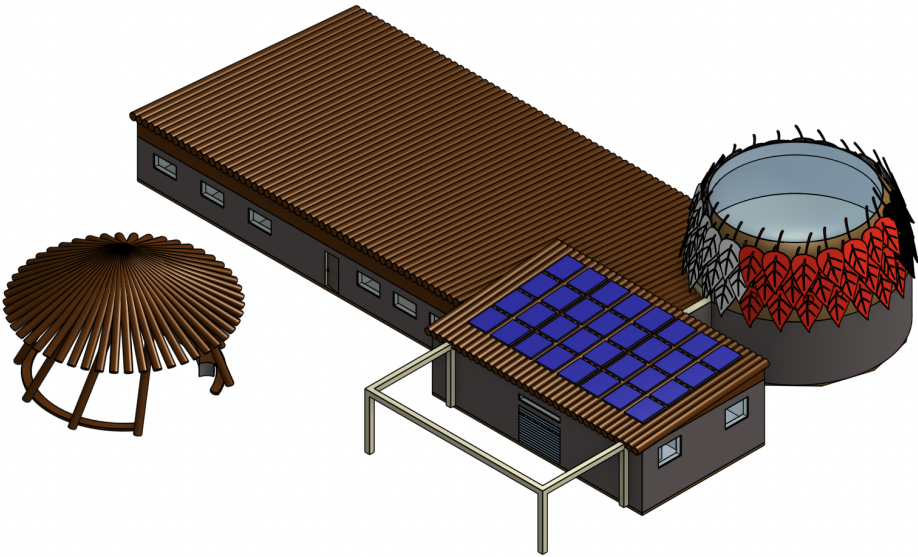
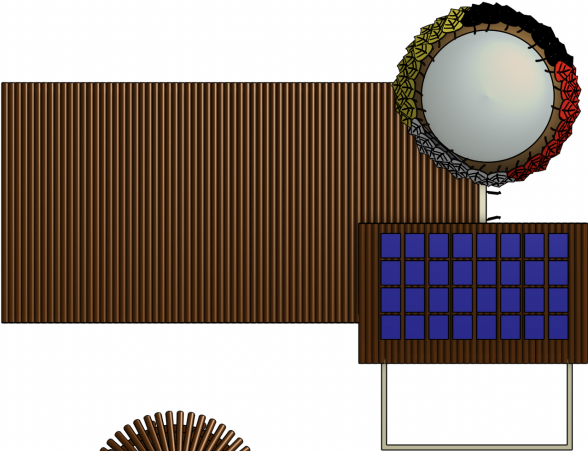
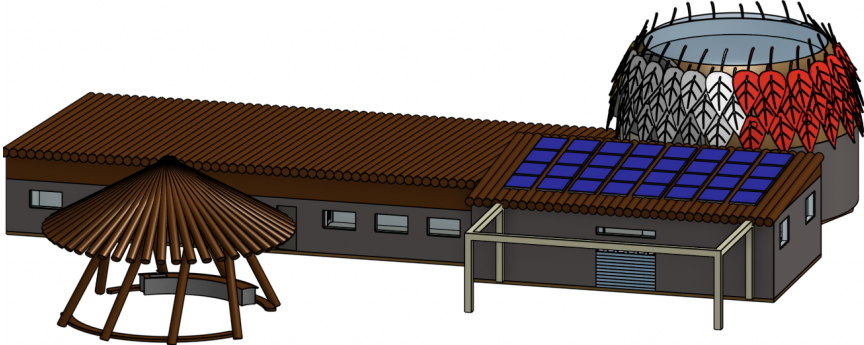


## **Deliverable G: Prototype II and Customer Feedback**

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**November 12th, 2023**

Prototype II



## **Intro:**

This deliverable covers our analytical prototype two. This prototype is an improvement of our first 3D prototype. This prototype has allowed us to improve our design by determining any issues within our design. We clever the feedback we've received and the improvements we've made. Then, we discuss the “why”, “what” and “when” of prototyping and how our prototype uses those principles. We also discuss an experimental model. We also do an analysis of the results of the test plan of our last deliverable of the analytical prototype. We go through comments and feedback from a potential client. Next, we updated our target specifications, detailed design and BOM after tests were completed and analyzed. Then finally, we discuss our test plan for our next prototype.

### **1. Clearly outline the feedback received from your client on the first prototype. How will feedback be used in future.**

We are still waiting for feedback from the client. Some improvements we will be making from the last prototype are adding windows, enhancing the roof by adding cultural aspects as well as solar panels, we will be adding a glass dome to the roof of the meeting room, adding furniture, and finally making the doors and entryways slightly wider.

### **2. Develop a prototype to achieve the objectives your team has set out (i.e. you need to answer the “why”, “what” and “when” of prototyping).**

Why- Before making our final physical prototype we decided to make another analytical prototype in order to further enhance and improve our first prototype which had numerous flaws. This is because we want to make sure we are happy with our final design and think about everything thoroughly before we start working on and making our physical prototype.

What- This is our 2nd analytical prototype that includes new features such as the gazebo and a new roof as well as the windows.

When- We started working on the deliverable on the 6th of November, and have finally completed it by the 12th of November.

### **3. An analytical, numerical, or experimental model should also be included.**

Critical components included in this prototype are: an office space; an open room for collaboration; a kitchenette; a meeting room; a lab; 2 bathrooms; a lean-to; the roof; windows and an outdoor space. Based on feedback from the first client meeting, more offices have been added to the office space to accommodate the maximum number of workers at once, and the offices are surrounding an open space with tables and chairs for collaborative work. A kitchenette with a dining table is included for lunch breaks and storing food. The meeting room is circular with a circular table to represent Algonquin culture and values. The lab includes space for computers and a garage door that opens to the lean-to. It also has space for dried plant storage and freezing products. Two handicap bathrooms are spread apart in

the building so they are close to all rooms. A lean-to is placed outside the lab with a garage door for parking and loading/unloading trucks. The roof is two heights, the office area being lower and the lab area being higher. The roof is made out of logs to better represent the Algonquin people's connection to nature. The roof above the meeting room is a dome-like structure with leaf shaped parts on it to represent nature, and there is a skylight in the middle to provide natural light to the meeting room. Windows have been added to all rooms for natural light, and a gazebo type structure was added outside for outdoor gatherings and activities.

**4. Carefully document your prototyping test plan, analysis, and your results (including detailed images of your prototype)**

<b>Test</b>	<b>Test Objective</b>	<b>Description of Prototype Used and of Basic Test Method</b>	<b>Results</b>
1	Accessibility Test	We will move the wheelchair model throughout our design on OnShape and see if its dimensions fit through our doors and floor plan.	After modifying our last prototype, making the doorframes wider allows for easy accessibility for wheelchairs.
2	Visual design Test (Does our design fit the Algonquin values)	We will ask Algonquin people using Reddit and then take note of their feedback.	Based on our results, we have concluded that our roof and gazebo represents important Algonquin values such as sustainability from the wooded design, and we can see the dimensions of the circles of life from the round meeting room. Further, the colors of the medicine wheel is also displayed on the roof of the meeting room, adding some more representation.
3	Test if our lab meets safety requirements.	Go through the Canadian guidelines for lab safety measurements and see if our lab meets the guidelines.	After reviewing the Canadian guidelines for lab safety, we have concluded our design should include lights in the room to ensure the laboratory is well lit. It is also important to keep a designated area for a first aid kit.
4	Test to ensure all doors have space to open.	Test all the doors on OnShape to make sure that all the doors have free space to open and close with no interference and without bumping into objects.	Using the analytical prototype, we were able to rotate the doors and determine they were clear of any other objects.

**5. You must gather feedback and comments on your ideas and prototype from potential clients/users that you have sought out and identified on your own.**

After making some changes based on our potential client's feedback and our ideas, we updated our prototype and presented the updated model to said potential client to gather further feedback. We received positive feedback about our windows, reception area and the addition of the medicine wheel colours on the circular section of the roof above the meeting room. The potential client i was consulting with also had the idea of adding a man door beside the garage door for when there are only small items and plants that need to be transported. This is a good idea and it will also reduce the amount of heat that would escape when transporting these small items during the winter months. In brief, the feedback was all positive and after talking through all the components of the building and their respective functions, we have once again sparked ideas for improvement.

**6. If applicable, update your target specifications, detailed design and BOM after tests are completed and analyzed.**

Our target specifications have not changed. We still want to include many target specifications, we want to ensure that we are including cultural aspects within the building. We want the design of the physical building to have cultural significance and not just have cultural decorations within the building. We will be adding a cultural design to the large part of the roof that resembles a wigwam, it will have lots of natural wood elements. We are still including a large circular meeting room and incorporating this cultural significance within this room. The detailed design has changed. Since the last prototype, we have included windows, doors, a more detailed roof, and a culturally significant gazebo, and we finished the dom roof on the circular meeting room. The tests caused us to change the size of the door openings, they were large enough for most wheelchair users but not all so we made each opening two inches wider. The tests have also shown...

**7. Outline a prototyping test plan.**

This is our prototyping test plan for the physical prototype:

<b>Test</b>	<b>Test Objective</b>	<b>Description of Prototype Used and Basic Test Method</b>	<b>Description of Results to be Recorded and how these results will be used</b>	<b>Estimated Test duration and planned start date</b>
1	Ensure the roof can support a snow load	Using a physical prototype we will add weight to the roof	The roof should not show any deflection. If this test fails, we will have to rethink the design of our roof.	This test will be done when we finish prototype three and should only take 20 minutes.
2	Ensure a person can move comfortably and safely in the building.	Using a physical prototype and a physical model of a person (to scale with our prototype), we will make sure there is enough room/ see if there is too much useless space in the offices, lab, meeting room, hallways,	The model person should be able to move freely in all areas of the building without any obstructions. If we encounter any issues, we will have to adjust the dimensions of said space	This test will be done when we finish prototype three and should take 20 mins

		entrance, etc...		
3	Ensure the removable roof on our prototype works	Our physical prototype includes a base and a removable roof. We will have to test if the walls of our prototype can support the roof	We will test that our roof fits well on our base and that it can be easily removed to expose the design of the inside of the building	This will be after our third prototype and should take 5 minutes
4	Ensure the roof is water resistant and good for water flow when it rains	We will put a small amount of water on the 3D-printed portion of the roof to see how water flows on our roof.	This will show us if our roof is designed well for rain and snowfall and if we need to redesign the roof for these weather conditions.	This will take 5 minutes and will be done after the roof of our third prototype is done.

**Conclusion:**

We cover our second analytical prototype in this deliverable. Our original 3D prototype has been improved upon. By identifying any problems with our design, this prototype has helped us refine it. We took note of the criticism we got and the advancements we achieved. Next, we go over the "why," "what," and "when" of prototyping as well as how our model applies to those ideas. We also analyze the outcomes of the test plan for the first analytical prototype, which is our most recent deliverable. We review the remarks and evaluations provided by a possible customer. Once the testing was finished and analyzed, we updated our goal specs, detailed design, and BOM. Lastly, we talk about our test strategy for the upcoming prototype.