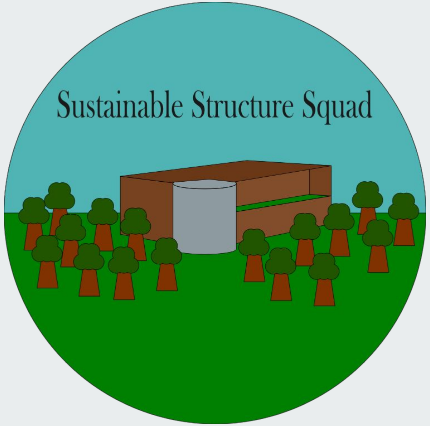
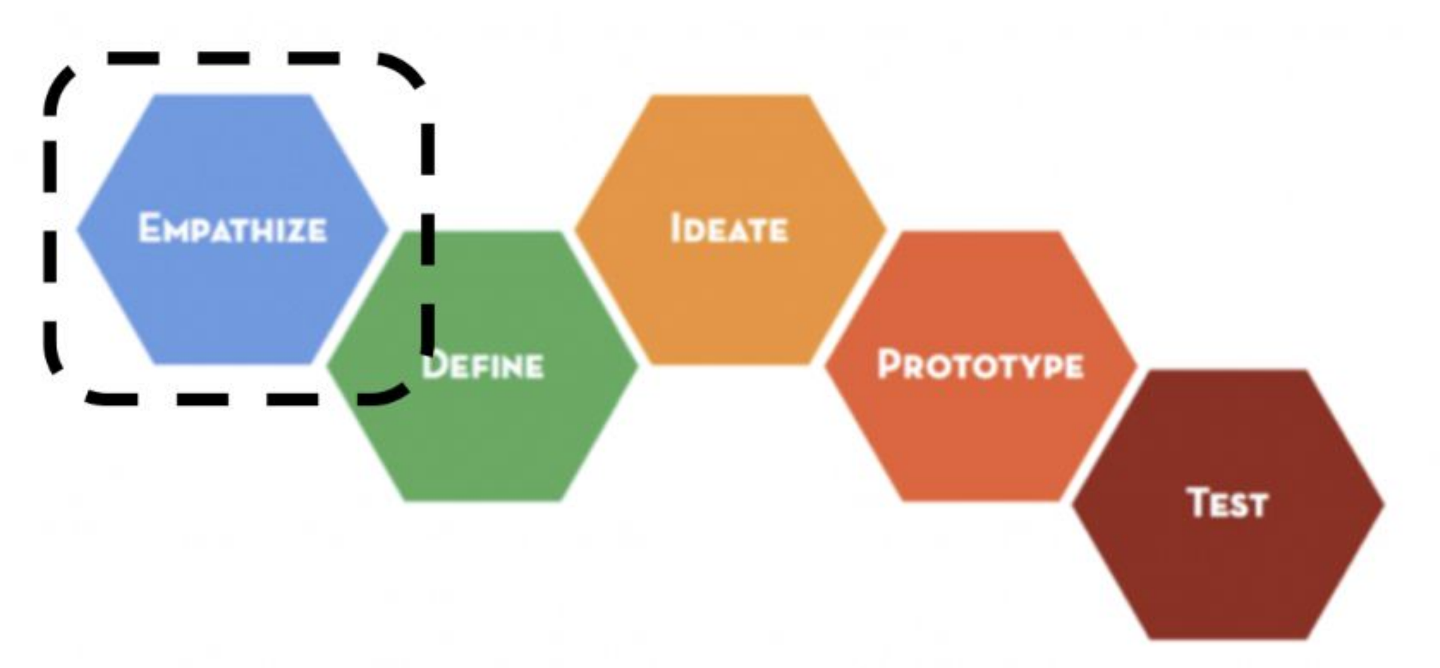
Pikwàkanagàn Neyagada Wabandangaki

Guardian Program

Environmental monitoring building

Sustainable Structure Squad




EMPATHIZE
DEFINE
IDEATE
PROTOTYPE
TEST

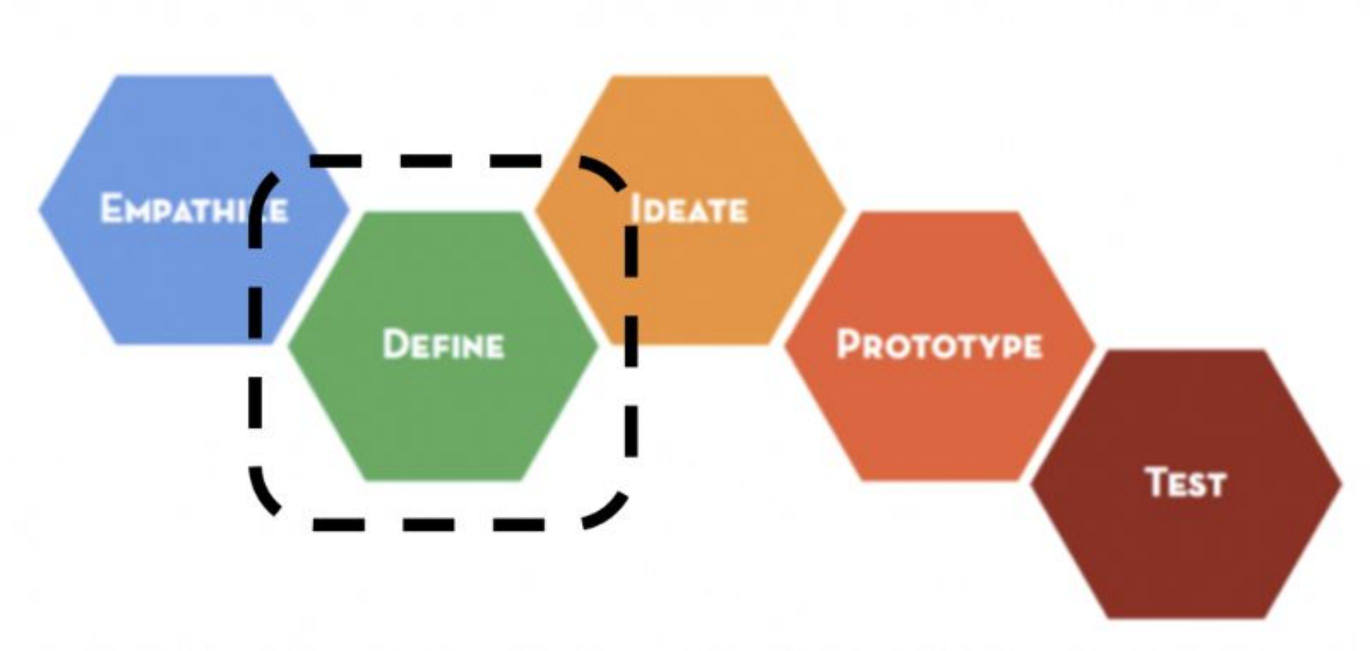
The challenge:

The needs:

- A multifunctional building
- A laboratory
- Plenty of storage
- Weather-protected parking
- A way to reflect indigenous culture
- Several offices
- A computer lab

The constraints:

- Limited budget
- Limited time
- A non-industrial aesthetic
- Accessible storeys


EMPATHIZE
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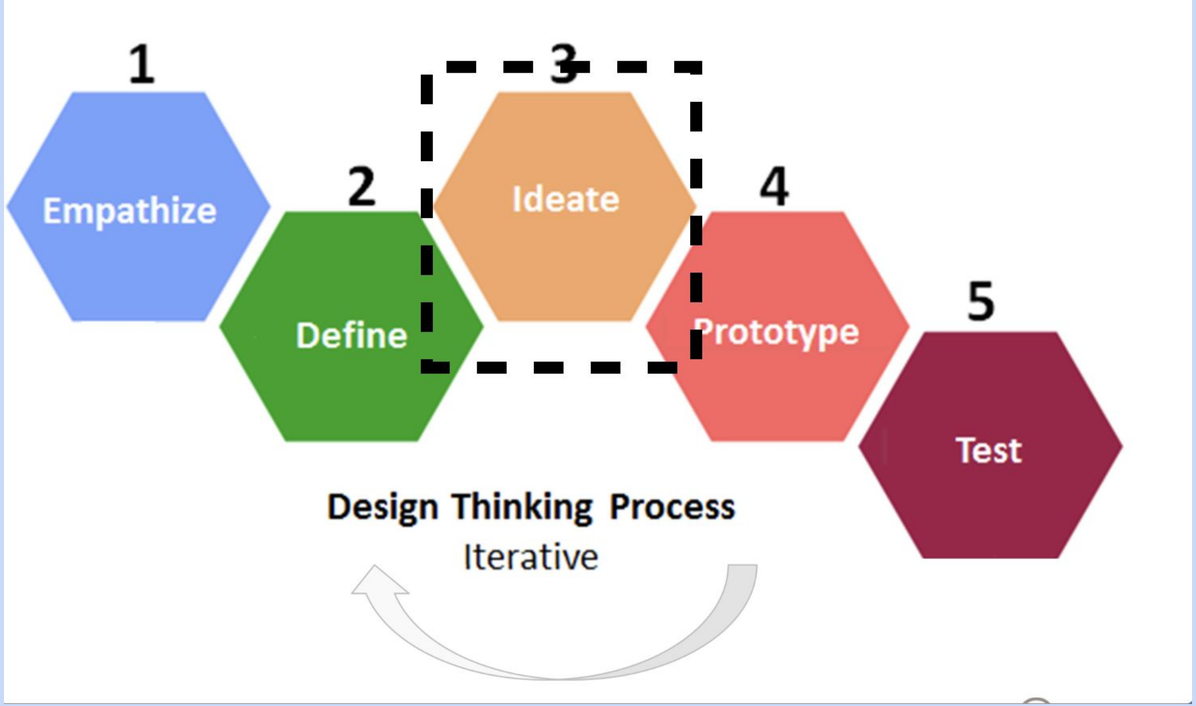
Number	Needs	Design Criteria
1	4-5 Small Offices	- Ceiling height (m) - Floor space (m^2) - Optimal workspace size - Noise level - Number of people occupying space
2	Common Workspace Area	- Ceiling height (m) - Floor space (m^2) - Open workspace - Number of people occupying space
3	Computer Lab	- Ceiling height (m) - Floor space (m^2) - Individual desktop workspaces - Number of people occupying this space

Company	Paradigm Environmental Services	Nagadjitòdjig Akì Guardian Program	Kichi-Sìbì Guardians Program	Allnorth
Laboratory testing & monitoring capabilities	Air & emissions Solid & hazardous waste testing Non-potable water testing Environmental waste Industrial waste-water Contaminated soil and groundwater testing	Moose populations, Rivershed monitoring, At risk species populations Drone footage Seed harvesting and preservation GPS tagging	Fish spawning areas and times, Baitfish population and patterns Fishing and collection data Lake mapping	Water quality monitoring Analysis of erosion Wildlife and vegetation surveys Environmental protection plans Contamination and hazardous waste assessments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Iterative

Brainstorming designs

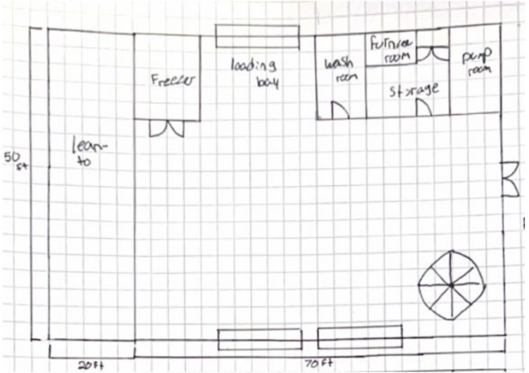


Figure 1: first floor design (Liam)

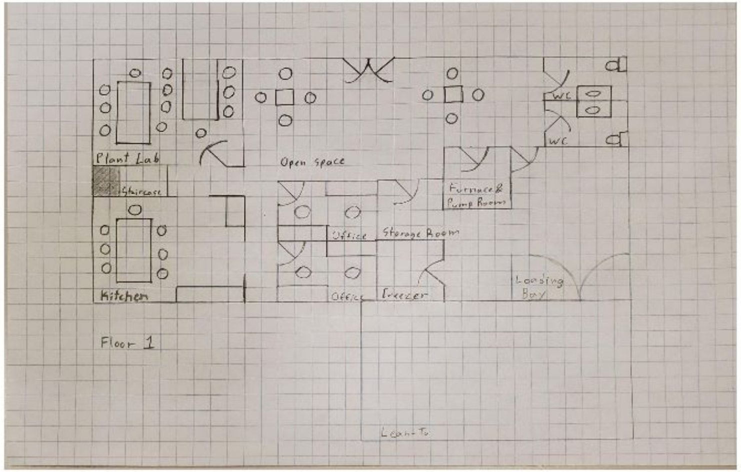


Figure 5: first floor design (Maximilien)

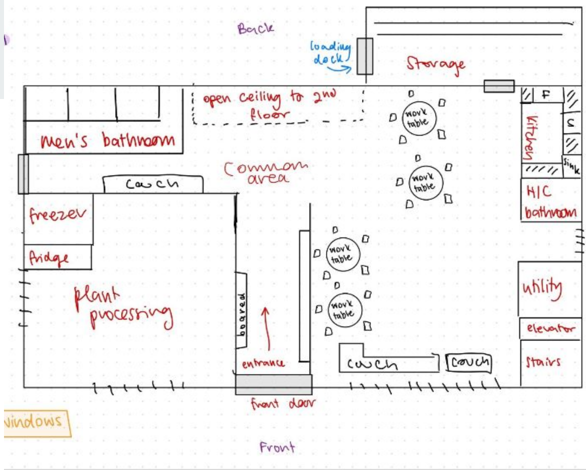


Figure 8: first floor design (Angelique)

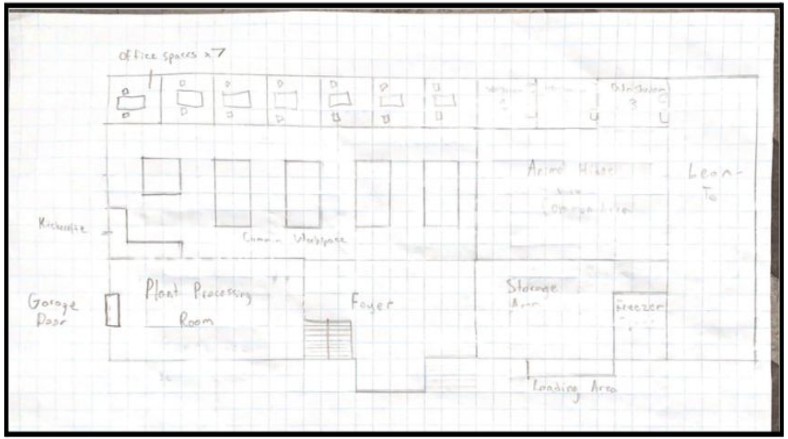


Figure 6: first floor design (Owen)

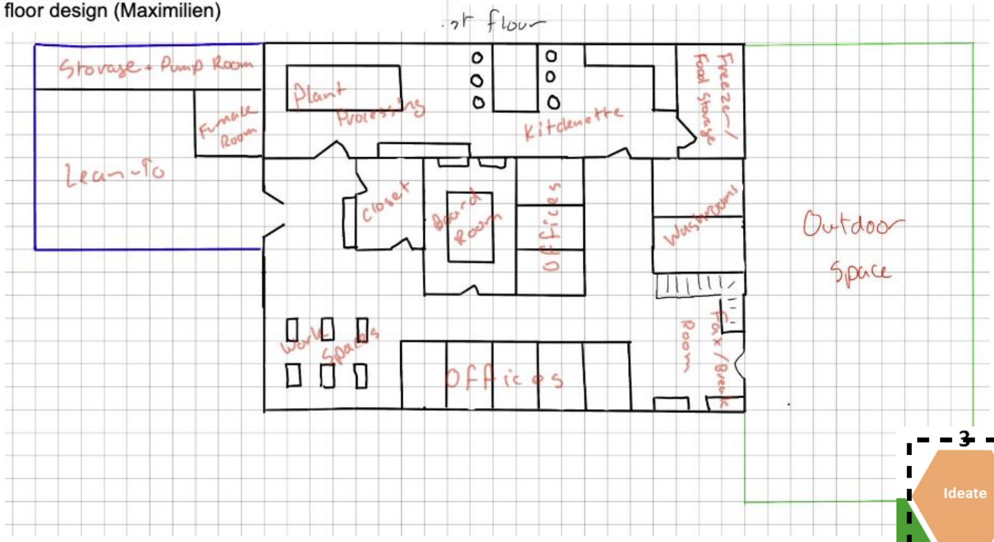
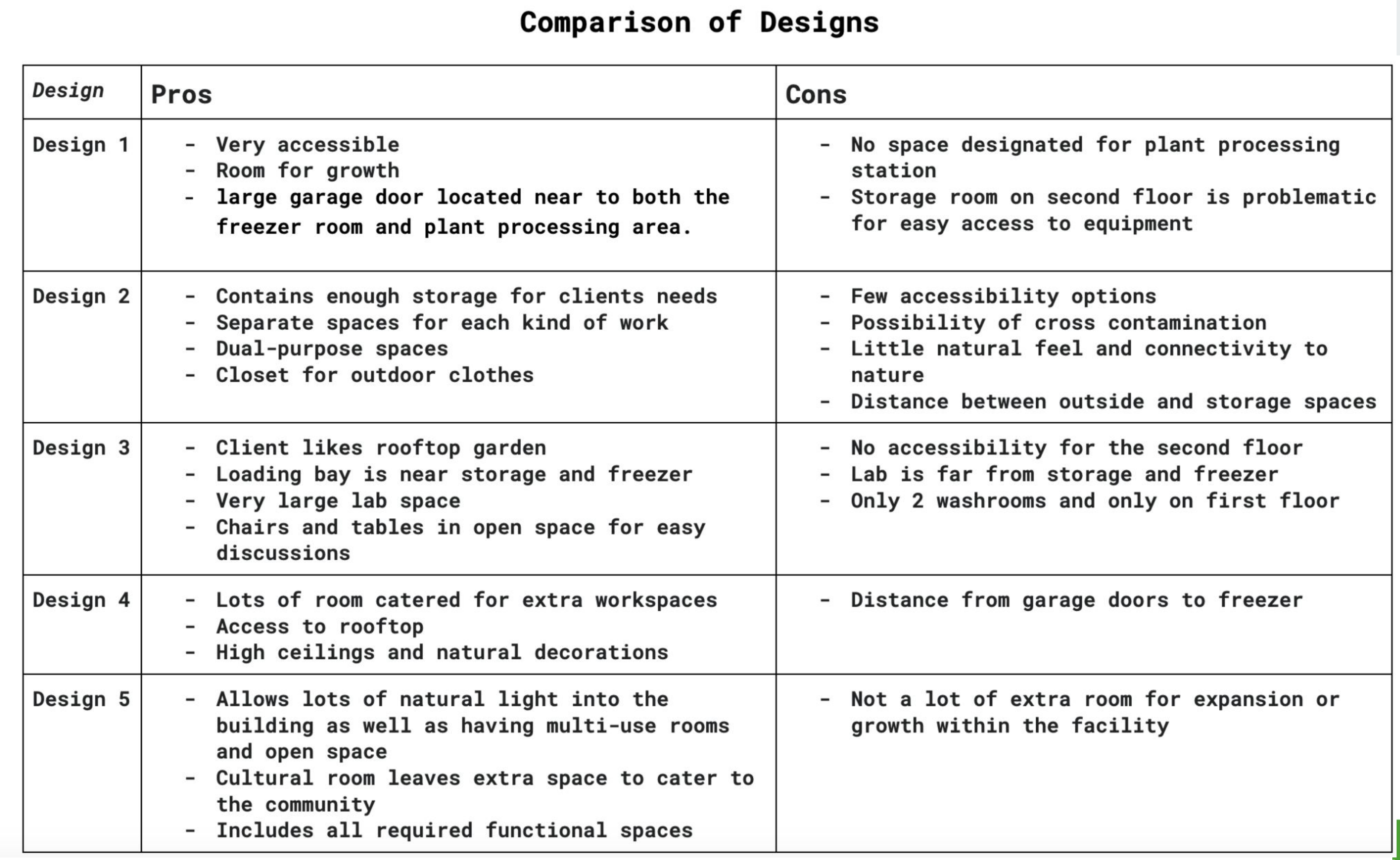


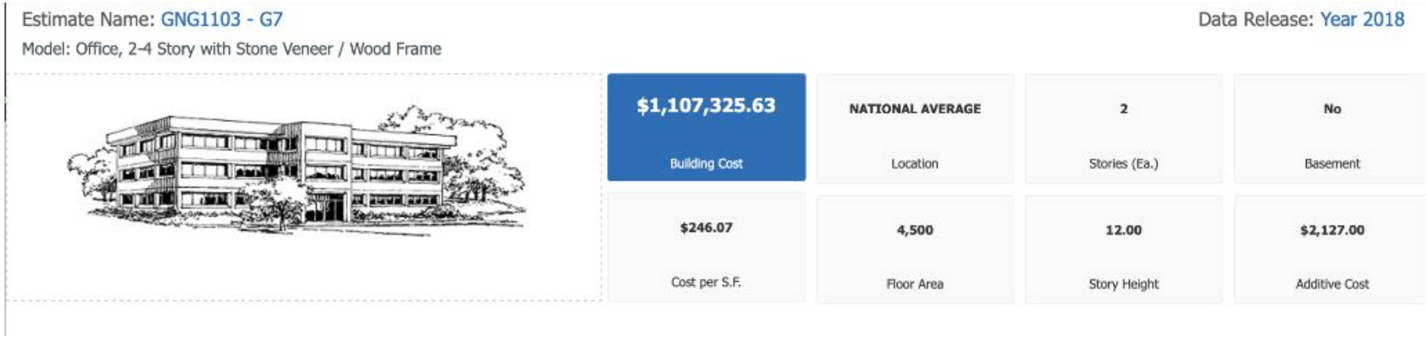
Figure 3: first floor design (Paul)



Comparison of Designs

Design	**Pros**	**Cons**
Design 1	- Very accessible - Room for growth - large garage door located near to both the freezer room and plant processing area.	- No space designated for plant processing station - Storage room on second floor is problematic for easy access to equipment
Design 2	- Contains enough storage for clients needs - Separate spaces for each kind of work - Dual-purpose spaces - Closet for outdoor clothes	- Few accessibility options - Possibility of cross contamination - Little natural feel and connectivity to nature - Distance between outside and storage spaces
Design 3	- Client likes rooftop garden - Loading bay is near storage and freezer - Very large lab space - Chairs and tables in open space for easy discussions	- No accessibility for the second floor - Lab is far from storage and freezer - Only 2 washrooms and only on first floor
Design 4	- Lots of room catered for extra workspaces - Access to rooftop - High ceilings and natural decorations	- Distance from garage doors to freezer
Design 5	- Allows lots of natural light into the building as well as having multi-use rooms and open space - Cultural room leaves extra space to cater to the community - Includes all required functional spaces	- Not a lot of extra room for expansion or growth within the facility

Bill of materials for prototype I



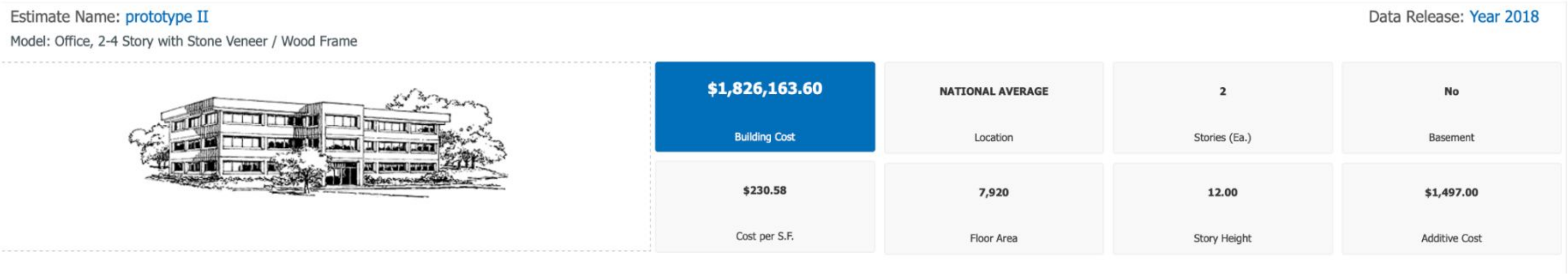
Estimate Name: GNG1103 - G7

Data Release: Year 2018

Model: Office, 2-4 Story with Stone Veneer / Wood Frame

$1,107,325.63 Building Cost	NATIONAL AVERAGE Location	2 Stories (Ea.)	No Basement
$246.07 Cost per S.F.	4,500 Floor Area	12.00 Story Height	$2,127.00 Additive Cost

Bill of materials for prototype II



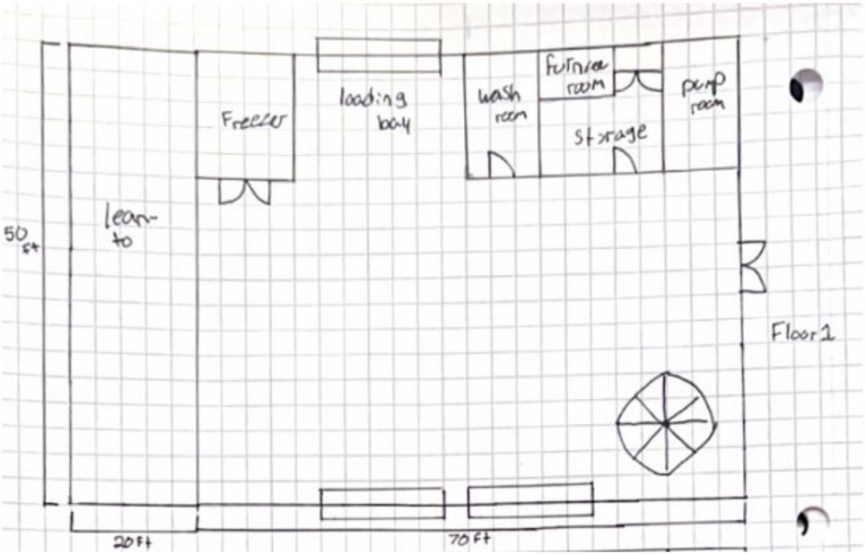
Estimate Name: prototype II

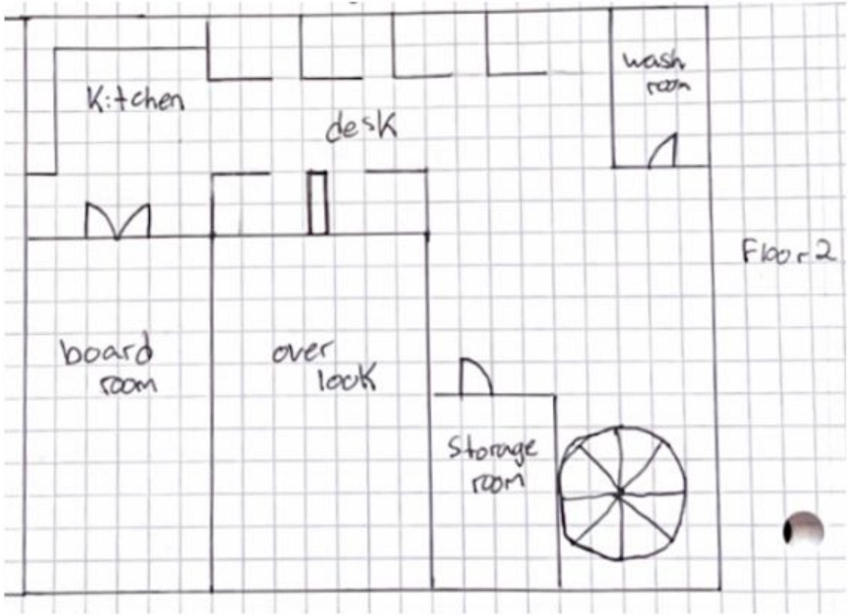
Data Release: Year 2018

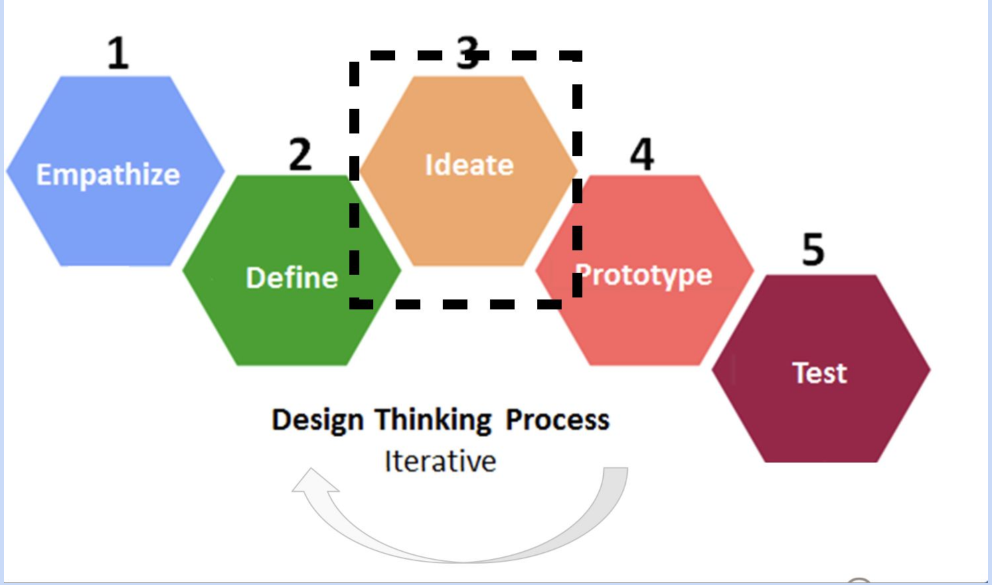
Model: Office, 2-4 Story with Stone Veneer / Wood Frame

$1,826,163.60 Building Cost	NATIONAL AVERAGE Location	2 Stories (Ea.)	No Basement
$230.58 Cost per S.F.	7,920 Floor Area	12.00 Story Height	$1,497.00 Additive Cost

First prototype from first iteration



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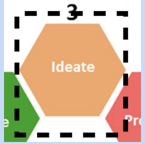
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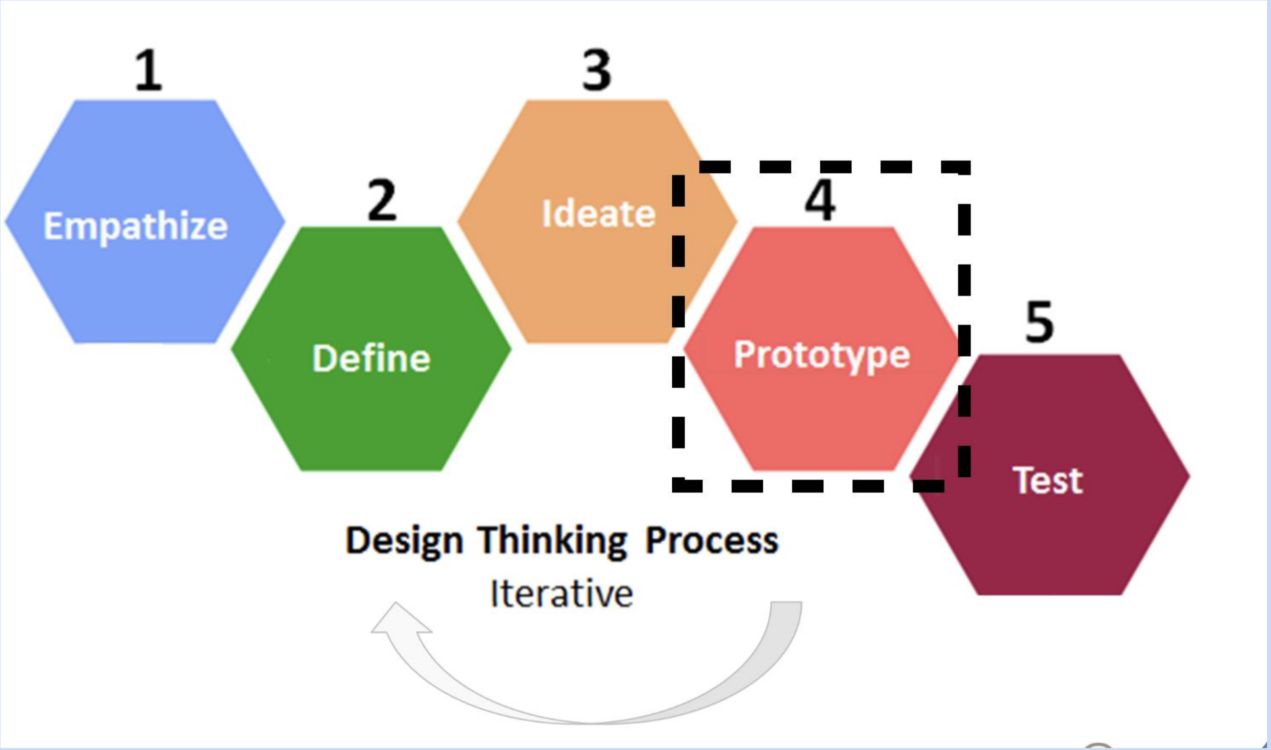
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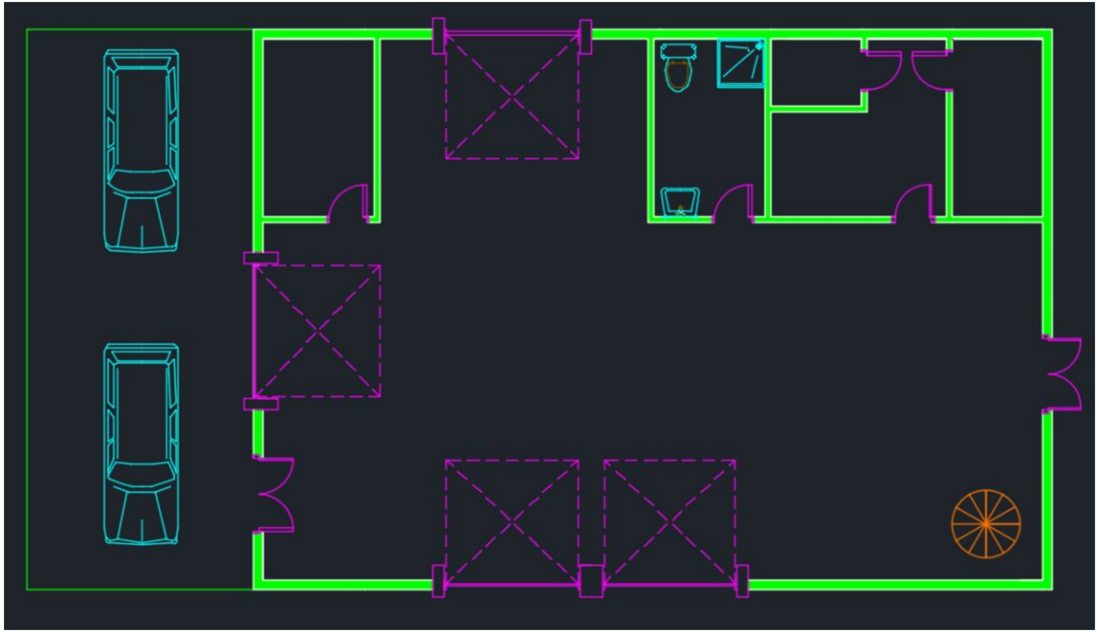
Prototype I



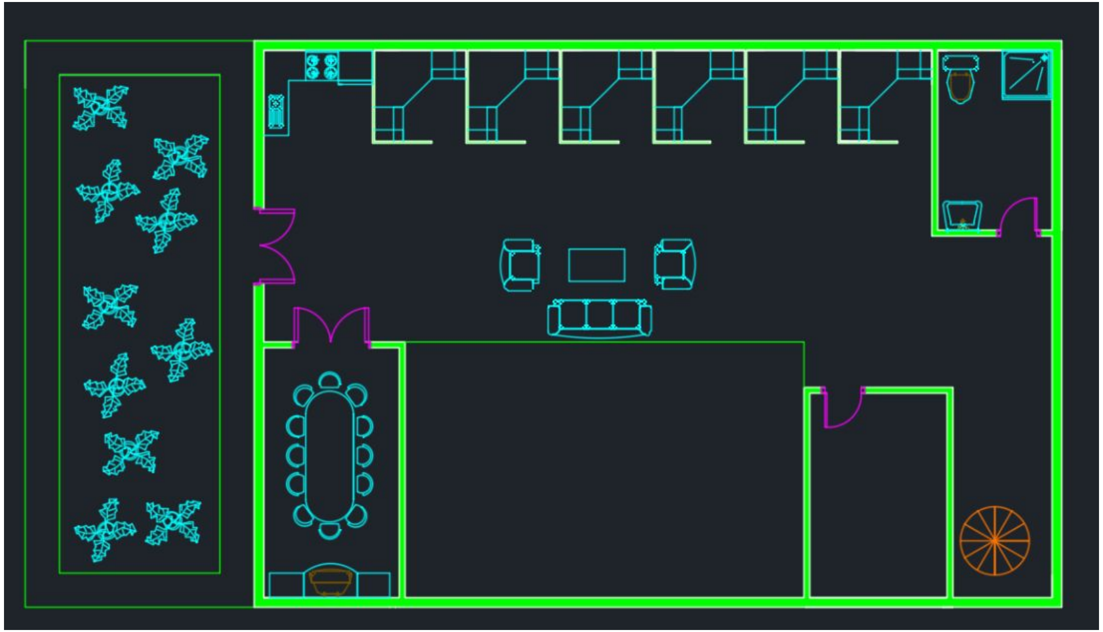
- Industrial look and feel to the build

-Open room design for more storage and usability

-Easy access from the freezer to the doors

-Lot of room

Prototype I



- Private cubicles for testing and and other work

- Kitchen

-An over look for looks and easy commtion from the both floors

-Roof top garden

- Boardroom for any meets with clients

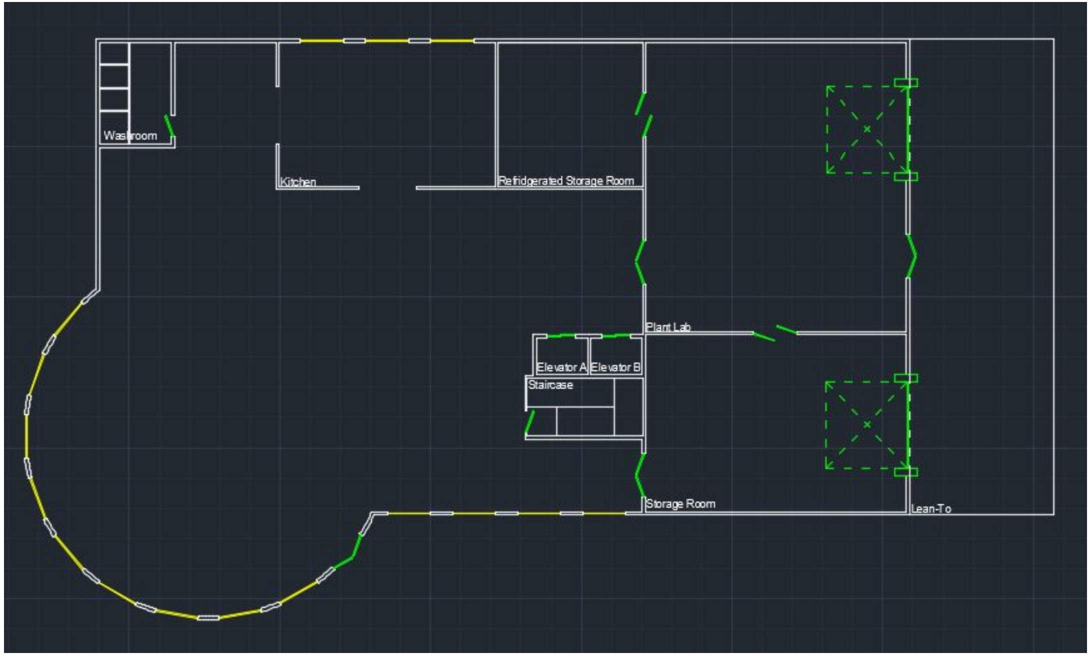
Prototype II

-Complete Redesign

-Remove Industrial

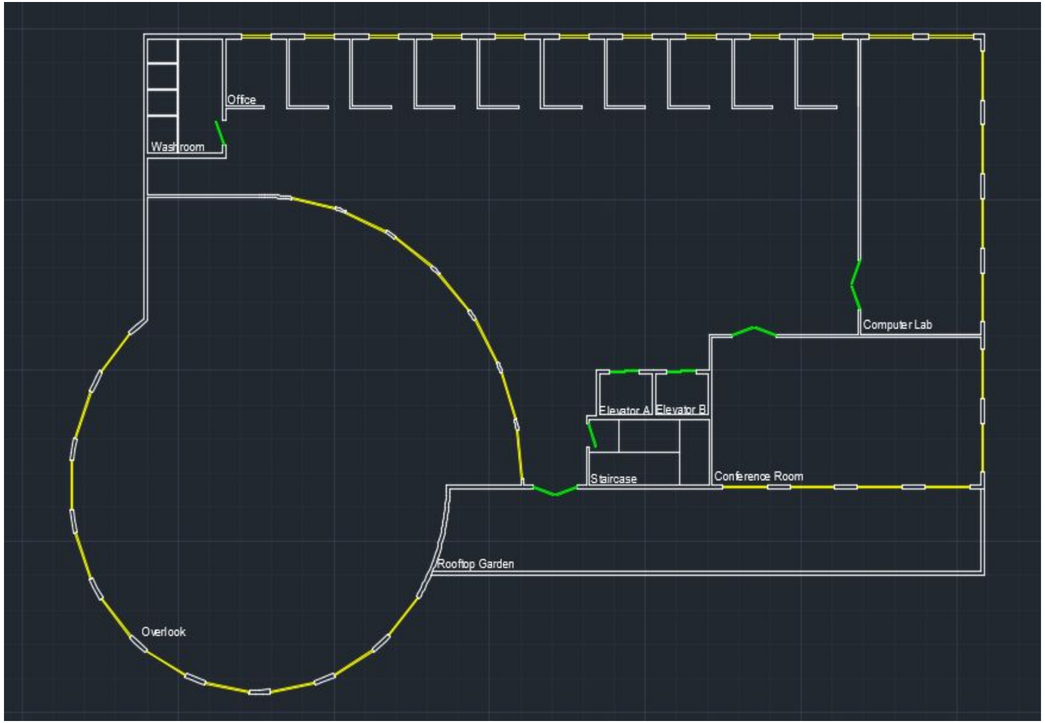
-Created More Natural Lighting

-More Room for Flexibility



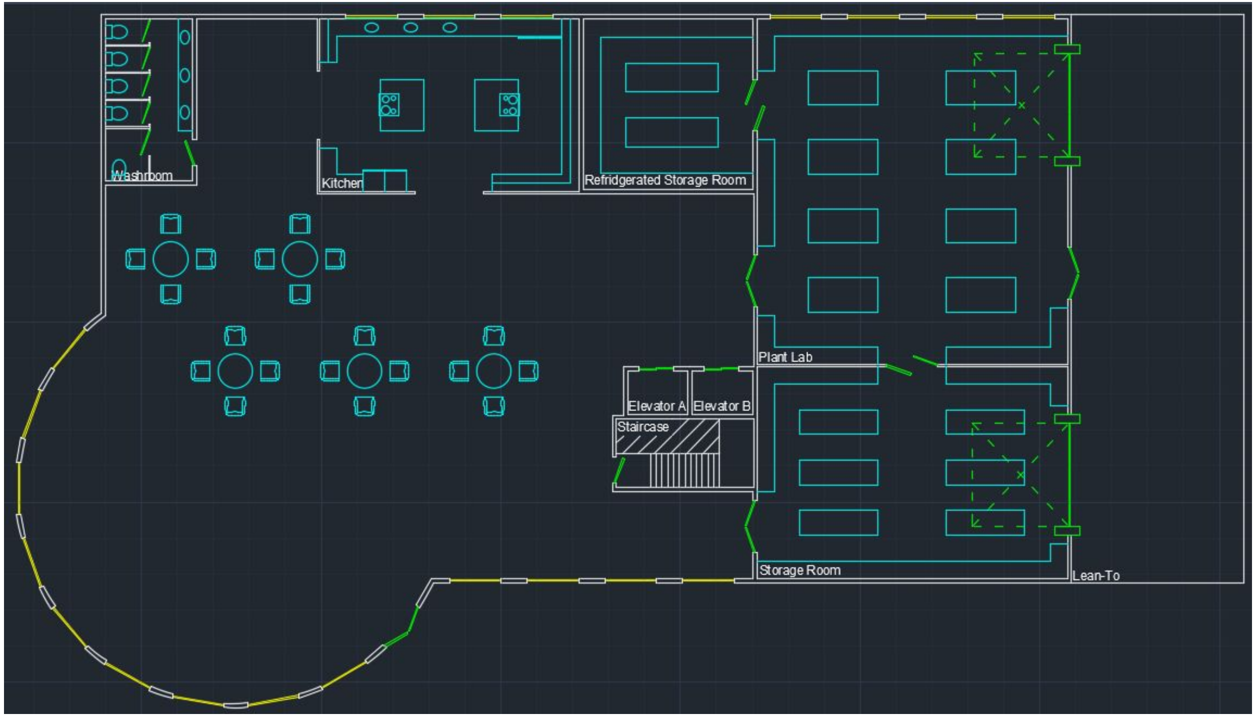
Prototype II

- Increased Office Space
- Left More Space for Flexibility
- Computer Lab Added
- Re-Designed Overlook/Rooftop Garden



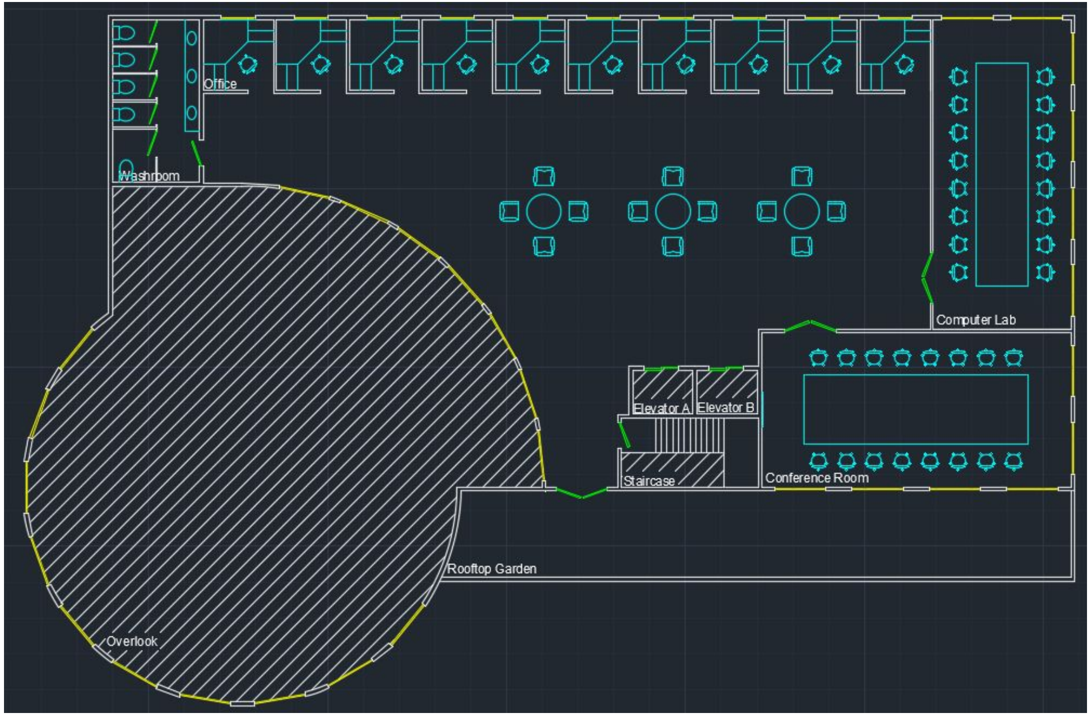
Prototype III

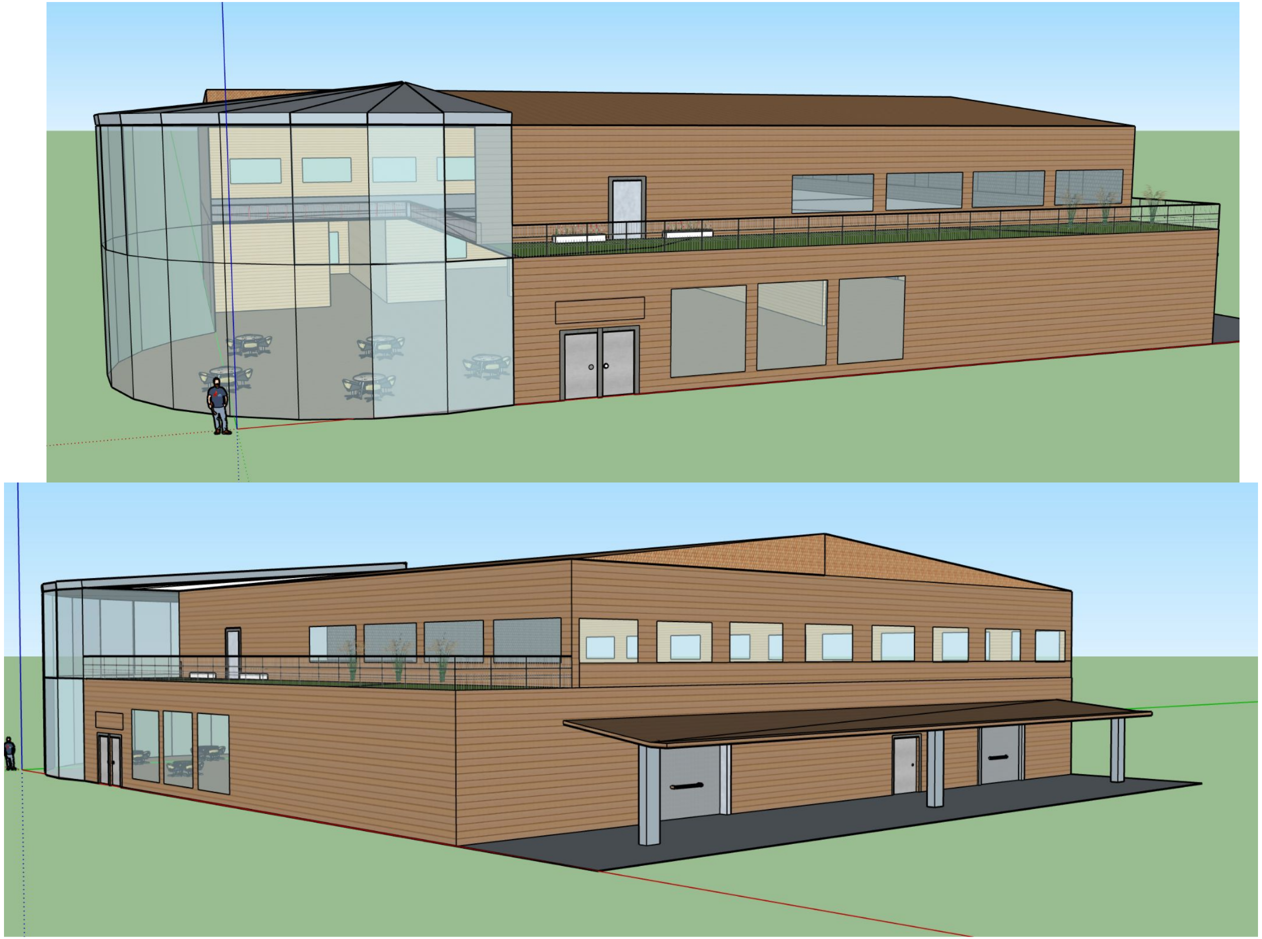
- Added public collaborative area
- Furnished rooms
- Added shelving units
- Finalized layout



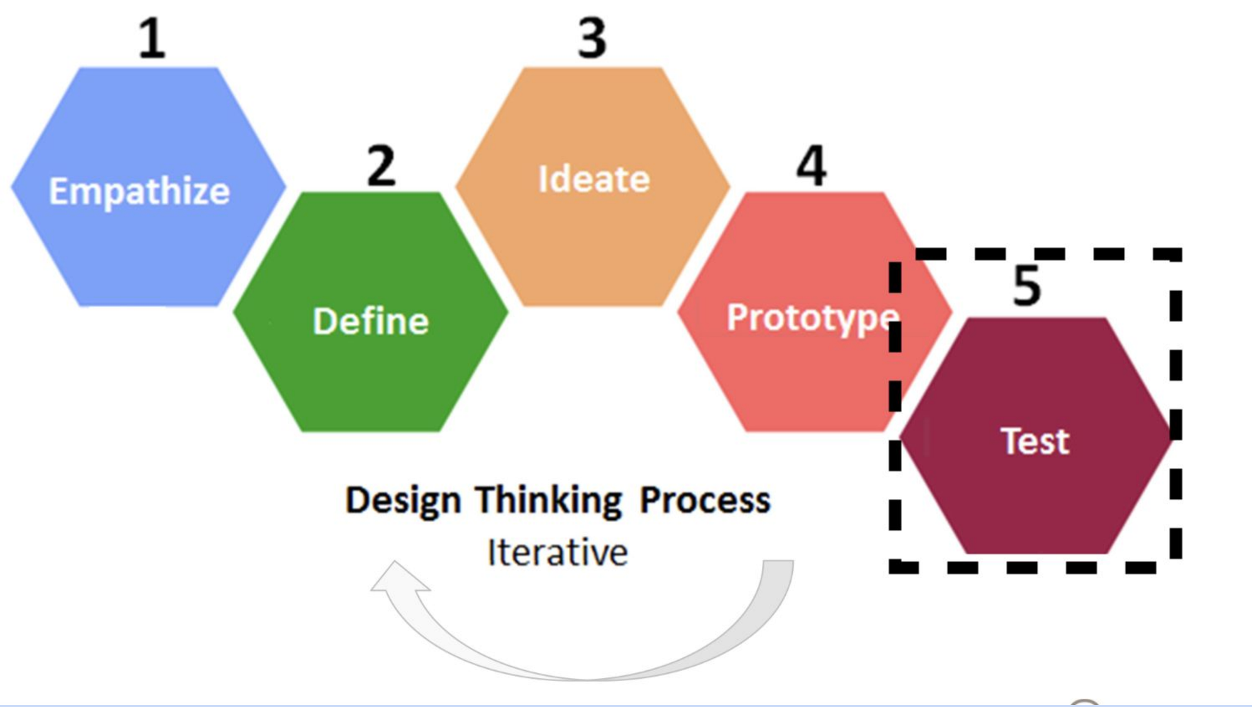
Prototype III

- Made overlook clear
- Furnished rooms
- Added private collaborative area
- Finalized layout





3D rendering of Prototype III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Tests

- Our main test plan was client feedback

Issues we faced

- Communication issues
- Tight deadline and time management.
- Division of tasks
- Software issues
- Differing opinion

Lessons we learned

- Effective communication is key.
- Pre-planning of each task needs to be done.
- Tasks should be divided fairly as per a team’s member strength.
- Adequate knowledge about software needs to be gathered beforehand.
- Be open-minded and think critically.

Thank you!