Project Deliverable E- Prototype I and Customer Feedback

GNG 1103 - Group A2

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Introduction

Prototype development is a crucial step that allows us to test, gather user feedback, and identify the design flaws early on, in order to have a successful final product. This deliverable covers the new development in our project, based on feedback and knowledge gained from past deliverables. We highlight the feedback received from the client/potential users and how it will be implemented in the future. Additionally, the development of the first prototype is documented, including the results from the first prototype test plan outlined in the previous deliverable, and the analysis of the critical components within our building. Lastly, the development of the prototype test plan that will be used for the second prototype is documented in this deliverable.

Client Feedback and Implementation

Feedback	**How it will be implemented**
Computer lab doesn't need to be an isolated space	Computer lab is going to be connected to the hallway where the offices are, prompting good flow from one space to the next
Lab will be used to analyze animals - should have lab bench	One large lab bench was added to the center of the lab, this will allow for a more open space where a lot of workers can work together at the same station
Offices are good, should have space for an extra person to sit	Offices will have a desk and chair, small storage, and extra seating
Need for climate controlled sample storage	Deep freezer for long term storage was added
Extra parking (minimum 6 spots + space for snowmobiles and boats)	Large visitor/employee parking lot and space for larger vehicles was included
Offices: quantity>size (minimum 6)	6 offices of decent size were included
Large doors needed	Large doors (1.89m) were added to access the front entrance and back storage area
Bulk storage needed with loading dock	Large storage area was added to back of building with loading dock, garage door, and ramp for easy access

Critical Components

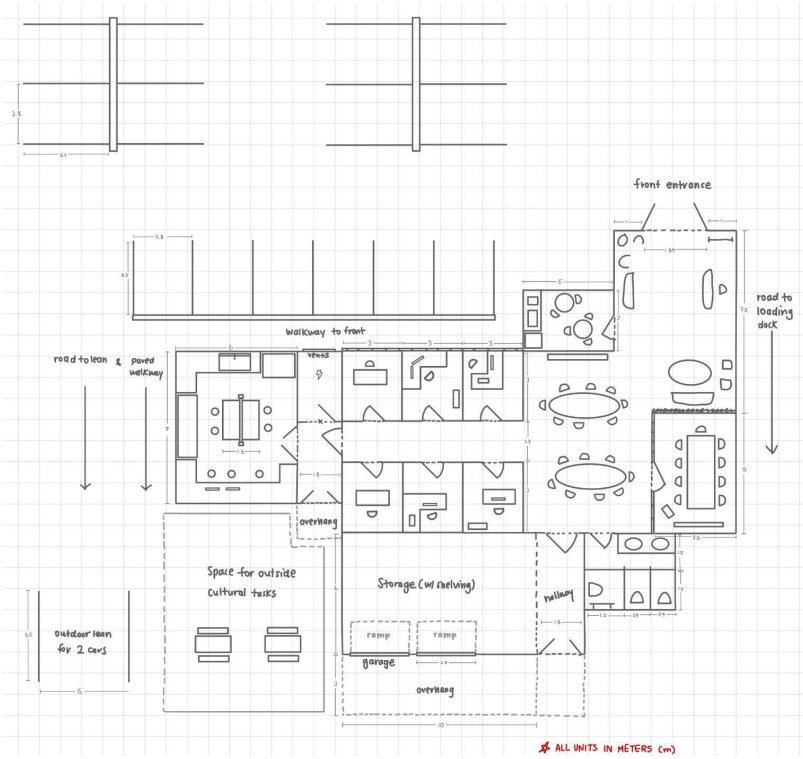
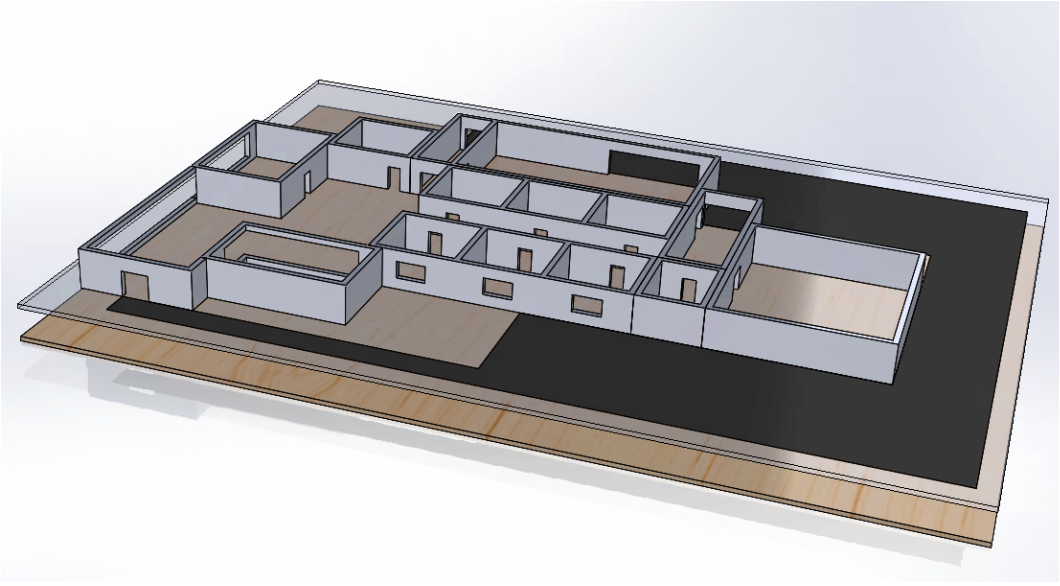
Critical components	**Analysis**
Deep freezer + fridge	A size big enough to store very large animal parts, as well as sufficient energy to provide a cool enough environment that will prevent spoilage.
Air conditioning unit/ Heater	The climate control system must be able to accommodate the office through the harsh weather experienced during the cold winters and hot summers of the region
Parking space	Needs to accommodate at least 6 standard cars and multiple large vehicles (trucks, snowmobiles, boats, etc.)
Ramps for accessibility	The ramps will need to be built according to the guidelines provided by the ACA (The Accessible Canada Act). Therefore, persons with disabilities will need to be consulted when building the accessibility ramps.
Plumbing	Pipes need to be strong enough to prevent any damage during extreme cold conditions. The radius of the pipes will need to be large enough to allow large substances to be passed out without clotting.
Insulation	Insulation will help maintain a constant set temperature within the building due to its insulating properties, it will be placed within all the interior walls of the building
Water	Access to clean water will need to be provided. One way this can be done is through vapor diffusion, by moving water vapor from areas of high concentrations to areas of low concentrations.

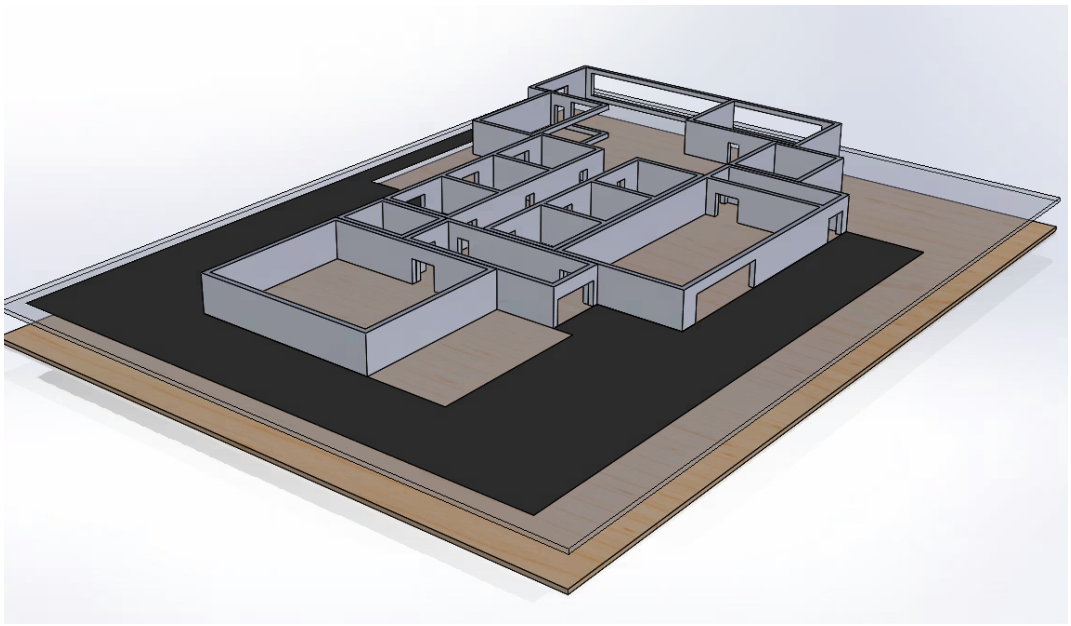
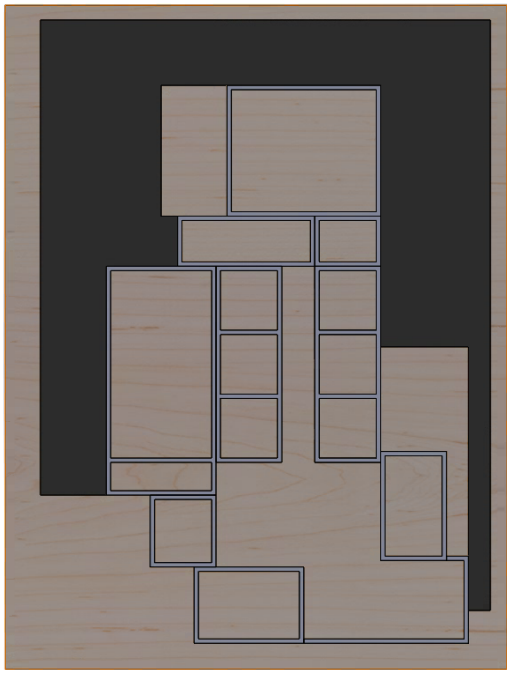
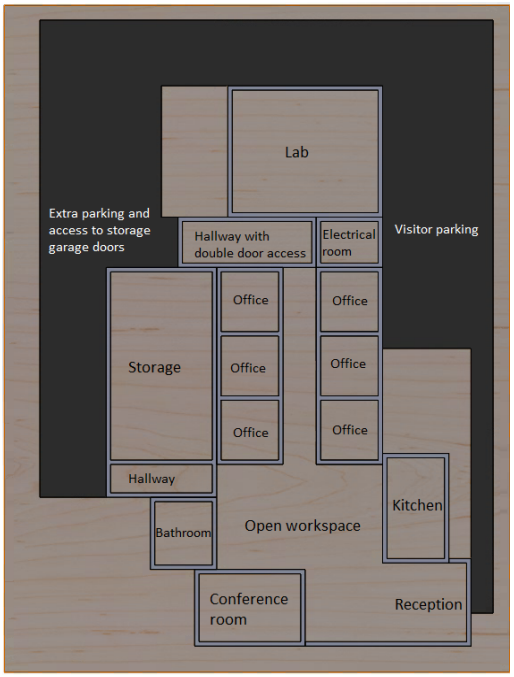
Prototype I Development

The team developed a focused and analytical prototype that outlines the main functional spaces and the general layout of the building. One of the main objectives when creating the 3-D model is to provide a general overview of the user's perspective inside the building. This defined prototype will allow for future prototypes to be well planned out in terms of the functionality of the space.

The 3-D model allowed the team to easily communicate with the client in terms of how we understood their needs. We can also gain effective feedback from the client on a prototype that

reflects the final iteration of the building without committing to any specifics and keeping our options open for the final prototype.

Detailed Design	
Front view of building prototype	

Back view of building prototype	
Floor Plan of Building prototype	 

Prototype I Test Results

Prototyping Test Plan				
Test ID	**Test Objective**	**Description of Prototype used and of Basic Test Method**	**Description of Results to be Recorded and how these results will be used**	**Test Results**
1	Longevity	Benchmarking using existing data on how long building materials last, so that we select them appropriately	Helps determine how long the building can be sustained. Results will indicate whether or not materials need to be improved for a longer duration of the building.	Office buildings are expected to remain functional for roughly 50-60 years.
2	Functionality of space	Assume the perspective of each potential worker and evaluate if the facilities we have provided allow them to complete the task as described by the client (i.e lab worker, office worker, manager)	Results will indicate how the provided space contributes in boosting the productivity of the entire company.	The space has been designed to ensure that it remains accessible to all potential users of the space. Including things like disability accessibility, and spacious work areas, the space will be comfortable and convenient for most users.
3	Meeting the wants and needs of the client	Use 3D model prototype as a reference to test that all the different spaces that the client wants are present	Results will provide insight to how much the client will enjoy the overall design of the project	The client required an industrial sink, a boardroom rather than a computer lab. The client also requested more office space, larger parking area and a more spacious storage area.
4	Consult an	Show the 3D model	Results will provide	The kitchen was

	expert	to an expert civil engineer to ensure the building plan is viable	knowledgeable advice on whether the building plan will be feasible.	judged to be at high fire risk, therefore emergency exits need to be put in place.

Additional Potential User Feedback

Feedback and Comments	**Implementation**
Are there going to be aesthetic considerations that reflect the program added in the later prototypes?	Yes, we focused on the layout and flow of the building for this prototype. We will be adding aspects, such as greenery to the building that reflects the guardian program.
Will the building be eco-friendly and be sustainable?	We will definitely incorporate more eco-friendly aspects to our design as we increase the level of detail that we are putting into the prototypes. This building is built to last in the long term and will be very sustainable.
The multiple entry ways are nice to have in a building.	A back door entrance will be added to accomplish this, similar design as the front door entrance.
I think the communal entrance/lounge so close to the conference room can be a hindrance because of the noise.	Soundproofing will be added to the conference room to prevent any disturbances due to close proximity to the lounge area.

Prototype II Test Plan

Prototyping Test Plan				
Test ID	**Test Objective**	**Description of Prototype used and of Basic Test Method**	**Description of Results to be Recorded and how these results will be used**	**Estimated Test duration and planned start date**
1	Longevity	Benchmarking using existing data on how long building materials last, so that we select them	Helps determine how long the building can be sustained. Results will indicate whether	Spend 20 minutes researching each material Start the week of

		appropriately	or not materials need to be improved for a longer duration of the building.	Nov. 12
2	Functionality of space	Assume the perspective of each potential worker and evaluate if the facilities we have provided allow them to complete the task as described by the client (i.e lab worker, office worker, manager)	Results will indicate how the provided space contributes in boosting the productivity of the entire company.	Spend 30 minutes as a group brainstorming typical work habits, then spend 15 minutes each thinking of how the space will be used by each Start the week of Nov. 12
3	Meeting the wants and needs of the client	Use 3D model prototype as a reference to test that all the different spaces that the client wants are present	Results will provide insight to how much the client will enjoy the overall design of the project	Client meet 3 duration: 20 minutes Scheduled for November, date TBD
4	Consult an expert	Show the 3D model to an expert civil engineer to ensure the building plan is viable	Results will provide knowledgeable advice on whether the building plan will be feasible.	10 minute consultation with a professional Scheduled for November, date TBD

Stopping criteria for the tests listed above are difficult to define, however the results of these tests will be used to iterate on our design.

Conclusion

This deliverable provided a meaningful update about the development of the project. Through analysis of the first prototype development, prototype testing, and the feedback received from the client, we were able to provide the team with more insight on the improvements to be made in the second prototype and a stronger establishment on the development of both the second and final iteration of the building. The analysis of critical components gave the team a strong understanding of the detailed elements of the building that need attention or that may pose challenges to our progress.