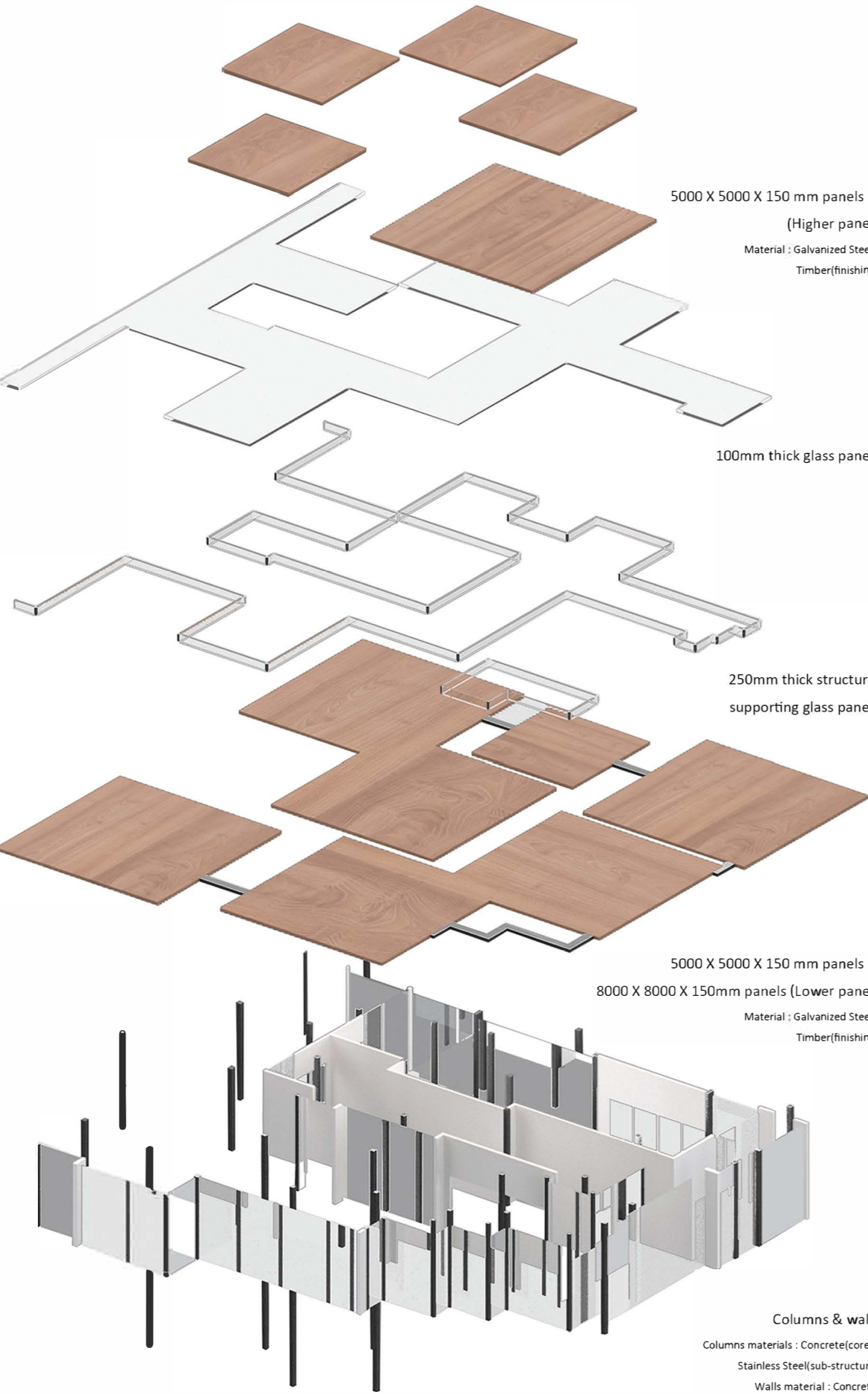
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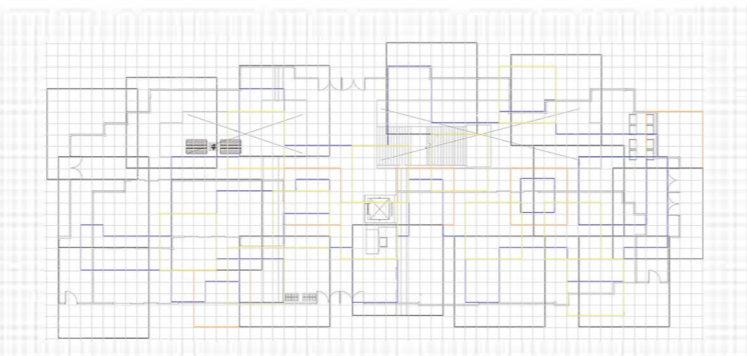
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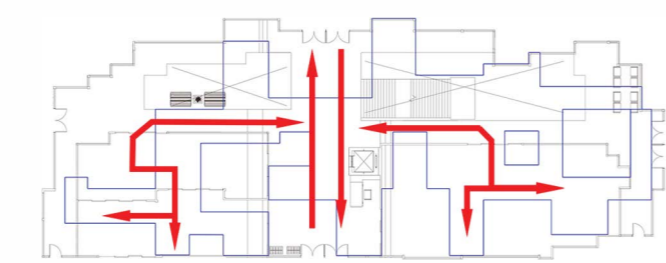
Transport Diagram



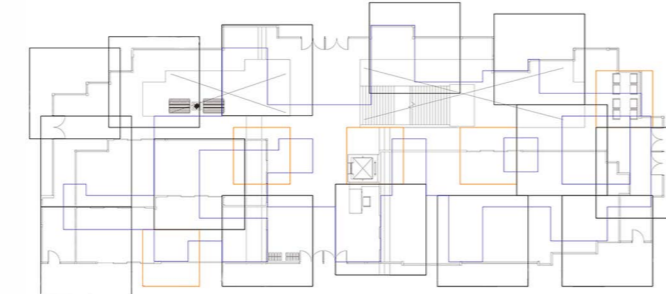
Components and Materials (Buildings)



Grid
All the walls , columns and panels are following the 1m x 1m grid for control the setting.

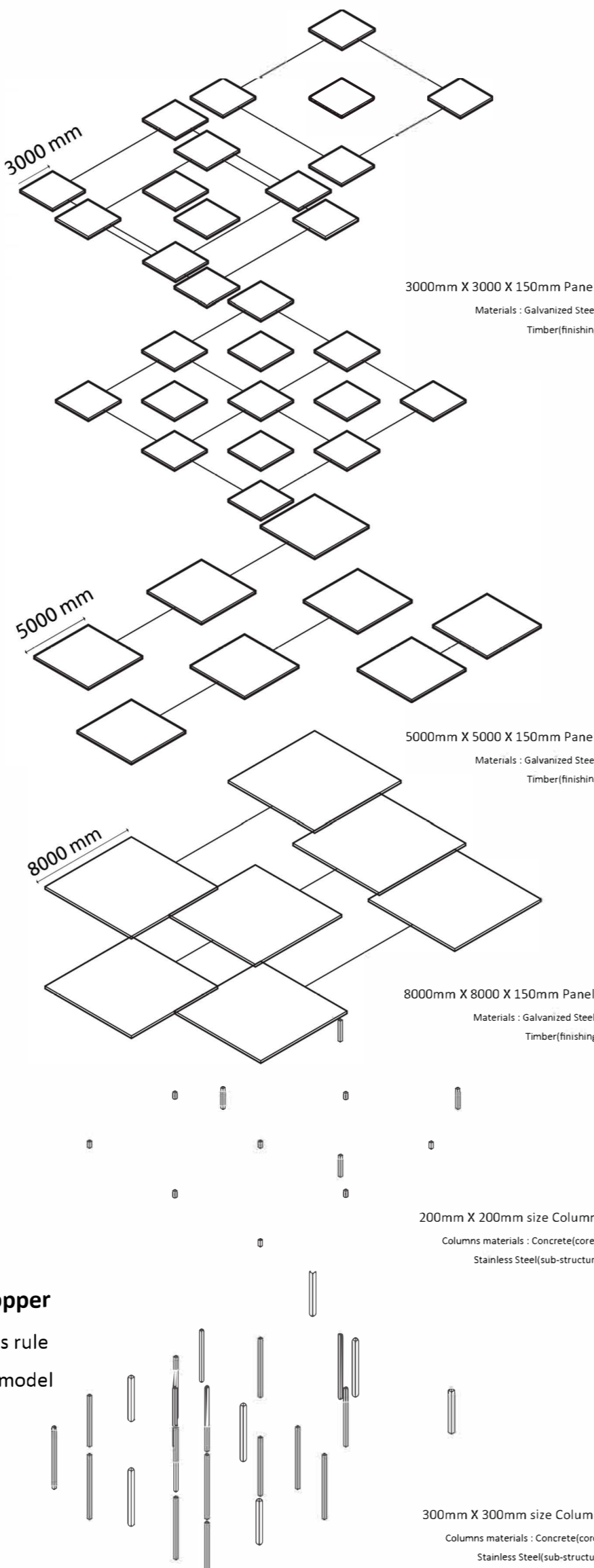


Glass panel & Circulation
Glass panel design is following the circulation of each building and columns to open a light corridor for the users.



Panel
Panel adding in different levels to shading the glass panel and create an overlapping visual experience.

Structural System



Components and Materials (Canopies)



Perspective View

The Perspective View of the sunken garden in the basement, sunken garden is one of our sustainable designs in our project, it can bring sunlight and help ventilation in the basement, lower the electrical use in the basement and reduce carbon emissions.



Outdoor View of canopies walkway



Outdoor View of park and outdoor exhibition area



Experience of Material library



Balance of work and green space



Experience of Indoor exhibition area



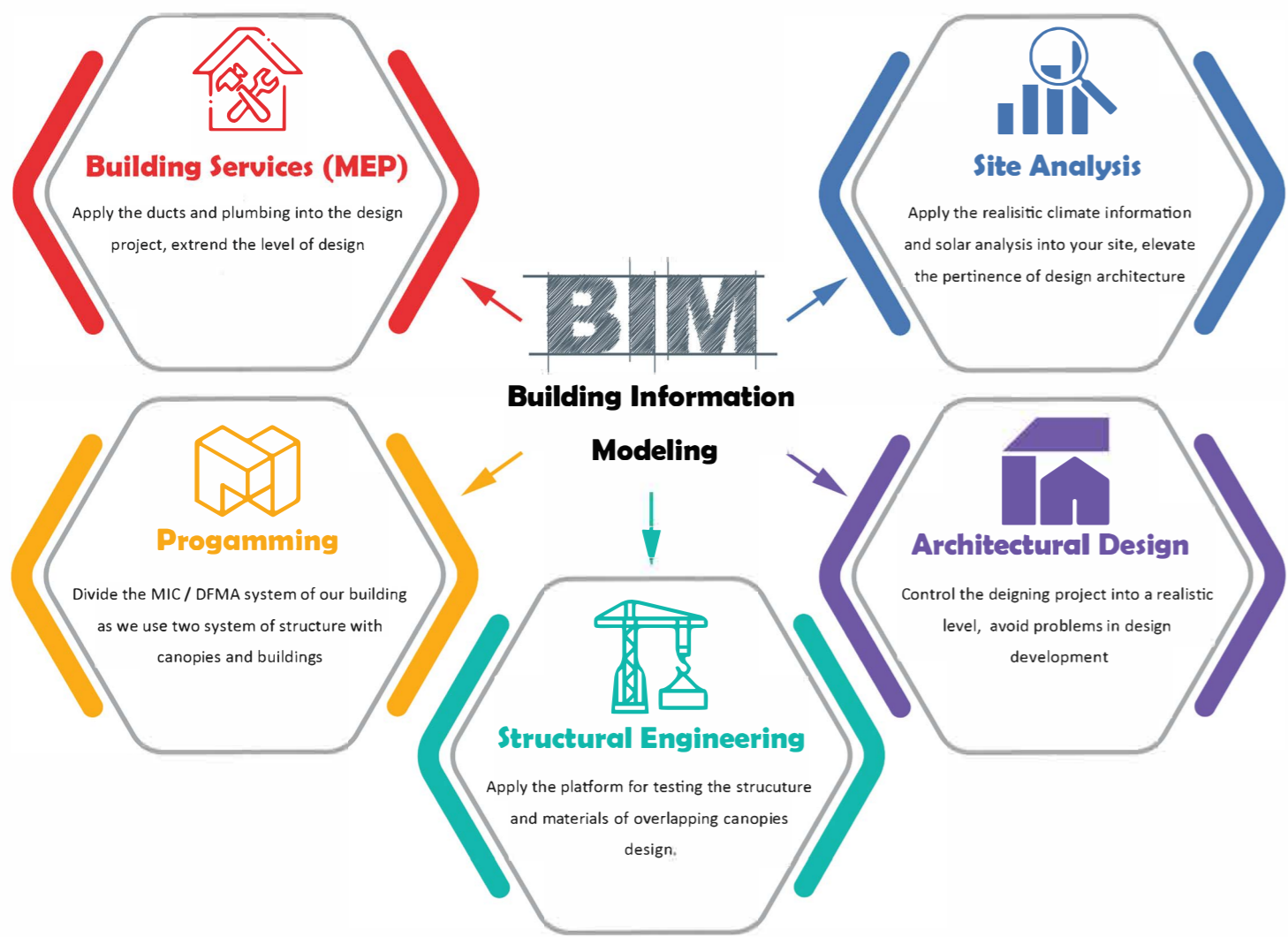
Sectional Perspective

Caravaneers

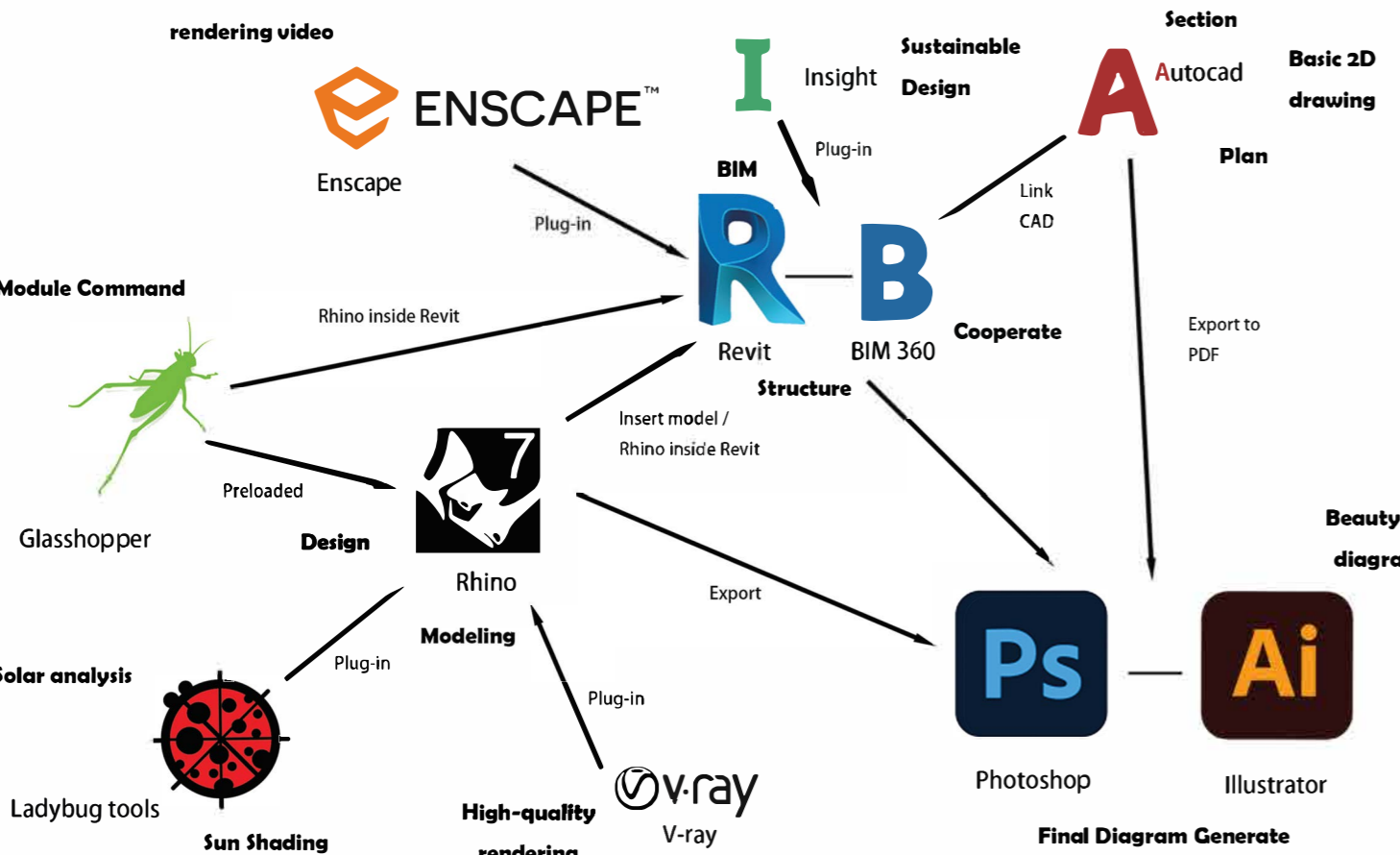
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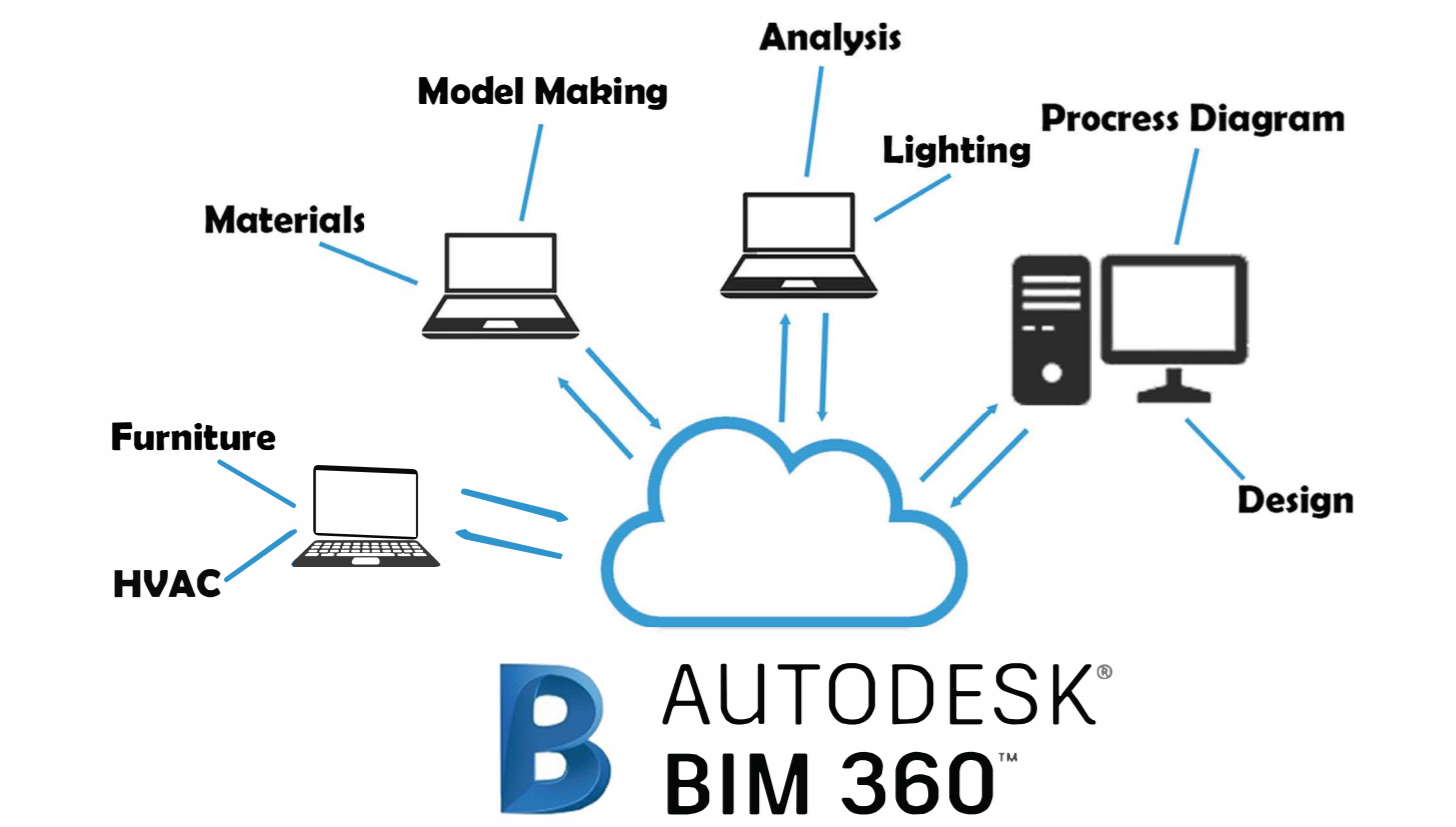


Advantages of BIM applied in the process

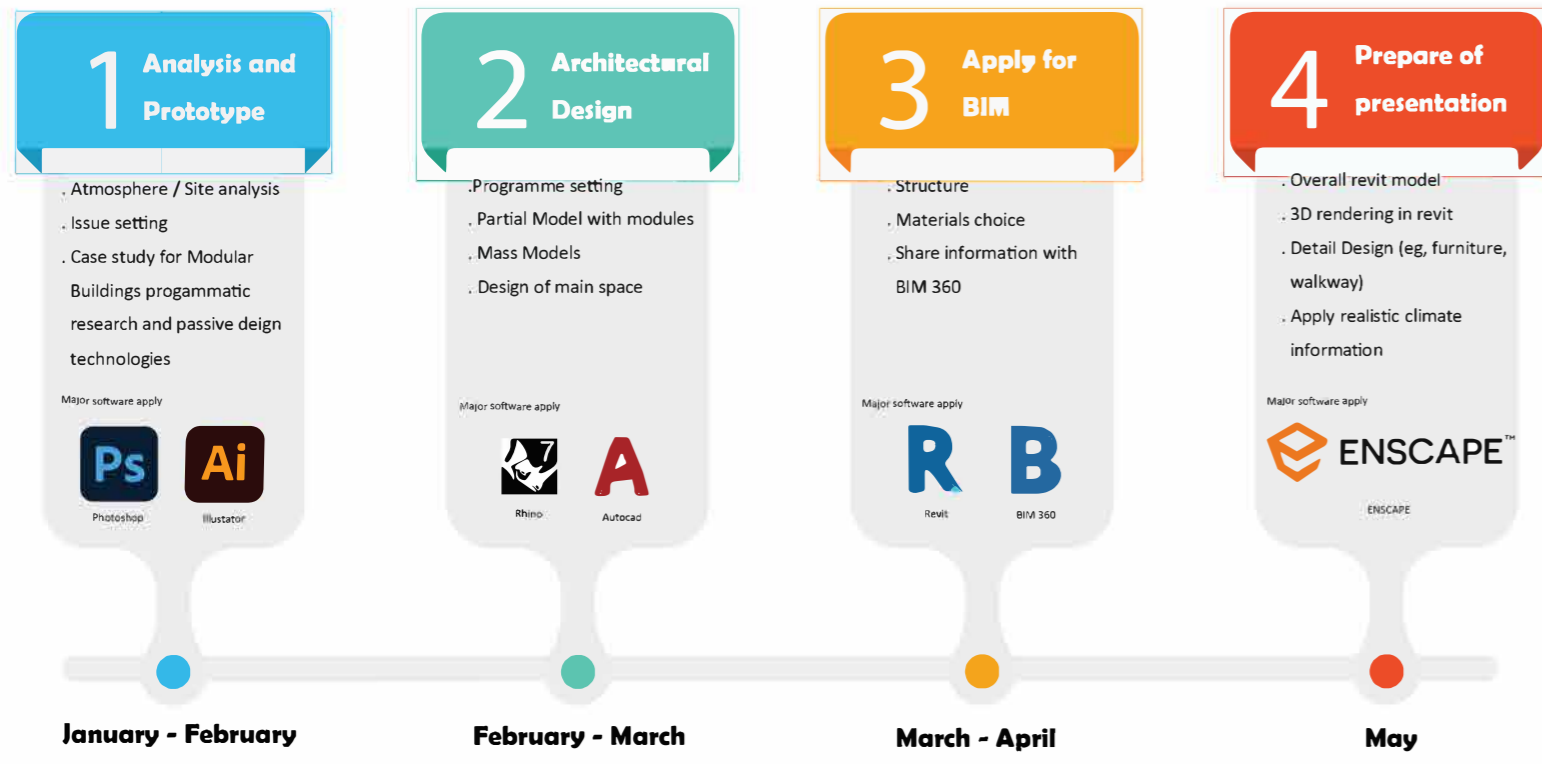
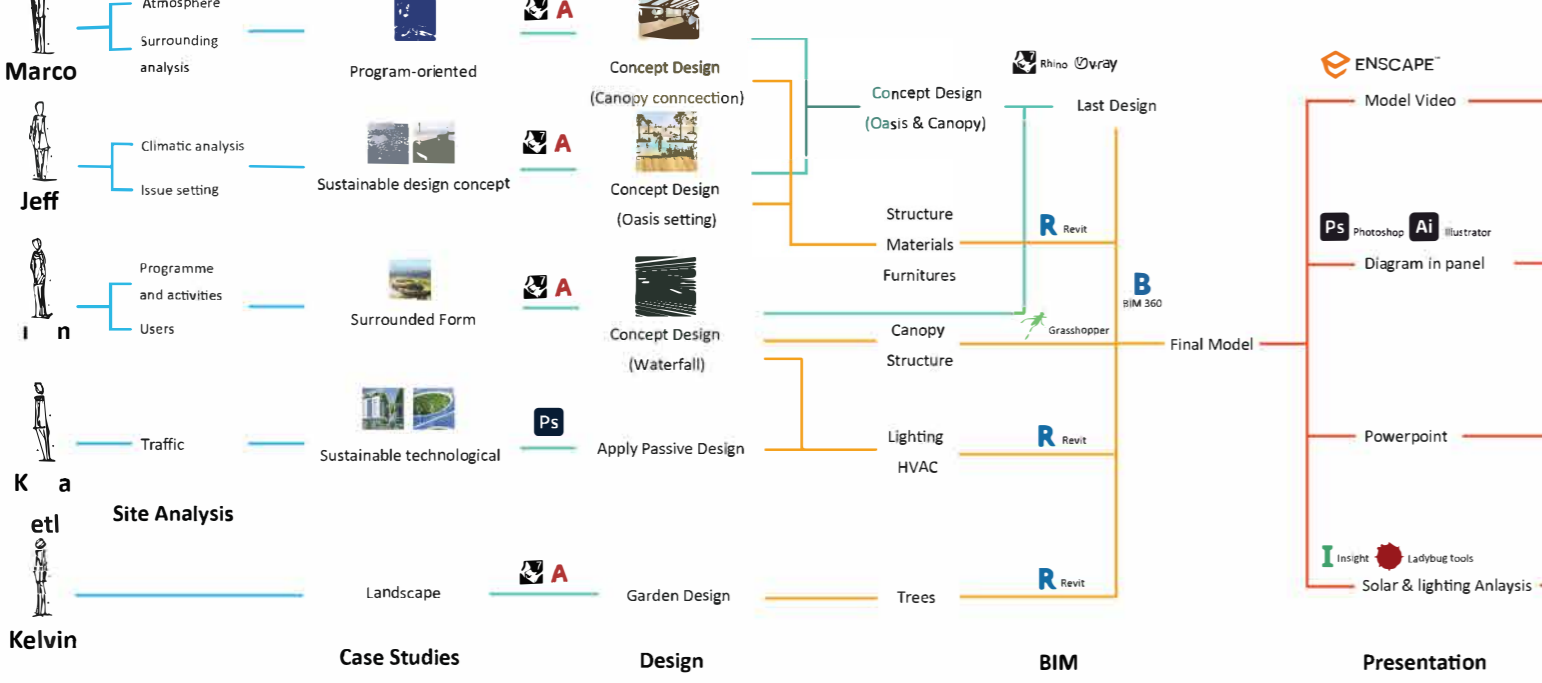


Design Coordination

In this competition, different software was used. Just like we used AutoCAD to sketch out 2D drawings and using rhino to generate design models in the early stage. After that, we used the BIM software, Revit for the overall model with detail and insight applied for solar and lighting analysis, Grasshopper used to created the canopy organization and structural system. Lastly, we use v-ray and Enscape to render the perspective image and video in our model.

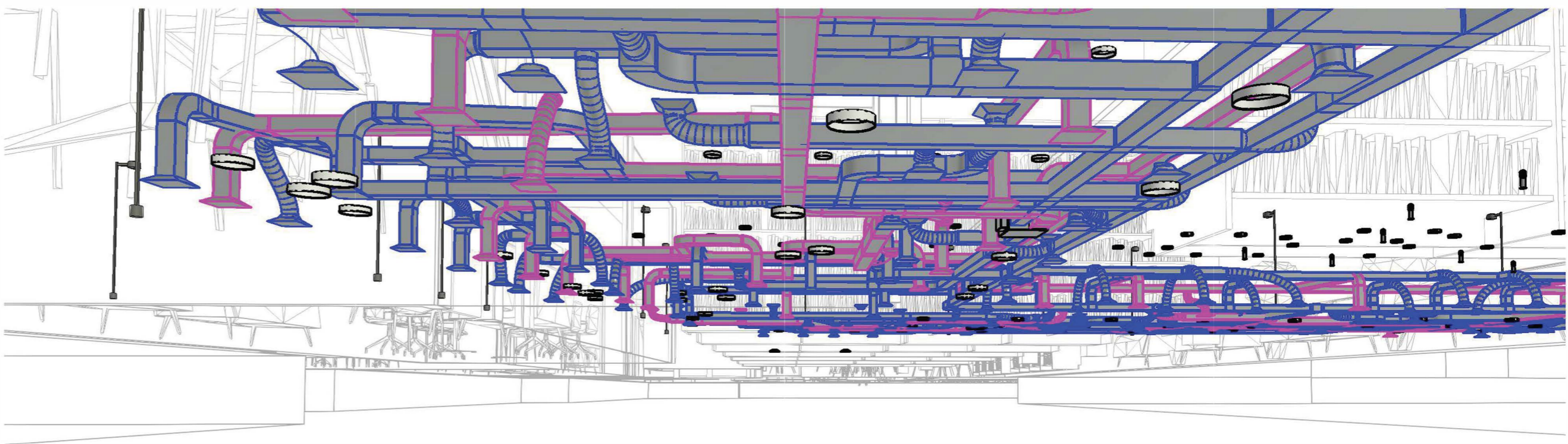


Cloud Sharing Function of BIM360

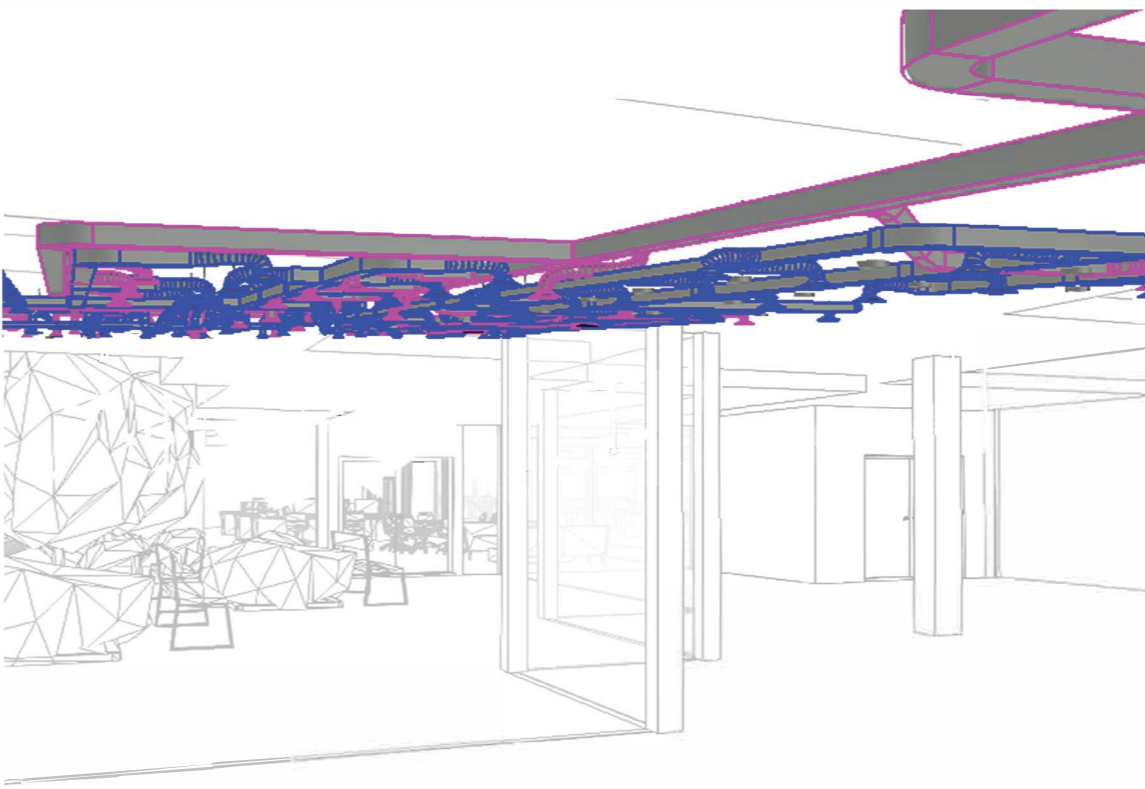


Project Team Collaboration

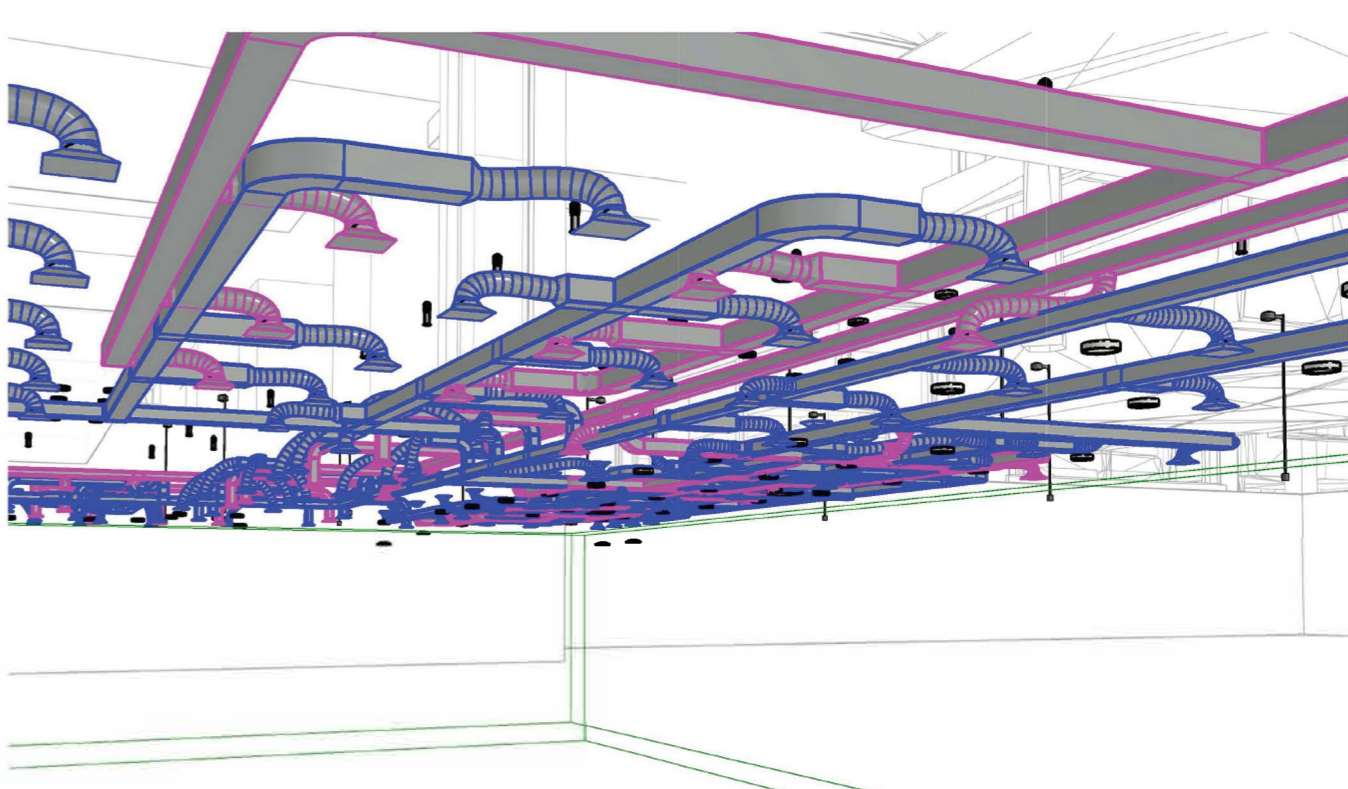
In this competition, collaboration is important for work with a team, But most of the software look separated and teammates are difficult to coordinate at the same time. The BIM software allows the cloud sharing model to let all the teammates work together at the same time and get more coordination to exchange opinions, it can improve our work efficiently and make our design project of higher quality.



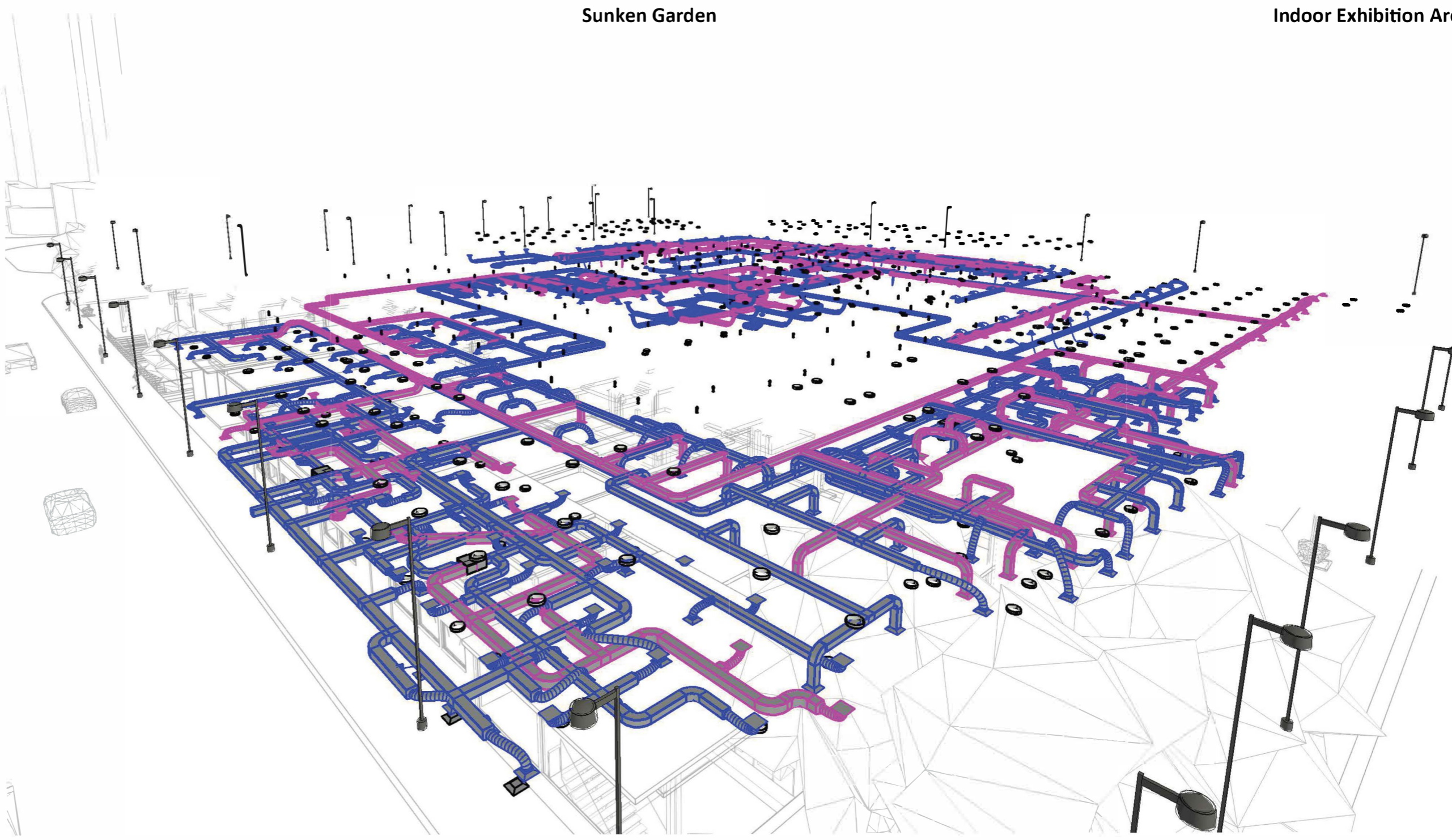
Meeting Room



Sunken Garden

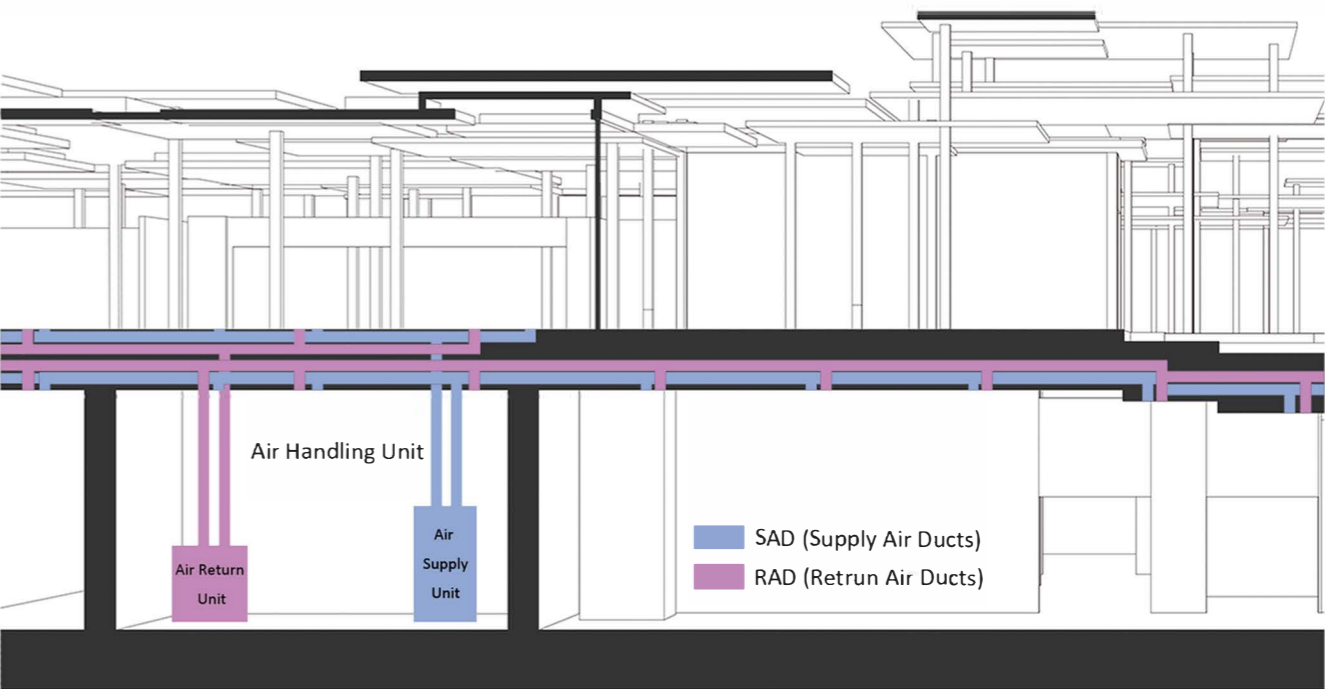
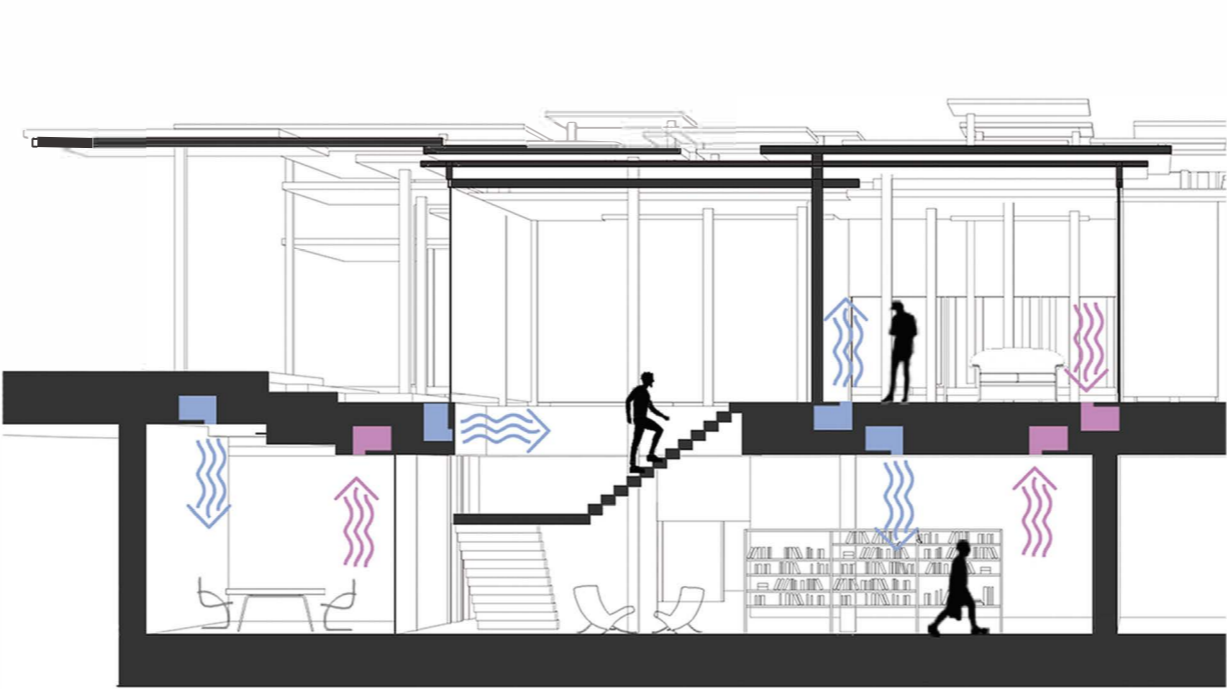


Indoor Exhibition Area



Overall HVAC

This is the perspective of the HVAC system and lighting system, SAD and RAD were applied into the overall project.



HVAC System Diagram

This view has shown us the arrangement of the HVAC between floors. As the design of overlapping panel on the ceiling, we cant put the HVAC ducts on the ceiling level on G/F, Therefore, all the HVAC ducts were set on the floor between G/F & the basement.

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