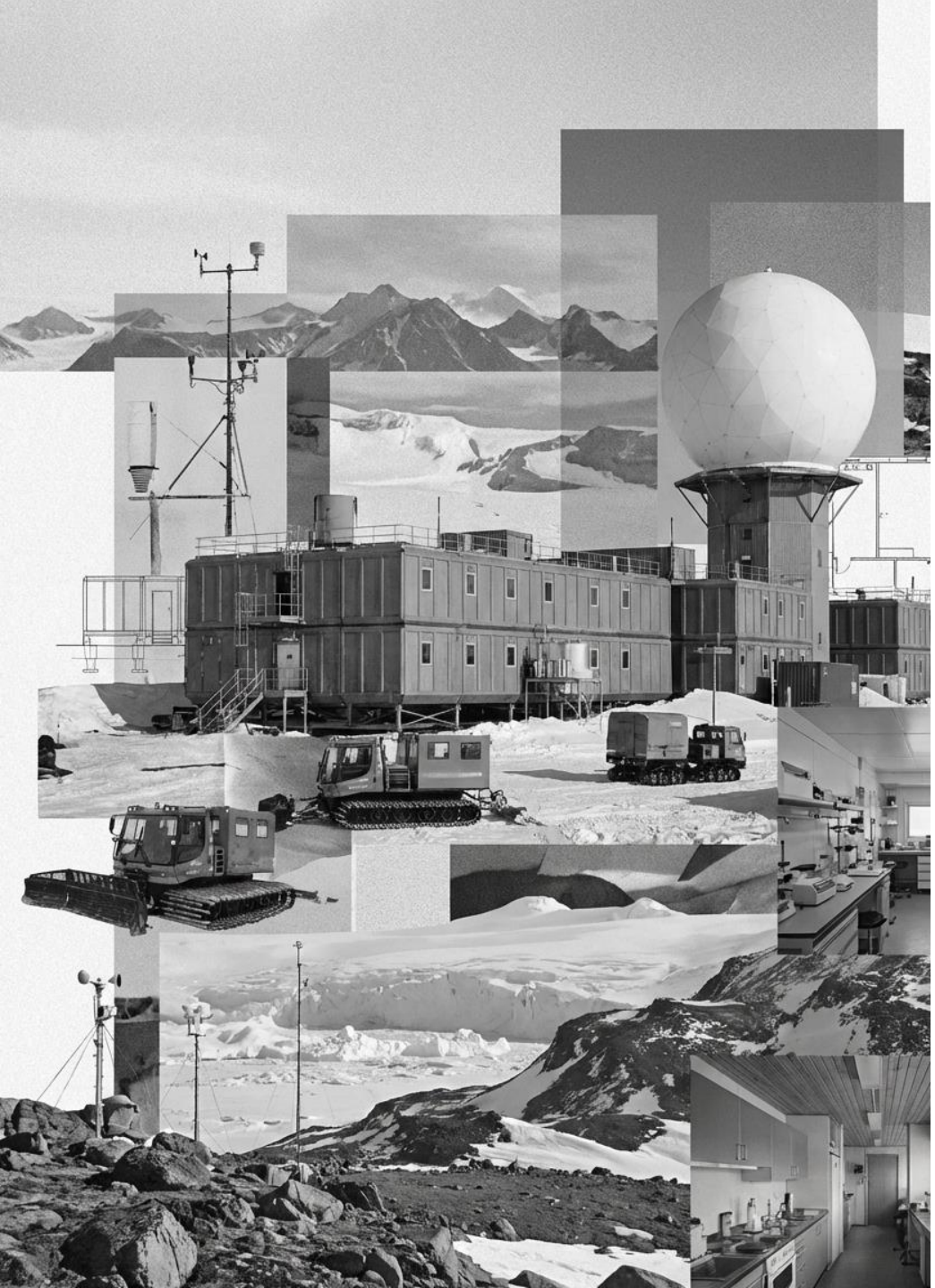


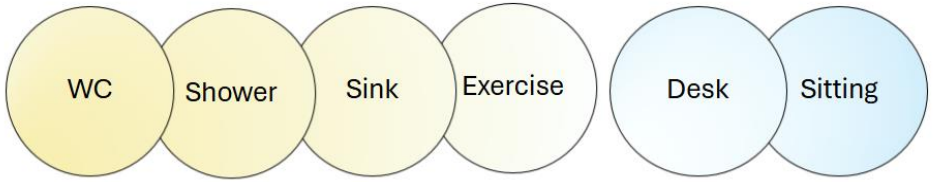
Mission-driven habitability

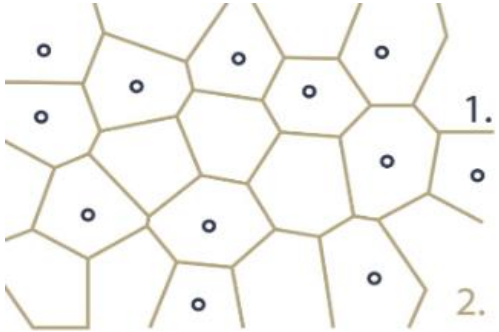
Designing habitats to support mission-driven confinement,
TROLL Station Containers

Week 3.4_ Group 2_ Brendan Exterkate, Gabriel Marks, Giorgia Vercelloni, Maciej Sachse, Ruxandra Florut, Zuzanna Schleifer, Long Ki

1. MAIN SYSTEM

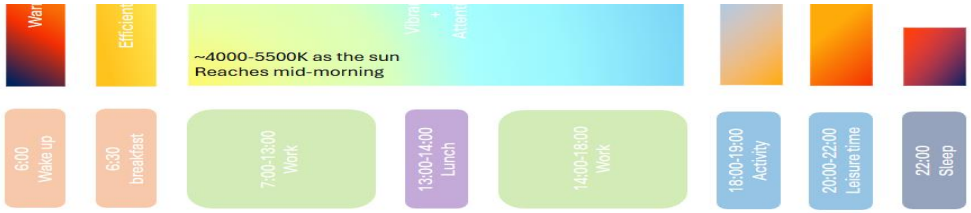
Main lighting system based on Human Activity Recognition (HAR)
With adjustment of light tone
- to the season and day time
- could help in simulating the course of the day at lower latitudes

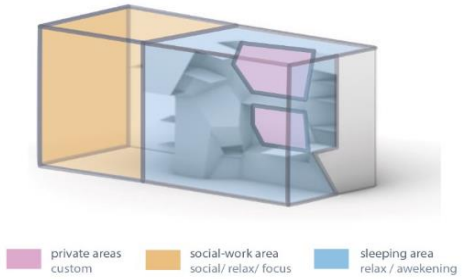


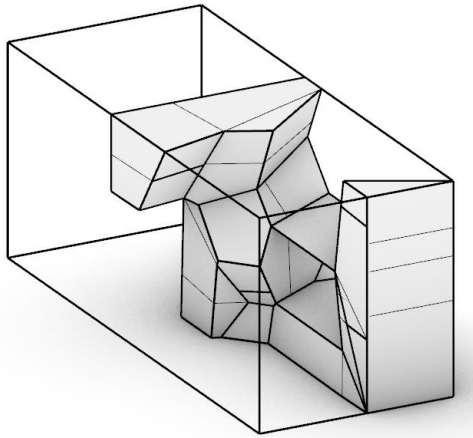


2. SECONDARY SYSTEM

Adjusting to the activity
With adjustment of light colour according to the wanted atmosphere (in accordance to biodata e.g. heart rate)
- Awekening
- Work/ study (focus)
- Social time
- Leisure time (relax)

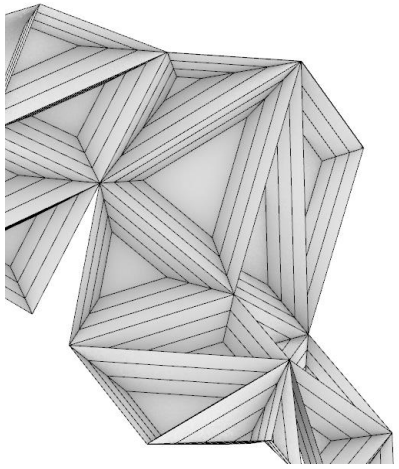






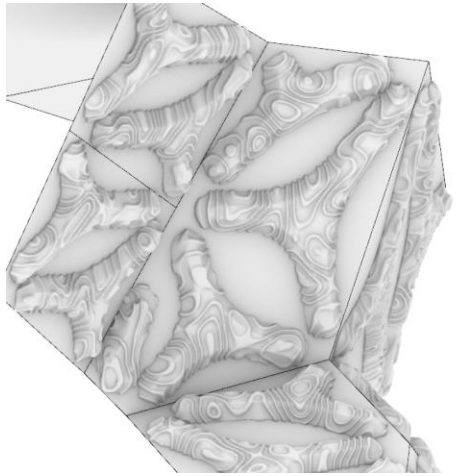
Starting geometry

Habitat for two



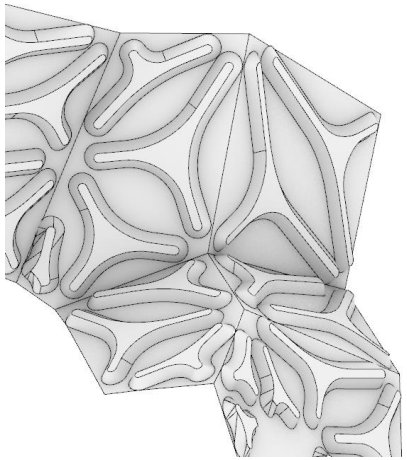
version 1.0

sample element



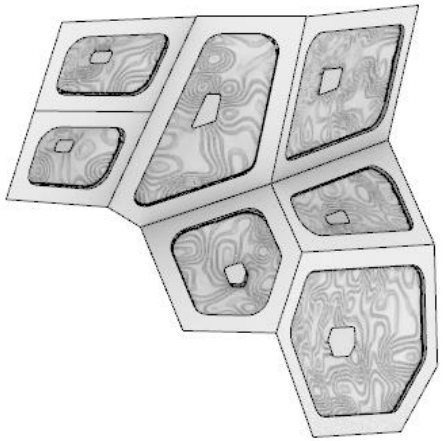
version 1.1

Sample element



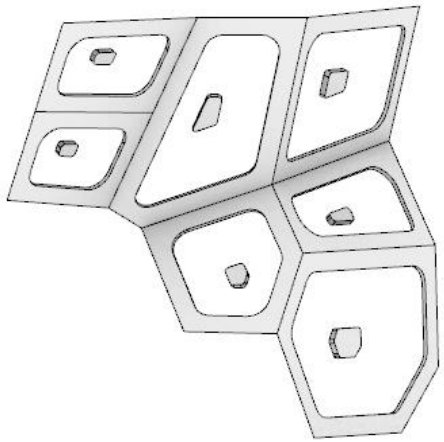
version 1.2

Sample element



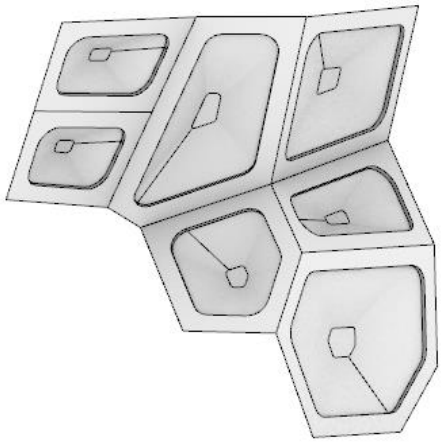
version 2.0

sample element



version 2.1

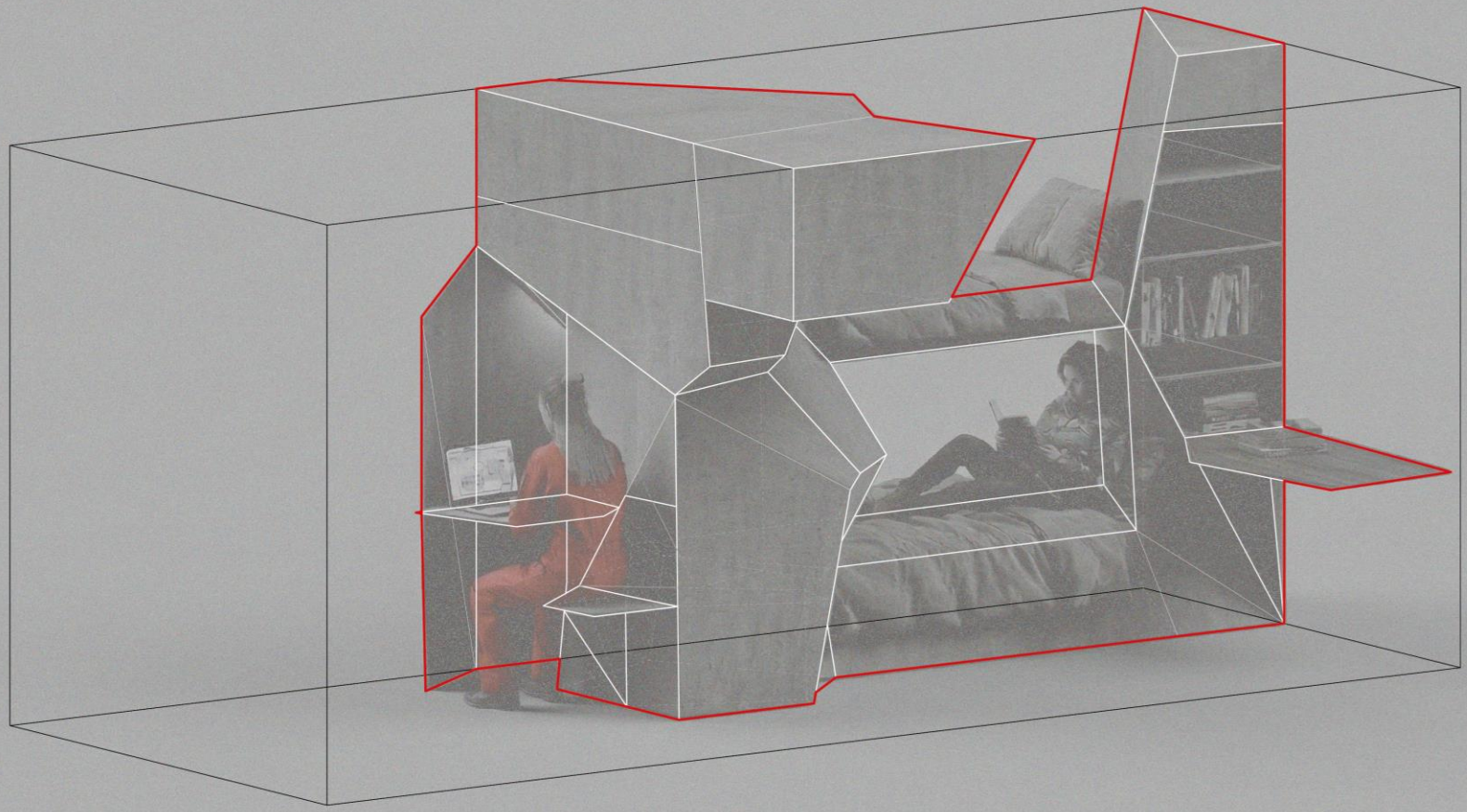
Sample element



version 2.3

Sample element

03 _Habitat, 3D adaptation

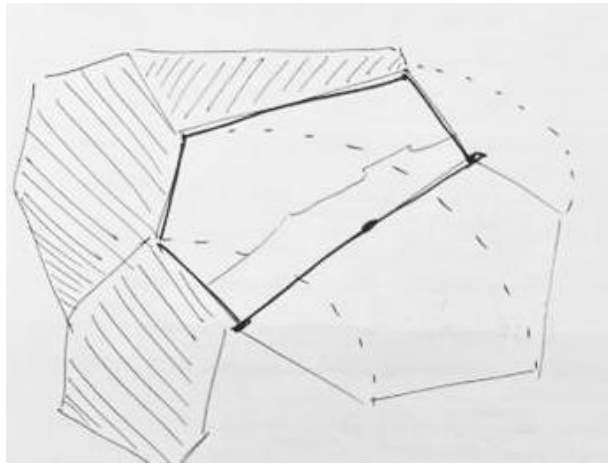


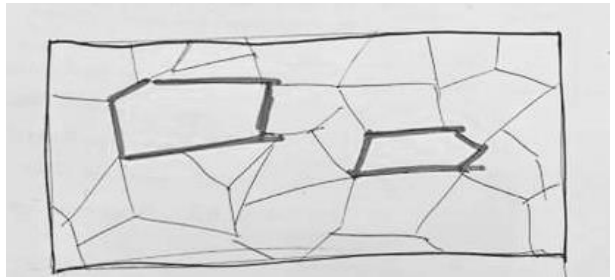
Habitat for two

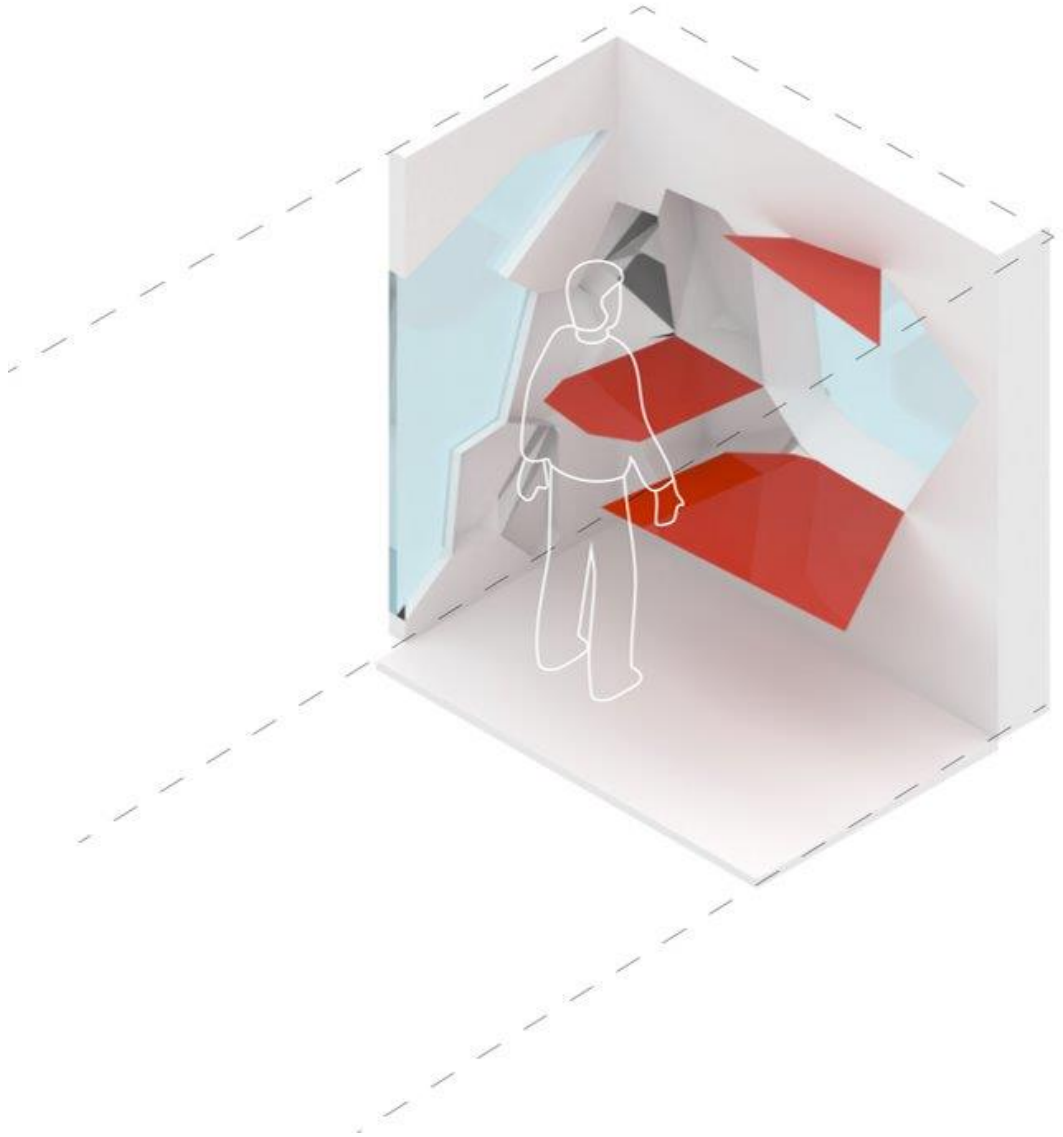
[sitting area, bathroom, overhead storage, bunk beds, library, desk]

Elevation

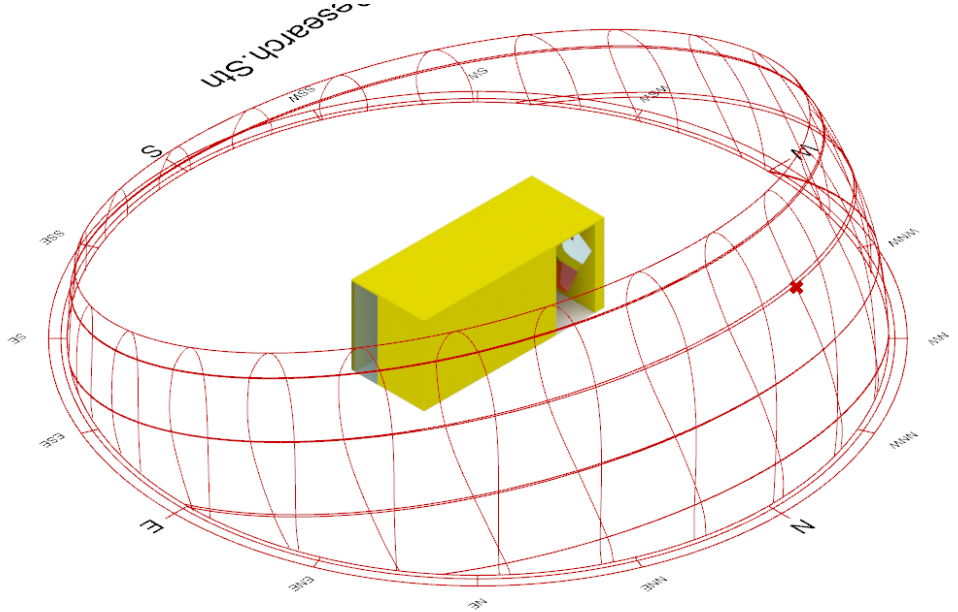
04 _Habitat, 2D adaptation (functionalised wall)







05 _Openings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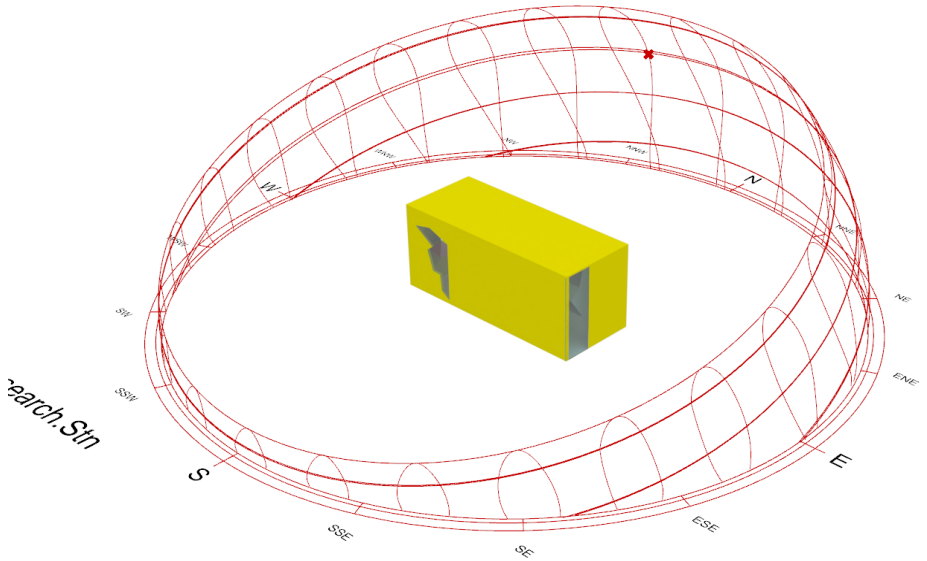
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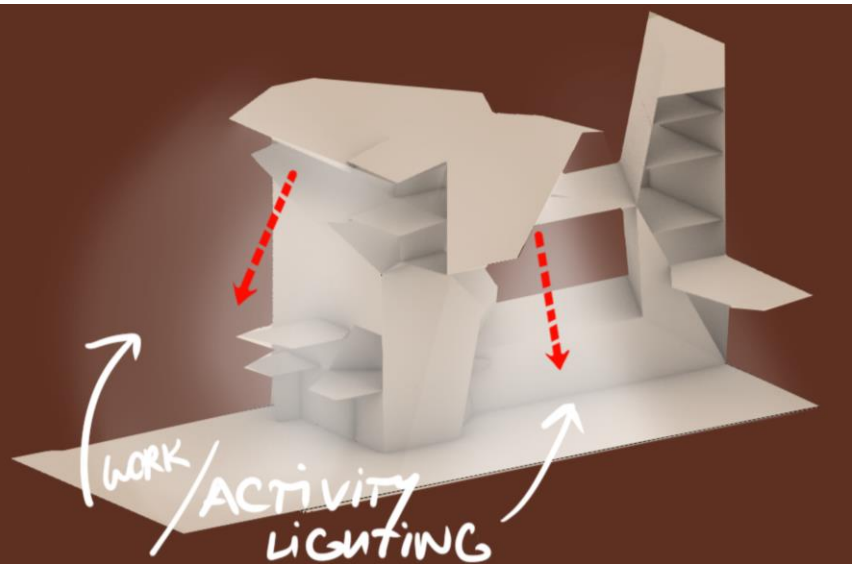

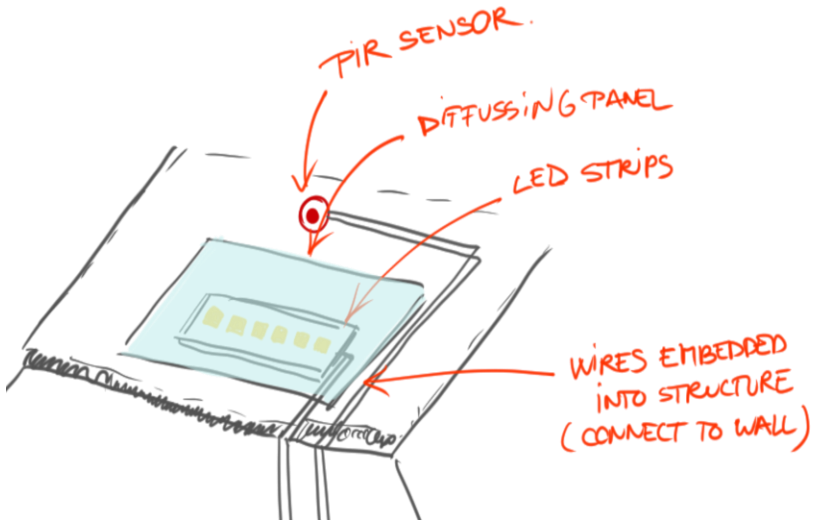

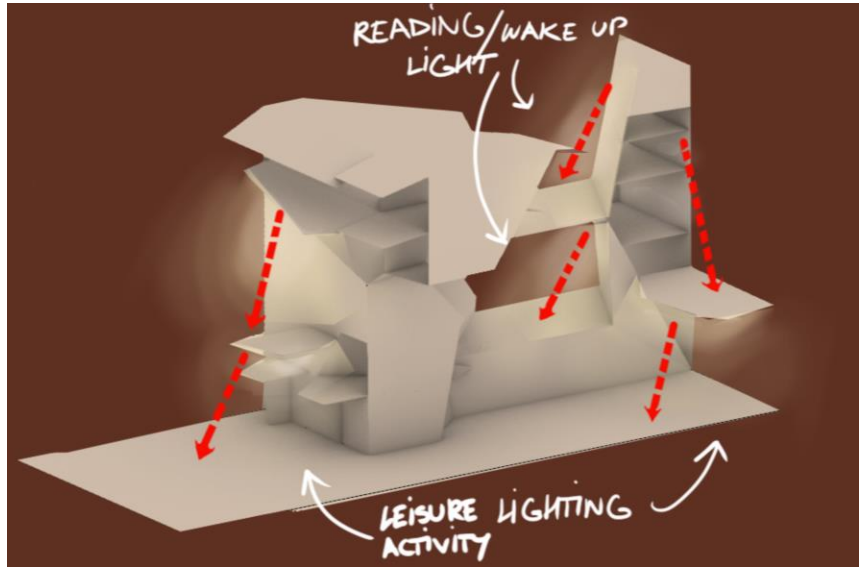

Certain foldable parts were chosen to host the LED strips and sensors.
These panels would have an opening milled into it and a diffusing panel would be inserted in order to distribute light evenly.
The wiring would be encased in the panel and ultimately connected to the wall.

Implementation of AI:
Using a synthetic set of data as a foundation to train the deep learning model, we will be able to potentially predict t lighting needs of users.

Drawbacks:
Such as the case study shared with us, there are issues when it comes to personal preference and individual vs group needs.

Due to the synthetic data, there may be a high chance for overfitting since the model will have no room for real input data