

Deliverable D

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1.0 Introduction

In this document, we present various conceptual designs for six different subsystems. We will then combine the conceptual designs to create three different global designs that will be presented in this document. The feasibility of each design is evaluated beforehand, and the advantages and drawbacks are discussed to allow us to rank each design from most optimal to worst.

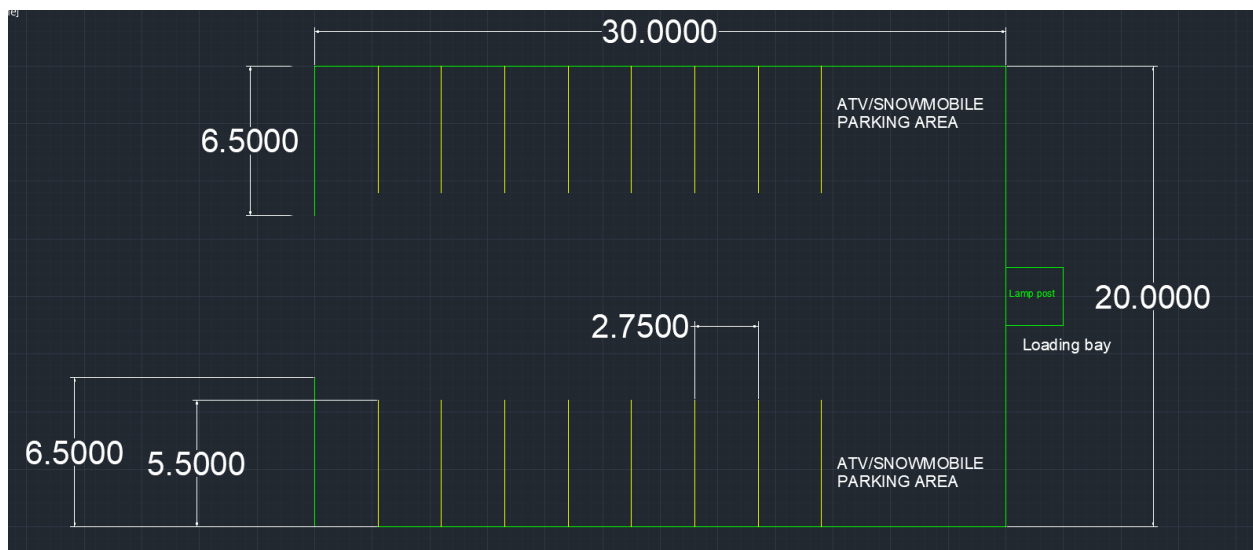
2.0 Subsystems

2.1 Parking lot (Michael)

The 30 m × 20 m parking lot offers 16 parking spaces for conventional vehicles and trucks. It also has spare room for a fleet of 5 to 10 ATVs or snowmobiles. It is planned to be made of dirt to keep costs down, but if the budget allows, it may be paved. It is connected to the building via a loading bay for the trucks. The lighting is intended to be solar powered to fit the eco-friendly philosophy of the project.

The fact that the material used to make up the surface is dirt means that costs are kept to a minimum. The loading bay offers easy access to the trucks, and the solar powered light fixture cuts the power demand from the building.

However, using dirt also means that vehicles get dirty faster with use of this parking lot. On cloudy days, there may not be sufficient sunlight to power the lights, but this can be solved by using a hybrid solar system which feeds from both solar power and an auxiliary power source when it is needed.



2.2 Lab (Cuyler)

The lab consists of two rooms, which is the lab entrance and the main lab. Starting with the lab entrance, it serves as a small workspace/foyer where workers can hang their coats and

personal items on the hooks and counters behind, while also offering a small workspace for anyone visiting shortly or needing to get some quick research done. The room is 2.70 m x 4.00 m with 10.800 m² of area to walk around on the wooden floor. There will be a window opposite from the door too to allow natural light to shine in when it gets dark. The main advantage of this room is to declutter the lab by allowing users to store their personal items here to keep a clean lab space, while also offering a small workspace to get some quick work done.

For the main lab, it will consist of a 6.750 m x 8.000 m room with a ellipses area of 3.550 m width with a 1.200 m depth. It will finally have a 3.500 m wide pocket with a depth of 0.600 m. The total area is 59.16 m² and the floor will be tiled. There are two entrances, one from the Lab Entrance and one from the main hall. The top area will be the main workstations with lab grade countertops where user can perform their research with the sampling equipment provided. There are also wooden shelves and cabinets underneath used for storing small items such as jars, equipment, and samples. There will be a sink countertop with running water in the middle along with a line of freezers opposite of the countertop in a pocket (if we decide to go with normal freezers instead of walk in freezers).

This area will also have a complete workstation to compute data and research in close proximity to the lab, along with chairs and rolling tables that will allow users to have a mobile workstation to work alongside. Finally, there will be many houseplants and green decor around the lab to reflect the Algonquin lifestyle of living alongside nature, along with two large windows at the end of each workstation and a curved window at the end of the computer desk for natural lighting. The biggest advantage of this lab is the accessibility as the lab wil contain everything necessary to analyze samples and conduct research within arms reach. There will be an on site computer in the room, a printer, the freezers and equipment so users won't have to travel out of the lab for any equipment they may need.





2.3 Offices (Ghalia)

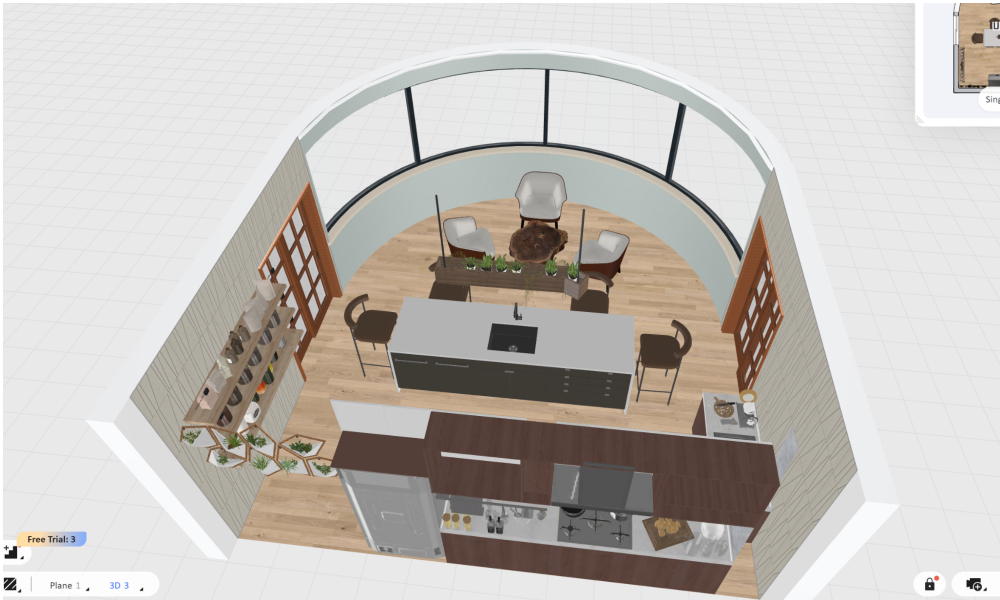
The office includes seven individual 4 m x 4 m (16 m²) offices, a large entrance area that can accommodate a waiting area, and an additional 96 m² workspace as requested. The main advantage of this design is that each office is disconnected from the other offices, giving the users of the space their privacy and allowing them to personalize their working environment to their liking while also minimizing any possible distractions. We also decided to add as many windows as possible, each office and the workspace has a window. Furthermore, the large entrance area provides a welcoming and professional first impression for clients and visitors and is big enough to allow the client to customize the entrance area in a way that implements culture. The entrance area is big enough to accommodate a comfortable waiting area for visitors. As requested by the client, we have added an additional workspace that can be used by a variety of people, including but not limited to temporary workers and visitors; it can serve as a safe space for employees to decompress. After some thought, we have found that the main drawback of this design is that it might have a lot of negative space, especially in the entrance area since it is a big area and can seem empty if not decorated properly. We still decided to go with a bigger entrance area because our client stressed the importance of the implementation of Algonquin culture and decided a bigger space would provide the client with greater creative freedom.



2.4 Kitchenette/Lounge (Dylan)

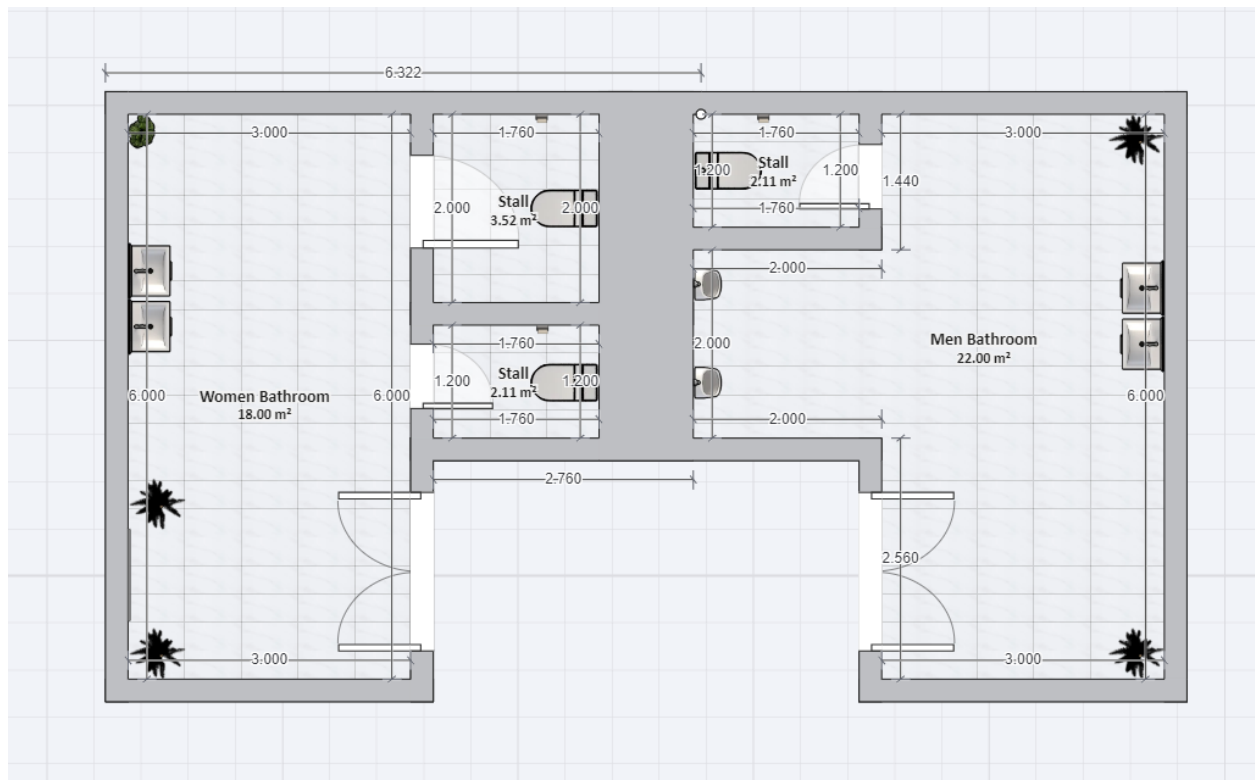
Welcome to our open-concept kitchen, designed in a charming half-circle shape with a delightful view of a small lounge. The kitchen features large windows that allow ample natural light to fill the room, reducing the need for artificial lighting and helping conserve energy. This thoughtful design not only brightens the space but also leads to savings on electricity costs. The open layout of the kitchen creates a friendly and inviting atmosphere. It encourages a sense of openness and

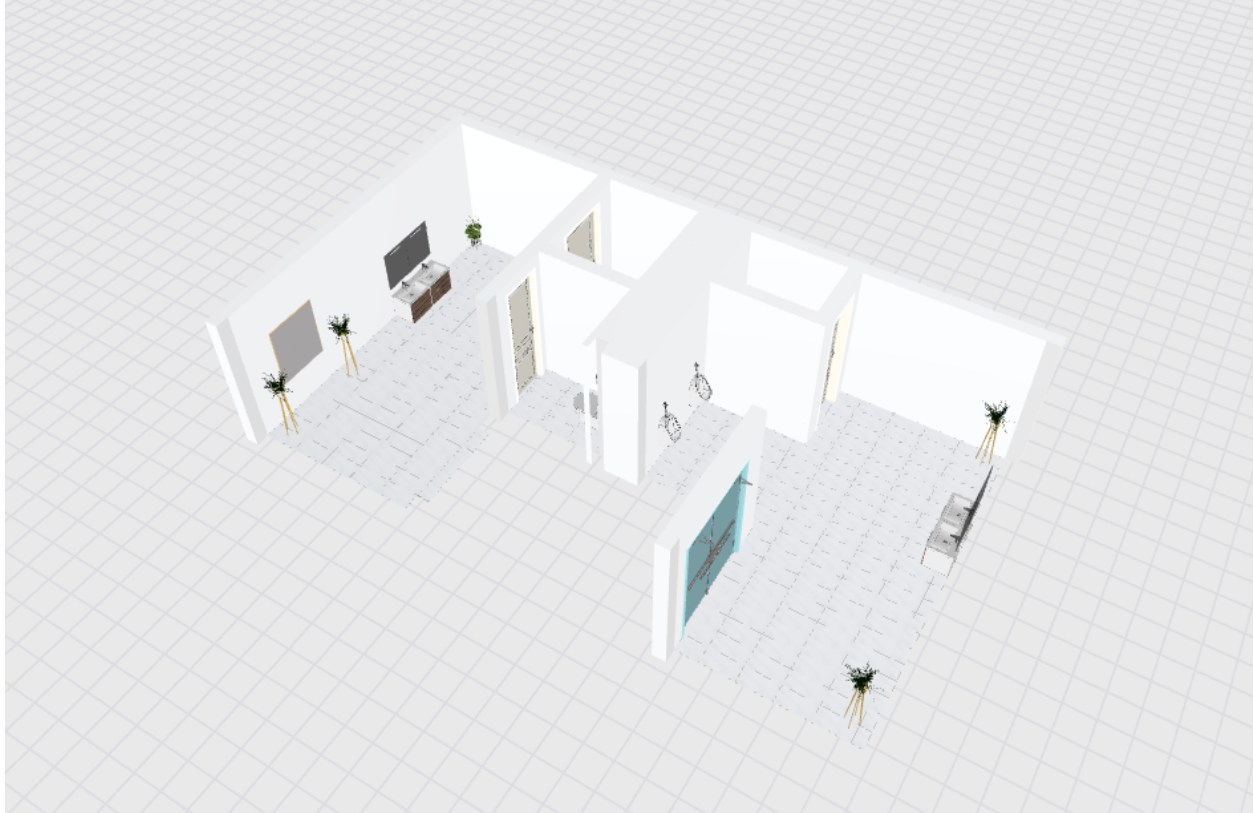
ease, making the room feel more welcoming and accommodating. The connection between the kitchen and lounge area promotes interaction and makes gatherings more enjoyable. With its simple yet thoughtful design, this open-concept kitchen offers both practicality and warmth, making it a comfortable and inviting space for cooking, dining, and spending quality time with family and friends.



2.5 Bathroom (Tony)

There are separate restrooms for men and women in this section of the structure. The bathrooms are built of two "L" shaped pieces, or four rectangles. Each bathroom measures 24.11 m^2 , which is the same for both of them. To offer further privacy, it is vital to note that there is a 1 m wall divider between the bathrooms. The bathroom entrance has two double doors that are thick and spacious. There is one hand dryer, one paper towel dispenser, two sinks, three mirrors, and three examples of plants in the women's restroom. Additionally, it features two stalls, one of which is marginally larger than the other to accommodate those with impairments. The bigger one measures 3.52 m^2 , while the smaller one is 2.11 m^2 . A toilet and toilet paper are provided in these stalls. The men's bathroom has one smaller stall, two mirrors, and two instances of plants, but it has the same amount of sinks, paper towel dispensers, and hand dryers as the women's bathroom. The smaller number of stalls is used to make room for two urinals. The men's restroom measures 2.11 m^2 , whereas the urinal area is 4 m^2 .





2.6 Board room (Jeremy)

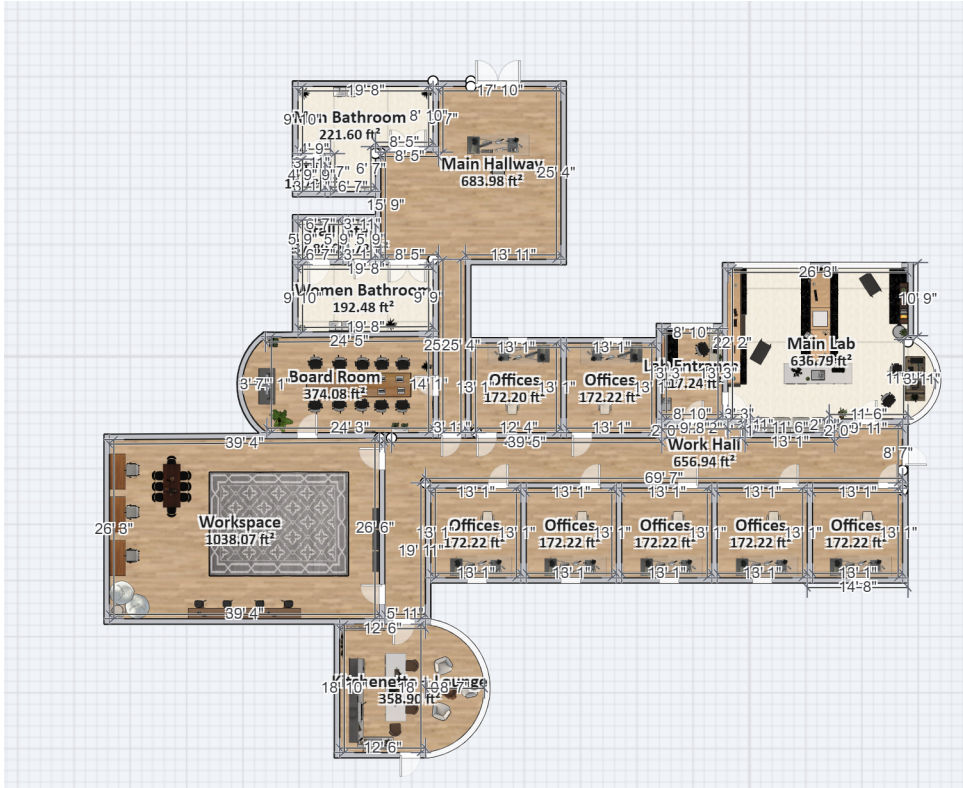
The Boardroom is a 376.03 ft² room, with a rectangular area of 24'3" by 14'1" and with a rounded end of 14'1" in width and a radius of 3'7". The rounded end allows for people to feel as if they are not trapped in a rectangular boxed area, but rather a cozy and unique looking room. The main advantage of this area is that it can comfortably accommodate 12 people to discuss information about the ongoing projects. The room consists of 3 televisions, 2 facing opposite to the layout of the chairs and one at the rounded end, which would allow for a clear presentation of the ongoing discussions to permit members to properly visualize plans and ideas. Additionally, there are 3 desks to allow people to properly organize themselves throughout the meetings and to be able to properly communicate with one another. The room also has decorations, mainly consisting of plants, which represent the type of work that happens in the lab. There is also a painting and a clock, and necessities such as ceiling lights. We feel as though the biggest drawback of this room is that there is not much room to accommodate more than 12 people. However, after much thought, we have deduced that it would be very uncommon that so many people would need to be in this room at once and it is unnecessary to add more room.

Attached below are images of both the 2D and 3D plans of the boardroom:

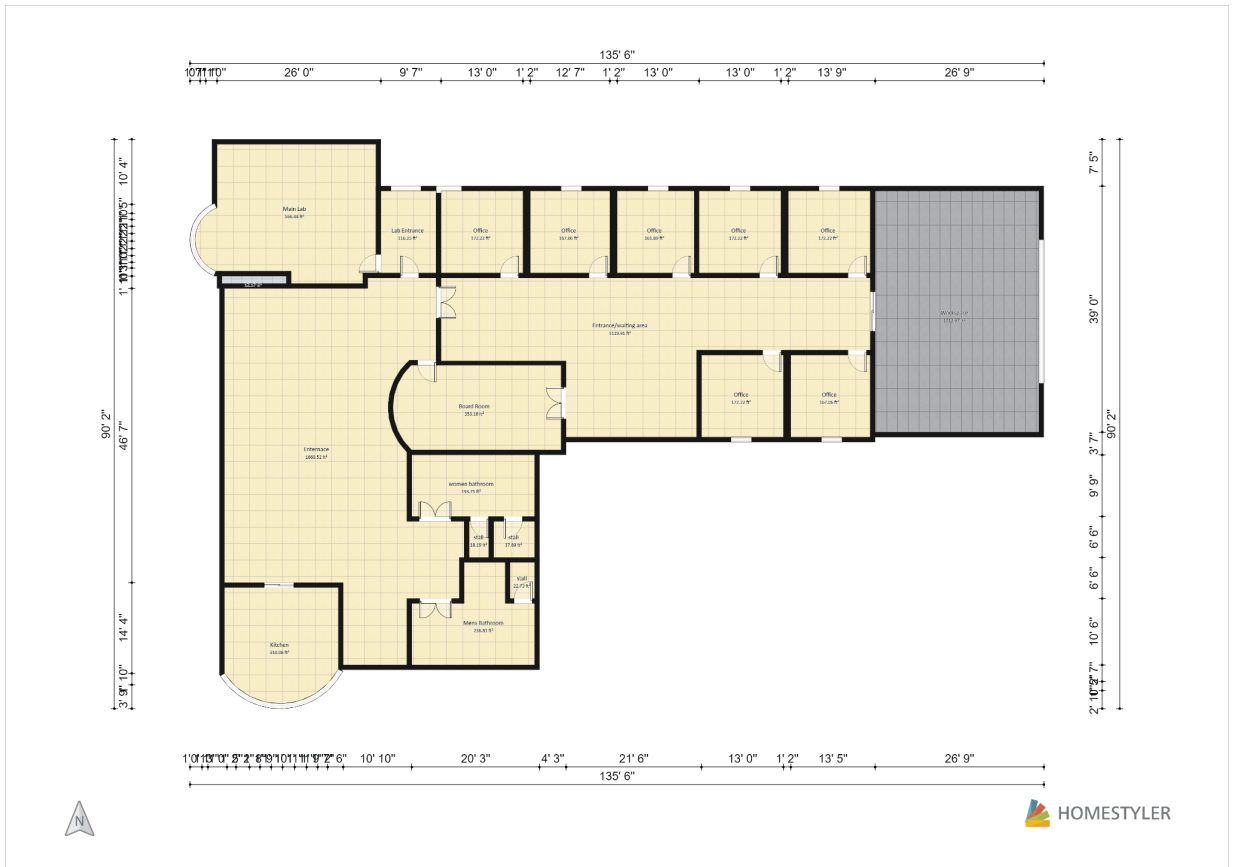


3.0 Global Designs:

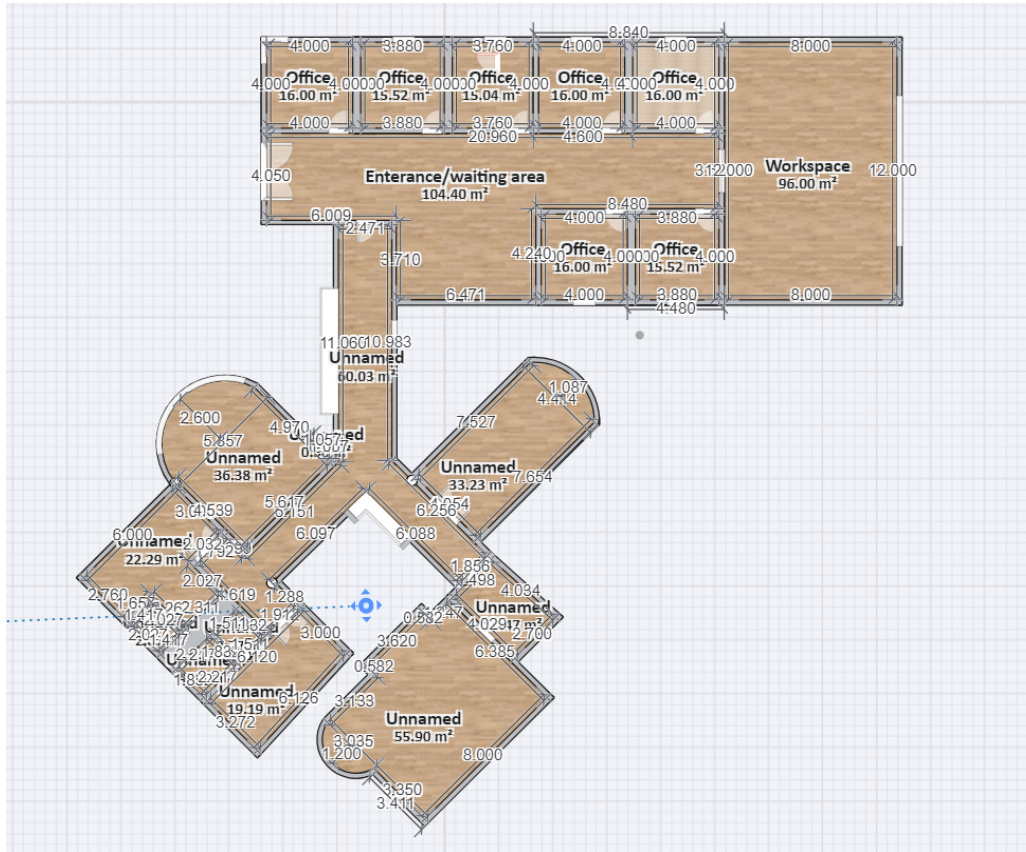
A)



B)



C)



Following a productive meeting with our client and a collaborative team discussion, we have made the strategic decision to proceed with Design Option A. During our consultations, the client expressed no specific design preferences. However, drawing upon our professional expertise and the valuable insights gathered from our client, it is clear that Design Option A presents a unique opportunity to provide greater flexibility and creative freedom in shaping their new building. This choice capitalizes on the extensive hallway and spacious rooms, allowing the client to showcase their heritage through an array of paintings and architectural elements, truly making the space their own.

4.0 Wrike Snapshot:

<https://www.wrike.com/frontend/ganttchart/index.html?snapshotId=wIMzkQYRiOkgxvsAVRKDaGVbMMJhH7Q8%7CIE2DSNZVHA2DELSTGIYA>

5.0 Conclusion

In conclusion, a global design was developed based on various subsystem designs. These designs were inspired from our technical benchmarking and our design criteria. Our choices have been driven by comprehensive examination of the aforementioned factors.